

May 28, 2004

Mr. Bart Hewitt
Cooperative State Research, Education, and Extension Service
U.S. Department of Agriculture
Washington, D.C. 20250

Dear Mr. Hewitt,

I am pleased to submit to you the attached Report of Accomplishments and Results for the University of Arkansas Division of Agriculture. This report includes the work of the Arkansas Agricultural Experiment Station (AES) and the Cooperative Extension Service (CES) for Federal Fiscal year 2002-2003.

We look forward to your comments on our report and welcome any recommendations you may have to improve our process.

Sincerely,

Milo J. Shult
Vice President for Agriculture
University of Arkansas
2404 North University
Little Rock, AR. 72207

Executive Summary

CES Introduction

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

Adding Value to New and Old Agricultural Products

Using Cotton Gin Waste

Agricultural Profitability

Commercial Vegetable Production

Cotton Production Education

Equipment and Techniques for Reduced Tillage and No-Tillage (Soybeans, Wheat, Cotton, Corn and Grain Sorghum)

Extension Soybean Educational and Applied Research Program

Farm Management, Marketing and Policy

Harvest Equipment Selection, Maintenance and Fine-Tuning (Corn, Cotton, Grain Sorghum, Rice, Soybeans, and Wheat)

Irrigation Scheduling Program

Master Gardener Program

Multiple Inlet Rice Irrigation

Ornamental Horticulture Business Development

Ornamental Plant Evaluation

Poultry Short Course

Soil Fertility and Plant Nutrition Education and Applied Research Program

Technology Transfer and Applied Research in Feed Grains

Technology Transfer for Sustainable Rice Production

Animal Health

Poultry Disease Prevention

Animal Production Efficiency

Arkansas Beef Improvement Program

Beef Cattle Management

Dairy Cattle Management

Forage Production and Management

Horse Management

Impact of Water Quality on Poultry Production

Poultry Breeder Management Training

Poultry Hatchery Management Training

Poultry Producer Education Programs

Diversified/Alternative Agriculture

Alternative Forest Products

Managing Change in Agriculture

The Future of Contracts in Agriculture

Risk Management

Native American Agricultural Producers

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

Food Quality

Food Processing Extension

Grain Storage and Drying to Preserve Quality with Minimal Losses

Food Safety

Food Safety Education Programs

Food Security

Homeland Security

Foodborne Pathogen Protection

Thermal Process Validation Workshops

HACCP

HACCP and Sanitation Training for the Poultry Industry

Goal 3 – A healthy, well-nourished population.

Human Health

Reducing Risks for Chronic Disease – Physical Activity

Human Nutrition

Expanded Food and Nutrition Education Program

Food Stamps Nutrition Education Program

Healthy Weight for Arkansans

Goal 4 – Greater harmony between agriculture and the environment.

Agricultural Waste Management

Animal Waste Management

Impact of Environmental Training for the Livestock Industry

Forest Resource Management

Forest Landowner Education

Sustainable Forest Management

Urban Forest Management

Integrated Pest Management

Cotton Integrated Pest Management

Diversified Integrated Pest Management

Fire Ant Management

Improved Efficiency in Crop Management Through Nematode Control

Management of Stink Bug in Cotton

Management of Stink Bug in Rice
Pesticide Applicator Training
Plant Disease Detection and Diagnosis
Precision Chemical Application
Rice Integrated Pest Management Program (IPM) for Arkansas
Soybean Integrated Pest Management
Turf, Rangeland and Pasture Waste Management
Urban Pest Management Program
Weed Management in Arkansas Crops

Natural Resource Management

Forestry Continuing Education
Natural Resource Public Policy Education

Recycling

Recycling Including Yard Waste/Composting and Solid Waste Management

Water Quality

Water Quality and Watershed Education

Wildlife Management

Wildlife Management on Private Lands

Goal 5 – Enhanced economic opportunity and quality of life for Americans.

Character/Ethics Education

Raising Arkansas Youth (RAY)

Child Care/Dependent Care

The Best Care: Best Care Connected; Best Care Myths and Magic

Community Development

Arkansas Procurement Assistance Center (APAC)
Citizen Action Produces Strength
Cooperative Extension Service Home-Based Business
National Institute on Cooperative Education (N.I.C.E.)
University of Arkansas Farm Income Tax School
VISION 2010 Program – Building Healthy, Sustainable Communities for the 21st Century

Family Resource Management

Financial Security in Later Life
Planning for the Long Term

Farm Safety

Farm Safety Programs and Farm Accident Rescue Workshops

Impact of Change on Rural Communities

Planning for Economic Development

Leadership Training and Development

The LeadAR Program

Parenting

Guiding Children Successfully

Workforce Preparation – Youth and Adult

Kansas City 4-H Global Conference

Mini-Society Camp

Youth Development/4-H

Arkansas AG Adventures

Arkansas 4-H Tech Team

Arkansas 4-H Volunteer Core Competencies

Building 4-H Clubs

Citizenship Washington Focus

Developing Youth

ExCEL: Experience the Challenge Experience the Leadership

4-H Responsible Environmental Stewardship-Quest (4-H RES-Q)

Regional and State 4-H O-Rama

State 4-H Camp

Youth Community Service

Youth Leadership

Youth Poultry Program

Management Goals

Agricultural Communications

Mass Media Education Programs

Print Media Programs

Support Material

Information Technologies

Agriculture Decision Tools

<http://www.uaex.edu>

Arkansas Information Management System (AIMS)

Arkansas Agricultural Experiment Station FY2003 Report of Accomplishments

The University of Arkansas, Division of Agriculture is addressing challenging economic issues, both for the clients we serve, as well as in relation to future funding for our own institutional infrastructure. While state revenue is inching up, the Governor and the Legislature have been working over the past year to respond to the state Supreme Court ruling related to restructuring Arkansas' entire public school system, which could have funding implications for all state agencies. This is a major public policy issue in our state. We were approved for a state and federal early retirement incentive plan, which was completed in December. This will assist us in responding to the need to adjust our organizational structure as well to assure flexibility and consistency in providing programs in every county of our state.

The University of Arkansas, Division of Agriculture has likewise initiated a strategic planning process expected to take 12 to 14 months. This process will include state, regional and local meetings with stakeholders and employees. Results will provide a road map for teaching, research, and Extension.

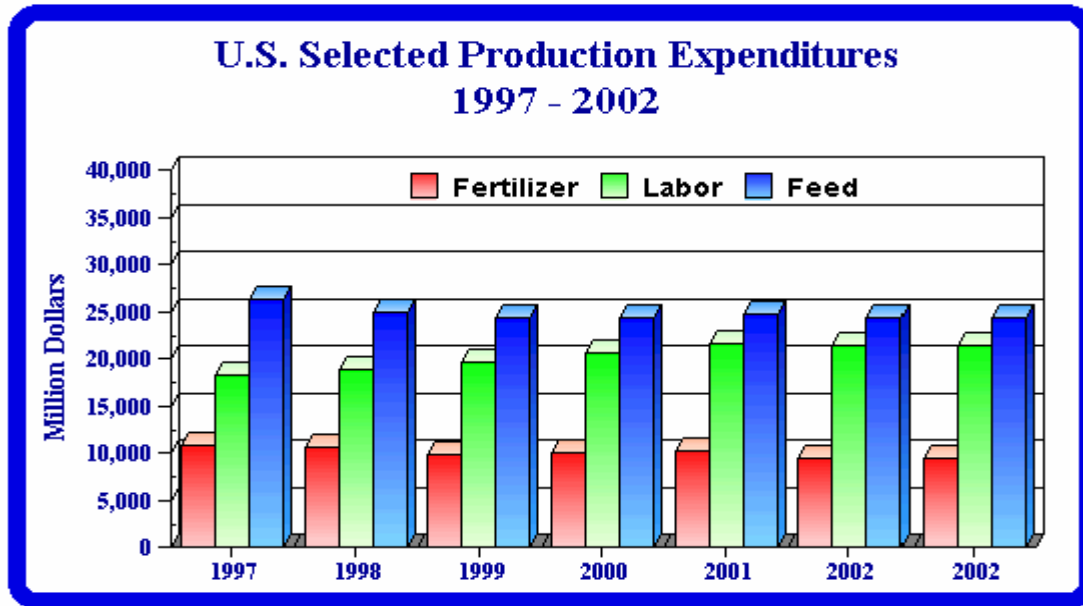
The University of Arkansas, Division of Agriculture continues to utilize a multi-disciplinary approach to collaboratively address many of the most challenging issues facing Arkansas today. The Division provides a critical bridge between the evolving agricultural, social, economic, family and environmental issues faced by Arkansans and the research-based solutions to many of these contemporary issues and problems.

Trend analysis is very important during these changing times. Arkansas' total land area is 33,328,208 acres. In 1960, there were 103,000 farms in Arkansas, with an average farm size of 174 acres, for a total of 19.9 million acres in some production venture. The U.S. Department of Agriculture National Agricultural Statistics Service (NASS) reported in February of 2004 that in 2003, only 47,500 farms continued to operate, with an average farm size of 303 acres and an overall reduction to 14.4 million acres in production. This production level is the latest in a progressive ten-year decline in the number of farms in Arkansas. This decline exists even with the change in data collection methodology from 1993 forward, to exclude actual farm sales as a criterion in calculating the number of farms and land in farms.

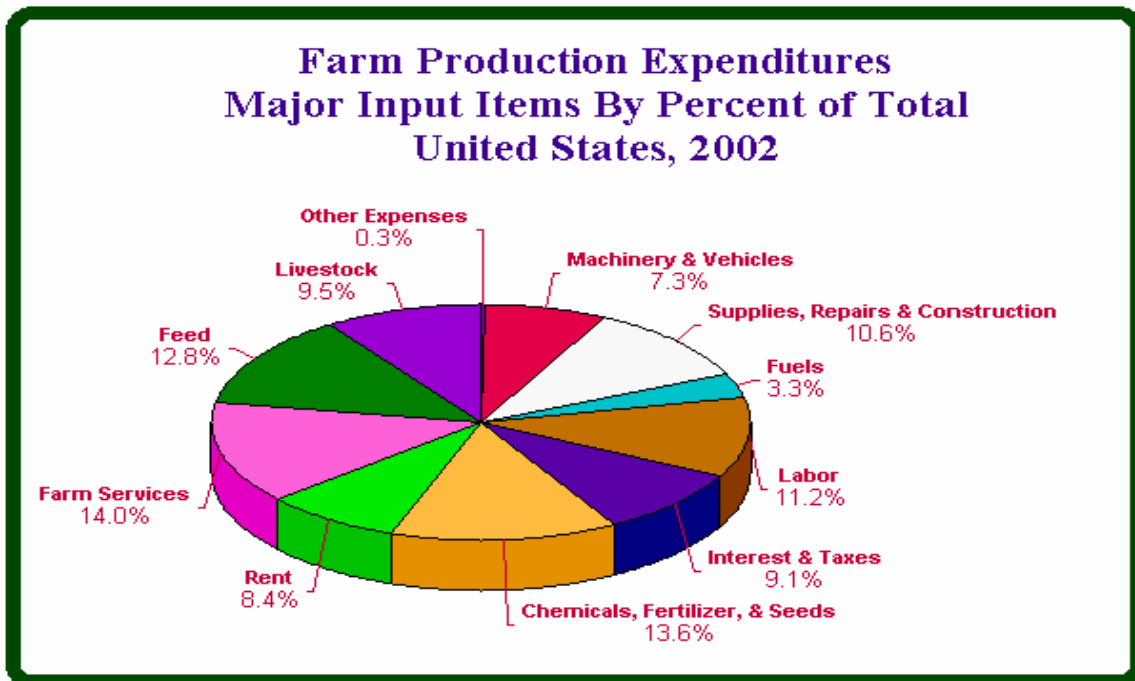
The value of Arkansas farm real estate rose 7 percent, with the overall value of farm business assets recorded as \$22.4 billion in 2003, increasing 2 percent from 1999. Cropland cash rents increased 3 percent in 2003, an average of \$2 for all land. NASS reported that cash rent for irrigated cropland in 2003 averaged \$78 per acre, decreasing \$2 from 2002; non-irrigated cropland averaged \$55 per acre, rising \$2 per acre.

State and national input cost data is an important consideration for support of the needs of Arkansas producers. This economic data assists the UA Division of Agriculture in the identification of key financial trends in contrast to geographic anomalies, or simple issues of perception. Arkansas farm labor data for 2003 reflects that the average wage rate for all hired workers averaged \$7.56 per hour, which was the same as 2002. Field workers' average earning remained \$7.41 per hour. Combined field and livestock workers' average

hourly wage was \$7.35, the same as 2002. U.S. Indexes of prices paid by farmers from 1997-2002 and for the year 2002 for farm production expenditures are provided below.



USDA, NASS Aug 2003



USDA, NASS Aug 2003

The NASS 1998 Farm and Ranch Irrigation Survey reported that Arkansas continues to demonstrate an upward trend in the use of irrigated farmland for enhanced crop production. NASS reported that 4,043,382 acres in Arkansas were irrigated for all field

crops during this study period. This high irrigation rate creates a multitude of complex and costly issues for farmers to consider when making production decisions. With a declining water table, increasing fuel costs, labor recruitment, training and retention issues, producers need research-based support now more than ever from educational systems like The Division of Agriculture. UA Campus and Experiment Station researchers work in concert with statewide Extension educators, through development of applied trials and educational programs.

The 2002-2003 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
Vice President for Agriculture
University of Arkansas
2404 North University
Little Rock, AR. 72207

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, 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 works:

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

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 of: 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
Associate Vice President for Agriculture - Extension
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 12.3 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 produce 47 percent of the country's rice production with a record-setting average yield of 147 bushels per acre in 2003. Areas of educational emphasis included rice variety selection, groundwater management and conservation, nutrient management, and controlling of rice diseases. This was attributed to improved varieties and improved management practices under less than favorable weather. The Rice Verification Program yields averaged 172 bushels per acre, resulting in an average net return of \$271 per acre.

Arkansas ranks fifth in the United States for cotton production. 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. Conventional till acreage was reduced from 65 percent to 41 percent since 1999. The Cotton Verification Program conducted on six fields continues to make a major impact for cotton growers. The program demonstrated that variety selection can improve income per acre by an average of \$100 and that proper timing of cotton harvesting returned \$50 to \$75 per acre. Arkansas yields during the last three years have exceeded those of the other mid-south states (Louisiana, Mississippi, Missouri, and Tennessee).

Soybean yields were impacted largely by weather, pests, irrigation techniques and fertility in 2003. Arkansas produced a record-setting average yield of 38 bushels per acre in 2003, breaking the records set in 1994 and 2002. Only 60 percent of the soybean acreage was irrigated and 86 percent of the acreage was produced using transgenic soybeans. The 2003 Soybean Research Verification Program consisted of 19 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 yields per acre for these fields ranged from 47 to 53 bushels depending on the management system evaluated.

Feed grain crops (wheat, corn and grain sorghum) were planted on 1.29 million acres in 2003, which is down primarily because of poor wheat planting conditions. Arkansas wheat farmers harvested only 570,000 acres of wheat but averaged 50 bushels per acre. The Wheat Research Verification Program included 12 fields in 2003, and through

improved management, improved yield per acre by 27 percent over the state's average. Arkansas farmers harvested 350,000 acres of corn in 2003, the most since 1959. Grain sorghum continues to receive additional interest due to its drought tolerance and serving as a non-host for soybean cyst nematode.

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 herd break-even per pound of beef sold by 28 percent from year 1 to year 5 of the program, improving mature cow-calf crop percentage from 85 percent in year 1 to 93 percent in year 5, and increasing the average 205-day adjusted weaning weight from 445 pounds to 501 pounds over the five years of the program. County workshops, programs and popular press articles are methods used to transfer ABIP knowledge gained to other producers. Other beef cattle educational programs included Winter Annuals demonstrations and Utilizing Stockpiled Fescue to Reduce Winter Feed Costs among others.

Extension dairy programs helped dairy producers and related industries identify areas to enhance production efficiency and compete in an increasingly competitive national milk market. Waste management, Dairy Herd Improvement Program, and forage quality are just a few 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 Training, Horsemen's Short Course, and other horse care and management programs were delivered to over 2,400 horse owners last year.

Forages are the basis of a healthy livestock industry. Educational programs included grazing schools, musk thistle demonstrations, alfalfa demonstrations highlighting grazing and hay production, soil management to improve bermudagrass 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 is one of the fastest growing segments of agriculture. Extension activities centered around marketing, production systems, maintaining quality, cultivars selection, and retail business (nursery, greenhouse, landscape, etc.).

Other important areas of Extension programming include Poultry Production and Management. Arkansas ranked 2nd, 3rd, and 8th in broiler, turkey, and egg production. Extension programs included 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

186.9

Total Budgetary Amount

\$13,453,237.54

KEY THEME: ADDING VALUE TO NEW AND OLD AGRICULTURAL PRODUCTS

Program Response: Using Cotton Gin Waste

Contact: Gary Huitink, Biological and Agricultural Engineering, 501-671-2242,
ghuitink@uaex.edu

Situation

Cotton ginners need alternative uses for ginned material other than cottonseed and cotton lint; hopefully, valuable enough to provide some gin income. Approximately 90,000 tons of gin waste are produced annually in Arkansas. Assisting cotton ginners and others to develop outlets for their gin waste as a vital soil amendment, erosion control agent, heat source for power generation, component of livestock rations, etc., will improve their gin profitability.

Stakeholder Input

Educational efforts and consultation with ginners regarding gin waste options has developed some unique applications for gin byproducts.

Overview

Each ginner's locale provides a somewhat unique mix of potential uses for gin byproducts (waste). Technical support to bring sources and users together is good economy for those with potential uses, ginners and society as well.

Extension Program Results and Accomplishments

Output Indicators

- Approaches to manage and market gin waste to gain value was explained to ginners who participated in the Annual Cotton Ginners' School and in a variety of individual consultations.
- Draft of publication "Gin Waste Alternatives" has been assembled and will be printed by The Cotton Foundation for ginners and growers as a basis for recommendations in cotton-producing states.

Outcome Indicators

- Gin managers are now improving their approaches to use waste properly. Most is utilized for agricultural or horticultural uses, including starting a composting facility in Desha County. The entrepreneurs have bagging and storage facilities and have negotiated a contract with Wal-Mart and the composted product is now available “off the shelf” in local stores for lawns, gardens and other horticultural uses. A number of gins have contracted to supply gin waste to restore recently shaped fields.
- A few gin managers are utilizing basic research to test market waste for creative uses. A few are investigating higher-value, novel alternate uses for gin waste, including use as a raw material to replace a portion of the wood normally used in a wood millwork industry.
- Dumas Gin Company has built their own compost turner and manage their gin’s waste. They have received more requests for composted gin waste than they’re able to supply from the 2003 cotton crop.
- Arkansas gins have not been cited for environmental pollution.

Source of Funds

Smith-Lever, National Cotton Council, Southern Cotton Ginners Association

Scope of Impact

Dissemination – Arkansas (and cotton-producing states) gin managers and potential gin waste users.

Scope of Program – Gin managers are using contracts, bids and other arrangements to clear waste from gin property before the Arkansas April 15 pink bollworm cleanup deadline. Some is applied to recently shaped (leveled) fields to restore productivity. Gin personnel are taking leadership to develop proper uses for waste and are responsible for avoiding environmental pollution.

Professionals throughout cotton-producing states are taking a team approach to recommendations and training for utilizing gin waste. Gins are meeting the regulatory standards of the Arkansas Department of Environmental Quality.

<p>KEY THEME: AGRICULTURAL PROFITABILITY</p>
--

Program Response: **Commercial Vegetable Production**

Contact: Craig Andersen, Extension Horticulture Specialist, 479-575-2639, Horticulture

Situation

A broad selection of fresh market vegetable crops was grown statewide in 2003. 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. After a cool spring, the weather was favorable for vegetable crops. Excellent quality and consistent prices made 2003 a good year for the state's tomato industry. The use of irrigation and plasticulture has been successful providing consistent production. The processing vegetable production in the state increased this year, reversing a trend of the past several years. Southern peas, green beans, greens and spinach were the leading processing crops grown in Arkansas in 2003.

Multi-disciplinary collaboration between growers, Extension personnel and researchers continued in efforts to solve problems critical to the state's vegetable 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 must be marketed within a short time span or the value is lost.

Production Systems – Changes in production systems allow growers to produce crops more efficiently. Shifts in production systems will benefit the producers as well as the environment.

Labor – Much of the fresh market vegetable industry depends on 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. There are no discounts for poor quality; poor quality does not sell. Post harvest management is essential for maintaining quality.

Cultivar Selection – Variety selection should best fit genetics as well as pest management needs.

Food Safety – Education of growers and handlers of produce to maintain a safe and wholesome food supply.

Extension Program Results and Accomplishments

Output Indicators

In efforts to meet the needs of clientele the following were implemented in 2003:

1,226 Number of educational publications, mass media, and other materials produced as a means to disseminate new technologies to commercial clientele and other interested parties.

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

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

13,954 Number of individuals attending educational meetings, field days, demonstrations, or workshops and receiving educational materials.

4140 Number of participants that examined new production technologies.

52 Number of commercial operations.

Outcome Indicators

1,623 Number of participants that reduced their chemical and fertilizer inputs.

Source of Funds

Smith Lever 3b and 3c

Scope of Impact

Dissemination – Educational publications, farm visits, field days and educational meetings and workshops were conducted across the state of Arkansas.

Scope of Program – Arkansas.

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 in 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 2003:

Demonstrations

- 6 Cotton Research Verification
- 11 Variety
- 4 Plant Growth Regulators
- 1 In-furrow/Seed Treatment Protectants
- 3 Harvest Aid Timing
- 1 Subsurface drip irrigation

Educational Meetings

- 19 Production Meetings
- 2 Cotton Scout Trainings
- 13 IPM Meetings
- 6 Harvest Aid Meetings
- 5 Field Day/Crop Tours

Applied Research

- 4 Plant Growth Regulators
- 2 Fertility
- 3 Harvest Aid

Outcome Indicators

- Arkansas' cotton growers harvested a record 914 pounds of lint per acre from 945,000 acres, for a total production of 1.8 million bales in 2003. The previous record was established in 1994 at 877 pounds of lint per acre. Arkansas is consistently among the leaders in the Mid-South as well as the U.S. in lint per acre yields. Arkansas yields during the last three years (870 pounds lint/A) have exceeded those of the other Mid-South states by 36 to 120 pounds of lint per acre (LA 120 pounds, TN 105 pounds, MS 53 pounds, and MO 36 pounds).
- Arkansas ranked fifth in production nationwide in 2003, producing approximately 10 percent of the U.S. crop. Arkansas' cotton and cottonseed are generally valued at over \$500 million annually.
- Arkansas produces about 1 million acres of cotton annually, while 12 to 16 million acres of cotton are grown nationally.
- 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. A trend observed since 1999 continues to occur with no-till cotton production acreage increasing by 50 percent each consecutive year. Conventional till acreage has been reduced from 65 percent to 41 percent during this 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. Arkansas was second only to Missouri (75.8 percent

vs. 83.8 percent) in the percentage of “tenderable” bales produced this season in the Mid-South.

- The Cotton Research Verification Program (CRVP), developed in Arkansas in 1980, continues to be a well-accepted program by all clientele. This program was implemented at six locations in six counties statewide this season. The CRVP coordinator also assisted with additional multiplier fields in which the county Extension agent supervises. 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 \$79,000, and “in kind” gifts totaled \$64,000 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:

- 5 Presentations/Posters at Professional Meetings
- 7 Extension Publications
- 5 Articles in Research Bulletins
- 4 Educational Materials
- 9 Individual Articles
- 19 Article Interviews
- 6 Television and Radio Interviews
- 1 Computer Software
- 6 Teaching Aids
- 1 Video

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, Cross, Monroe, Lee, St. Francis, Monroe, Philips, 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, Louisiana and Texas, primarily through the use of COTMAN.

Programs of Excellence

Emergency Cotton Meeting

Approximately 20,000 acres of cotton in Poinsett County were lost to cold weather, rain, and seedling disease the last of May. The agents in Poinsett County were receiving an overwhelming number of calls on all aspects of cotton replanting. An emergency meeting was held to address the current situation. Thirty-one growers attended the meeting. Every grower in attendance made a point to thank the Agents for putting the meeting together. The information provided at the meeting proved to be extremely timely and gave producers the necessary guidance to complete a successful season.

General Program Information – Emergency meetings such as this are held in response to disasters or problem situations to provide producers advice, in this case concerning the options for replanting. Varieties and modifications in cultural practices as a result of the late crop were discussed. Similar meetings were conducted in Crittenden, Mississippi, and Craighead Counties.

Locations – This success story highlights the Poinsett County program.

Impact Numbers – Late plantings at the end of May accounted for 40 percent to 50 percent of the cotton acres in Poinsett, Craighead, Mississippi, and Crittenden Counties. Over one-third of the cotton acres planted in Arkansas are contained in these counties.

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

Cotton Research Verification Program (CRVP)

In 2003, Crittenden County cotton producers raised approximately 42,000 acres of cotton. Cotton is a high management crop that is both labor and capital intensive. From field and soil preparation to variety selection and harvest, many management decisions are made through the course of the year.

Jamey Sharp, a third year cotton producer from Crawfordsville, was in the CRVP for the second year. Local staff monitored the crop twice a week to make management decisions with an emphasis on low production costs. Production costs through defoliation were \$223.77 per acre, one of the lowest in the CRVP.

The new farmer through this demonstration has benefited economically and also by knowledge gained. He recognizes Extension as an unbiased source of information for crop production. The CRVP has given him skills necessary to improve his bottom line.

General Program Information – The CRVP is a program to verify the recommendations of the University of Arkansas in commercial cotton production. We are able to incorporate and demonstrate new technologies including varieties, transgenic traits, and cultural practices and their impact on profitability and sustainability.

Location – This success story highlights the Crittenden County program in Central Arkansas.

Impact Numbers – The University of Arkansas Cooperative Extension Service has conducted the CRVP since 1980. This interdisciplinary effort is now used or modeled by other states. In the last five years of the program the CRVP lint yields (939.2 pounds lint/A) have exceeded the state average by 328 pounds.

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

Program Response: Equipment and Techniques for Reduced Tillage and No-Tillage (Soybeans, Wheat, Cotton, Corn and Grain Sorghum)

Contact: Gary Huitink, Biological and Agricultural Engineering, 501-671-2242,
ghuitink@uaex.edu

Situation

Soybeans and wheat have generated little profit in recent years prior to 2003 for many growers, and in some cases soybeans have been produced at a loss in Arkansas. Direct-seeded or no-tillage soybeans, wheat, rice, cotton, corn and grain sorghum that were grown without tillage reduced labor and fuel costs for production. TMDL guidelines are imminent, requiring soil conservation measures to reduce sediment loads in some cropped watersheds. Challenges remain to guide growers about appropriate drainage and equipment that are required for profitable yields. These criteria are essential to produce grain and cotton crops economically in Arkansas using no-tillage.

Stakeholder Input

Arkansas and Mid-South growers are asking for equipment and crop production guidelines to produce crops with equal yield using direct-seeding (no-tillage). These needs are becoming more specific as the TMDL criteria are identified for specific watersheds. If “best management plans” are implemented for cropped land, more research and technical data are needed than is necessary for hay meadows or grazing lands. Growers desire to reduce their fuel and labor costs while maintaining or increasing yields. Proper drainage, seeding and timeliness are three key factors that may include specific engineering input to implement the reduced or no-tillage appropriate for a soil or part of a field.

Overview

Consulting and education on adequate drainage, reduced pre-plant tillage and appropriate use of subsoiling to improve production of cotton, rice, soybeans, wheat, corn and grain sorghum are increasing. Replicated studies on the University of Arkansas experiment stations and on farms have demonstrated the effectiveness of direct seeding, subsoiling, crop rotation and reduced traffic for corn, cotton, grain sorghum, soybeans, rice and wheat production. More research applied to typical soils in Arkansas and adapting the recommendations to growers’ fields is needed. Consultation, field days, demonstrations and meetings provided growers practical techniques.

Extension Program Results and Accomplishments

Output Indicators

- Replicated experiments were conducted with corn, grain sorghum, rice and soybeans at Pine Tree Experiment Station.
- *Planting Reduced-Tillage Soybeans* fact sheet was updated in 2002 and has been distributed to 1,421 producers, providing advice on planting equipment.
- Draft of *Drill Calibration and Seeding Demonstration* prepared for county agents' use.

Outcome Indicators

- Replicated no-tillage experiments conducted on the Pine Tree Experiment Station reinforced that adequate drainage and seeding on beds are valuable, if not vital, for corn, cotton and grain sorghum. Direct-seeded soybeans and rice have become accepted practices by progressive growers. Growers are inquiring about vital equipment, management requirements and procedures on how to maintain yields with direct seeding. Producers desire to reduce the time, labor and fuel per acre needed to produce a crop. County agents, consultants, growers and others are using these data and recommendations.
- An estimated two-thirds of the wheat crop, one-third of the soybean crop and one-fourth of the cotton crop were direct-seeded.
- Significant portions of the cotton, rice and soybean crops were seeded as “stale seedbed” in 2003.
- Pioneering growers were direct-seeding corn, cotton, grain sorghum and rice this past year.
- Estimate that 1 million acres are subsoiled annually in Arkansas, when fall weather allows.

Source of Funds

Smith-Lever

Scope of Impact

Dissemination – This program is available through county Extension offices throughout the area soybeans are grown in Arkansas. County agent and grower training and consultation were provided as requested. Subsoiling developments pioneered in Arkansas have been imitated in educational efforts in Louisiana, Mississippi, Missouri, North Carolina, South Carolina and Tennessee. University of Arkansas Cooperative Extension Service guidelines are available in print and also on the Cooperative Extension Service web site.

Scope of Program – Most growers desire information on how to manage stale seedbed and no-tillage, and some are requesting information on drainage and equipment recommendations. Approximately 1 million acres are now subsoiled annually in Arkansas, using recommendations based on our on-farm replicated studies and subsequent education.

Program Response: Extension Soybean Educational and Applied Research Program

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

Situation

In 2003, producers planted 2.99 million acres, which is only slightly down compared to previous years. 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 2003 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 2003 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 2003, over 200 different 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. Emerging issues, such as boron deficiency, are increasing throughout much of the major soybean producing regions of the state. These problems should continue to be addressed. Additional testing is needed to ascertain the benefits of conservation tillage in Arkansas soybean production systems.
- **Reducing Production Expense:** Based on current Farm Bill legislation, yield is the primary factor that drives profit. Reducing production expenses without sacrificing yield losses is the overall goal of Arkansas soybean producers.
- **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.

Extension Program Results and Accomplishments

Output Indicators

In efforts to meet the needs of clientele the following were implemented in 2003:

Demonstrations

- 19 Soybean Research Verification Program
- 5 Variety
- 10 Production Topics

Applied Research

- 3 Seed Treatment Evaluations
- 3 Conservation Tillage Evaluations
- 2 Fungicide Evaluations

Educational Meetings

- 1 Arkansas Soybean Research Conf.
- 58 County Production Meetings
- 15 Field Day/County Crop Tours

Outcome Indicators

In 2003, Arkansas harvested 2.89 million acres of soybeans with an average yield of 38 bushels per acre. This average set a new record, surpassing the previous record of 34 bushels per acre set in 1994 and again in 2002. Arkansas ranks 9th nationally in soybean production and soybeans are produced in 42 counties in Arkansas. Only 60 percent of the soybean acreage in 2003 was irrigated and 86 percent of the acreage was produced using transgenic soybeans.

The 2003 Arkansas Soybean Research Verification Program (SRVP) consisted of 19 commercial soybean fields. The Early Season (ESPS), Full Season (FSSPS) and Double Crop (DCSPS) production systems were utilized in the 2003 SRVP. All three-production systems were represented within the irrigated environment but only the ESPS was represented in the non-irrigated production environment. Varieties of maturity groups 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 (UofA) Extension recommendations. The SRVP average yield for the 10 irrigated FSSPS fields was 53 bushels per acre. Four irrigated ESPS fields averaged 51 bushels per acre while the four irrigated DCSPS fields averaged 52 bushels per acre. In the non-irrigated environment, one ESPS field averaged 47 bushels per acre. The overall SRVP yield average was 52 bushels per acre compared to a state average yield of 38 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 \$20,000 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
- 16 Educational Materials
- 59 Article Interviews
- 25 Television and Radio Interviews
- 2 Computer Software Programs

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

Soybean Research Verification Program

The Soybean Research Verification Program (SRVP) continues to have far reaching benefits to Arkansas soybean producers. Being able to provide soybean producers with accurate research-based recommendations for soybean production is critical. The overall SRVP yield average was 52 bushels per acre compared to a state average yield of 38 bushels per acre. Based on the 2003 USDA average price for soybeans (\$7.25 per bushel), the SRVP fields provided a \$101.50 per acre increase in total returns. Specifically, one Phillips County participant increased yields from 35 bushels per acre in 2001 to 51 and 48 bushels per acre in 2002 and 2003, respectively.

Another example included the incorporation of the Early Soybean Production System (ESPS) in the Arkansas River Valley region. Dustin Tackett, a young Pope County soybean producer, worked with the SRVP coordinators to determine the potential economical and environmental benefits of combining the ESPS and poultry litter as an alternative fertilizer source. Early results indicate that both early planting and poultry litter can provide acceptable yields while providing an adequate source of poultry litter disposal. This may offer an avenue for poultry producers to dispose of poultry litter while possibly improving soybean yields. These preliminary data indicate that additional research is needed to support a recommendation that provides both economic and environmental benefits to Arkansans.

General Program Information – SRVP fields were conducted in 15 different counties in 2003. This marks the 21st 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 the 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 would include Chicot County. There are approximately 200 soybean producers in Chicot County and almost 80 percent of these are taking advantage of this production system. Approximately 60 percent of the planted soybean acreage was planted to MG IV varieties. Traditionally, soybean yields in Chicot County have increased 15 percent increase in county yields. Additional benefits with this system include reduced pesticide applications (primarily stink bugs), with average savings of \$7.50 per acre. One final example is Crittenden County. Approximately 40 percent 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.

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

Program Response:

Farm Management, Marketing and Policy

Contact: Tony E. Windham, Section Leader - Agricultural Economics and Community Development, 501-671-2000, twindham@uaex.edu

Situation

Arkansas agricultural producers faced some of the most volatile prices in recent history during the 2003 production year. Row-crop commodities began the year at near record lows but by harvest time had rebounded to profitable levels. Cattle producers saw favorable prices at the beginning of the year but faced extreme uncertainty because of the mad cow situation. These uncertain times require farmers to have a better understanding of commodity marketing for managing risk associated with price.

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

Stakeholder Input

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

Overview

Farm Management

Research Verification 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 profitability.
- Economic analysis of transgenic cotton varieties.
- Economic analysis of no-till row cotton.

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

Farm Management and Marketing Newsletter – This quarterly publication, designed to bring timely management information to county Extension agents and agricultural producers, continues to gain strength. A typical issue contains equal numbers of articles from research faculty in the Agricultural Economics Department at Fayetteville and from Extension agricultural economists. 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 Extension’s web page, allowing interested individuals to print off the entire newsletter or a single article.

Commodity Marketing

Commodity Situation and Outlooks – Passage of the 2002 Farm Bill has increased the need for commodity marketing skills. Protection against declining government support payments is now important as well as protecting against low prices.

Vegetable 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.

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

Agricultural Policy

The agricultural policy educational and research program places primary emphasis on defining and solving agricultural policy, management and resource development problems of Arkansas farm firm systems and supporting infrastructure with specific 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 firm systems and infrastructure.
- 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 2003, Extension policy specialists were involved implementing and analyzing future impacts of the 2002 farm bill, provided agricultural policy and outlook information to clientele through the web, print media and radio, provided decision aids for analyzing farm government program update options and planned and participated in the rice industries national meeting.

Farm Family Risk Management Program

A major focus of this program is to help producers evaluate the financial position and performance of their operation and identify strategies to continually improve the overall financial health of their business.

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
- Land leveling or improvement investments

In addition to individualized farm and financial 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 at county Extension offices. Also, these materials are available at county Extension sponsored events. Additional information is available at the web site listed below.

- http://www.aragriculture.org/farmplanning/risk_management.asp

Horticulture Economics

Fruit Enterprise Budgets – The preliminary plasticulture strawberry enterprise budget underwent some major revisions before being released to the state’s producers. The final budget is in the final stages of being released to producers on Extension’s website. This version of the budget was utilized by some producers to discuss strawberry production cost to their county agriculture production committee. Information was also provided for strawberry producers in the areas of cost analysis, pricing and marketing approaches.

Survey of Arkansas Horticulture Industry – This statewide project assesses the economic contribution of the state’s horticulture industry. The project data was collected and analyzed. The survey examined 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. Although the final report is still being developed, some of the data was utilized in a paper, Economic Impact of Arkansas’ Green Industry”, presented to the Southern Nurseryman Association at their Annual meeting.

Marketing Horticultural Products – A marketing program was conducted at two Extension regional training events and a statewide University of Arkansas at Pine Bluff conference on specific strategies for marketing horticultural products. The focus of those programs examined niche marketing opportunities and the importance of developing marketing plans. Additionally, a train-the-trainer workshop was conducted to provide resources and information to those working with producers (county agents, University faculty, and government agency personnel).

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 website 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

- | | |
|-------|--|
| 109 | Number of educational meetings held in which management, marketing and/or farm policy information was presented. |
| 3,259 | Number of participants attending educational meetings and receiving educational materials related to management, marketing, and farm policy. |
| 385 | Number of educational materials produced. |

Outcome Indicators

- 320 Number of producers that implemented changes in management practices as a result of farm management educational efforts.
- 160 Number of producers that implemented changes in management practices as a result of commodity and livestock marketing educational efforts.
- 488 Number of producers that implemented changes in management practices as a result of farm policy educational efforts.

Source of Funds

Smith-Lever 3b and 3c.

Agricultural economist 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 – These programs have been delivered at some level in all 75 Arkansas counties.

Program Response: Harvest Equipment Selection, Maintenance and Fine-Tuning (Corn, Cotton, Grain Sorghum, Rice, Soybeans and Wheat)

Contact: Gary Huitink, Biological and Agricultural Engineering, 501-671-2242, ghuitink@uaex.edu

Situation

Soybeans and wheat have generated little profit in recent years prior to 2003 for many growers, and in some cases soybeans have been produced at a loss in Arkansas. Corn has made inroads into some acreage that formerly was planted to soybeans or cotton. Corn, cotton, grain sorghum, rice, soybeans and wheat are harvested by costly self-propelled equipment, in some cases costing more than \$300,000 for a new model. Making these expenditures involves evaluating the new cost, the field capacity, field losses and the operator skills to maximize profit from cotton and grain production in Arkansas.

These harvesters are complex and growers appreciate assistance with many aspects of cotton picker and combine technology. Challenges remain for growers to manage harvesting to improve their income, irrespective of commodity prices.

Stakeholder Input

Arkansas and mid-south crop growers seek harvesting equipment selection and use guidelines. Growers seek unbiased information from the Cooperative Extension Service to make research-based decisions.

Overview

Consulting and education on aspects of grain and cotton harvesting are provided to crop producers. During July 2003, violent thunderstorms blew portions of fields down after the corn crop was nearly mature. Growers were unable to recover the grain from the damaged corn with conventional corn heads. In response to this need, consulting and education provided options to corn growers on how to recover most of the grain at harvest in August or early September 2003. More research is needed to adapt current technology to typical Arkansas harvest situations. Consultation, field days, demonstrations and meetings provided grain growers practical techniques.

Extension Program Results and Accomplishments

Output Indicators

- Consultations and meetings were held in 4 counties where the storms caused the most damage to corn.
- *Harvesting, Chapter 8, Corn Production Handbook, MP437* was published in 2002 and has been distributed to corn producers, providing advice on combine options, operation and field loss management.
- *Harvesting Grain Sorghum, Chapter 8, Grain Sorghum Production Handbook, MP297* was published in 2003 and has been distributed to grain sorghum producers, providing advice on combine options, operation and field loss management.
- *Grain Storage and Aflatoxin in Corn, Chapter 10, Corn Production Handbook, MP437* was published in 2002 and has been distributed to corn producers, providing recommendations on mitigating the effects of aflatoxin.

Outcome Indicators

- Corn producers in several counties obtained Roll-A-Cone attachments for their corn heads and were able to salvage almost all of the quality grain (recovering 160 bushels/A in one 90 acre field where the corn was irrecoverable without the newly-purchased attachment).

- Progressive growers are purchasing more rotary threshers and rasp bar combine threshers, in harmony with research that better grain quality is possible with these options. Growers are inquiring about preferred equipment options and other management recommendations.
- County agents, consultants, growers and others are using harvest recommendations from CES publications, as well as consulting with Extension engineers on special harvest needs for corn, grain sorghum, cotton, rice, soybeans and wheat.

- Progressive growers plan their planting and drying schedules to accommodate anticipated harvest schedules for their farm mix of corn, cotton, grain sorghum, soybeans and rice.

Source of Funds

Smith-Lever

Scope of Impact

Dissemination – This program is available through county Extension offices throughout the area soybeans are grown in Arkansas. County agent and grower training and consultation were provided as requested. University of Arkansas Cooperative Extension Service guidelines are available in print and also on the Cooperative Extension Service web site.

Scope of Program – Most growers desire to use the costly harvesters in the best possible manner to retain grain and cotton quality and yield throughout the crop-growing areas of Arkansas. Other states have requested permission to copy our publications.

Program Response: Irrigation Scheduling Program

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

Situation

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

Stakeholder Input

Personal communications with producers and county agents indicate that educational efforts in irrigation scheduling are needed. Many indicate personal experiences where irrigation scheduling has greatly enhanced crop yields and quality. County Extension Councils and other advisory groups in the row crop producing counties recommend that Extension address this issue. The Soybean, Corn and Grain Sorghum Research Promotion Boards fund educational efforts related to irrigation scheduling.

Overview

Irrigation is becoming increasingly necessary for producers to achieve crop yields and quality that improve their sustainability and opportunity for profit. Limited water

resources, increased energy costs and a limited labor source pose a challenge to properly scheduling irrigation to efficiently meet crop water demands. An Irrigation Scheduling Computer Program that is available through the Extension Service has proven to be a very helpful water management tool for producers. The program requires only a minimal amount of data input in order to project irrigation needs so the producer can better manage his irrigation water and labor to satisfy crop water needs and achieve desirable yields.

Extension Program Results and Accomplishments

Output Indicators

- 32 Educational meetings, tours, field days and workshops where information on irrigation scheduling was presented.
- 30 County Extension offices emphasizing irrigation scheduling in their educational efforts.
 - Irrigation scheduling program is downloadable from CES web page.

Outcome Indicators

- Five Experiment Stations using irrigation scheduling program.
- Five other states (Missouri, Kentucky, Tennessee, Mississippi, Louisiana) using irrigation scheduling program.
- Approximately 300 farms and/or producers using irrigation scheduling program.
- 35 fields enrolled in the Crop Research Verification Program using irrigation scheduling program.

Source of Funds

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

Scope of Impact

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

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

Program Response: Master Gardener Program

Contact: Janet B. Carson, Extension Horticulture Specialist, 501-671-2174, Horticulture

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 and County Councils across the state.

Overview

The Arkansas Master Gardener program began in 1988. Over 5,200 Master Gardeners have been trained to date. In 2003, 604 new Master Gardener volunteers were trained, with 1,524 active Master Gardeners returning, giving us a total of 2,128 Master Gardener volunteers in Arkansas sharing their talents statewide. These Master Gardeners volunteered 74,623 hours in the state, and accrued 41,566 hours in educational hours. In dollar terms using a \$14.50 per hour rate, this had an impact of \$1,082,033.

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. 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

- 242 Number of educational publications, mass media and other materials produced as a means to disseminate new ideas to consumer clientele and other interested parties.

- 62 Number of educational meetings and demonstrations held to educate consumers.

- 265 Number of workshops on horticultural-related topics conducted to educate consumers.
- 3,458 Number of individuals attending educational meetings, demonstrations or workshops and receiving educational materials.

Outcome Indicators

- 942 Number of participants who report improved satisfaction from leisure gardening activities.
- 1,236 Number of participants who improved their home garden or landscape.
- These Master Gardeners volunteered 74,623 hours in the state, and accrued 41,566 hours in educational hours. In dollar terms using a \$14.50 per hour rate, this had an impact of \$1,082,033.

Source of Funds

Smith-Lever 3b and 3c

Scope of Impact

Dissemination – Arkansas

Scope of Program – Master Gardener programs are in the following 50 counties: Arkansas, Baxter, Benton, Boone, Carroll, Clark, Cleburne, Columbia, Conway, Craighead, Crawford, Dallas, Desha, Faulkner, Fulton, Garland, Grant, Greene, Hot Spring, Independence, Izard, Jefferson, Johnson, Lawrence, Logan, Lonoke, Madison, Marion, Miller, Monroe, Montgomery, Newton, Ouachita, Perry, Pike, Polk, Pope, Prairie, Pulaski, Randolph, Saline, Searcy, Sebastian, Sharp, Stone, Union, Van Buren, Washington, White, Yell.

Program Response: Multiple Inlet Rice Irrigation

Contact: Phil Tacker, 501-671-2267, Biological and Agricultural Engineering, ptacker@uaex.edu

Situation

Arkansas producers irrigate approximately 1.5 million acres of rice. Energy prices 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 row crop producing counties recommend that Extension address this issue. The Rice Research Promotion Board has funded educational efforts related to improving rice irrigation water management.

Overview

Extension promotes using Multiple Inlet Irrigation on rice for its improved water management that enables rice producers to irrigate more effectively and efficiently. Field demonstrations of Multiple Inlet Rice Irrigation (MIRI) indicate a potential average water and energy savings of 25 percent and an average labor savings of approximately 30 percent. Field experiences also indicate that MIRI fields can be flooded quicker, which improves fertilizer and herbicide efficiency. MIRI can 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 MIRI was presented.
- 30 County Extension offices emphasize MIRI in their educational efforts.
- 23 Counties with MIRI field demonstrations – 9 of the counties are either designated or pending designation as critical groundwater usage areas.
- 35 Producers involved in MIRI field demonstrations.
- 36 MIRI field demonstrations.

Outcome Indicators

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

Two rice producers cooperated with Extension to conduct field comparison studies on MIRI during the 2003 season. Following are the farms, the counties and the results.

- Felts Farm, Drew County – used 13 percent less water during the season on MIRI field with silt loam soil.
- Parker Farm, Lonoke County – used 25 percent less water on initial flood with MIRI field on silt loam soil.

Source of Funds

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

Scope of Impact

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

Scope of Program – The following 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, Woodruff.

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 businesses 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 \$2 billion, nursery retail (not including mass merchants) at \$125 million, and landscape services at \$175 million. Nursery production, ranked at 32nd in the United States, is considered the sector with greatest growth potential. Access to major transportation lanes, reasonably priced agricultural land, labor, water, and other resources makes Arkansas a prime state for large-scale nursery production. Estimates indicate that 75 percent of plant material in Arkansas is imported from other states. Arkansas nursery products could also be exported to many states.

CES programs are designed to focus efforts on enhancing current ornamental horticulture businesses and to start new businesses. Programs, written materials and web materials are designed to support this goal. Eleven 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 is being conducted to document the economic impact of the ornamental horticulture component of agriculture in Arkansas.

Extension Program Results and Accomplishments

Output Indicators

- 21 Number of educational publications, mass media and other materials produced as a means to disseminate new technologies to commercial clientele and other interested parties.
- 145 Number of educational meetings, demonstrations, nursery and greenhouse visits or field days held to educate commercial clientele and other interested parties.
- 5 Number of workshops on fertility, production, post harvest, marketing and/or breeding and selection conducted to educate commercial clientele and other interested parties.
- 6,701 Number of individuals attending educational meetings, field days, demonstrations, or workshops and receiving educational materials.

Outcome Indicators

- 2 Number of participants who adopted new production technologies.
- 2 Number of new commercial operations.
- 0 Number of participants who reduced their chemical and fertilizer inputs.

Source of Funds

Smith-Lever 3b and 3c

Scope of Impact

A significant increase in new or existing nursery production has been documented. The states third largest rice producer has now switched from rice production to field production of shade trees. This proposed nursery program should yield the client \$180,000 in profit per year once harvest begins. The CES programs have also supported a significant increase in container production at the state's second largest container nursery.

Dissemination – Arkansas, Louisiana, Mississippi, Tennessee

Program Adoption – Cleburne, Craighead, Faulkner, Garland, Grant, Greene, Hot Spring, Independence, Lonoke, Perry, Pulaski, Saline, Searcy, Sebastian, Sharp, Stone, Union, Van Buren, Washington, White and Yell Counties.

Program Response: Ornamental Plant Evaluation

Contact: Gerald Klingaman, Extension Horticulturist – Ornamentals, 479-575-2604 or gklinga@uark.edu.

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 annual, perennial and greenhouse crops, especially poinsettias.

Stakeholder Input

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

Overview

The ornamental industry in Arkansas is primarily composed of small, single location firms that service a local clientele base. The retail nursery/greenhouse base has an estimated value of \$125 million, not including mass-market sales. Texas has estimated that 80 percent of the ornamentals sold 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 Horticulture Display Garden at the University of Arkansas has evaluated over 850 annuals and perennial plants since it was established in 1998. Greenhouse evaluations have been conducted for poinsettias with over 120 cultivars evaluated in the past three years. Trials have been conducted on garden mums, asters and assorted perennial plant groups.
- The results from these evaluations are reported at state and regional meetings and in publications such as the Horticulture Report series published by the Horticulture Department. A monthly greenhouse column in a national publication also provides ongoing updates of the program findings.

- Consumer output is provided by an ongoing series of newspaper releases called “Plant of the Week” which appears in about 20 newspapers throughout Arkansas and is also published on the Extension Home and Garden web site. The Arkansas Select program is an extension of the plant evaluation program.

Outcome Indicators

52 Number of different plant related articles published for use in newspapers and the Extension web sites Arkansas Select leaflets distributed to perspective consumers.

3,427 Attendance at talks given during the plant discussing plant selection.

Source of Funding

Smith Lever 3-b and 3-c, plant contributions from greenhouse firms

Scope of Impact

New plants continue to drive the growth of the ornamentals market. Providing information on plant performance under Arkansas conditions helps continue the growth of the industry.

Dissemination – Arkansas and surrounding states; nationwide through monthly greenhouse column.

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 operate commercial production and processing facilities.

Extension Program Results and Accomplishments

Output Indicators

- 2 Short course programs conducted.
- 47 Presentations on poultry production provided by faculty.

Outcome Indicators

- 50 Allied industry leaders learned about the poultry industry.
- 3 Popular press articles as a result of the short course.

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: 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 100,00 soil samples are received at the Soil 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 together with plant analysis can aid in the identification of potential problems.

- 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 that have a high nitrogen requirement.

Extension Program Results and Accomplishments

Output Indicators

Demonstrations

- 3 Cotton fertility demonstrations
- 2 Wheat fertility demonstrations
- 2 Soybean fertility demonstrations
- 3 Grain sorghum irrigation trials

Educational Meetings

- 9 Production Meetings
- 1 Staff trainings
- 3 NRCS staff trainings
- 5 Field Day/Crop Tours

Applied Research Studies

- 3 Grain Sorghum (irrigated) fertility trials
- 3 Grain sorghum (dryland) fertility trials
- 2 Cotton no-till trials
- 2 Cotton fertility trials
- 1 Corn no-till trial
- 4 Corn fertility trials
- 1 Soybean no-till trial
- 3 Soybean fertility trials
- 2 Wheat fertility trials

Outcome Indicators:

- 117,000 acres of soybean were sampled and provided with fertilizer and lime recommendations. This represents nearly 3 percent of the total soybean acres planted in 2003.
- 219,000 acres of cotton were sampled and provided with fertilizer and lime recommendations. This represents nearly 24 percent of the acres planted in 2003.

- 478,000 acres of rice were sampled and provided with fertilizer and lime recommendations. This represents nearly 33 percent of the acres planted in 2003.
- 298,000 acres of pastures provided with fertilizer and lime recommendations.
- 62,000 acres of corn were sampled and provided with fertilizer and lime recommendations. This represents nearly 18 percent of the acres planted in 2003.

- 23,000 acres of grain sorghum were sampled and provided with fertilizer and lime recommendations. This represents nearly 11 percent of the acres planted in 2003.
- Nearly 700 soil and tissue samples were received for diagnostic purposes. Assistance was provided to those samples that required further consideration.
- Arkansas soybean producers can potentially reduce yield losses by 20 bushels, if they follow Extension recommendations for soybean growing in areas affected by a boron deficiency.
- Arkansas grain sorghum producers could potentially increase their dryland yields by up to 40 bushels if they follow Extension's fertility and irrigation recommendations.
- 2,000 copies of the Corn Production Handbook were produced and distributed to producers.
- More than 2,000 Arkansans received information on soil testing, and best management practices for lime and fertilizer application and plant analysis, via production meetings in 2003.

Source of Funds

Funds were obtained from The Soil Test and Research Board, The Corn and Grain Sorghum Promotion Board, Cotton Incorporated, and from seed and chemical companies and Extension (Smith-Lever Act). Direct funding to conduct applied research totaled over \$70,000, with "in-kind" donations totaling nearly \$30,000.

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, vegetable or fruit growers. Fertility research, demonstrations, and/or educational activities were conducted in the following counties: Crittenden, Cross, Desha, Garland, Greene, Lawrence, Jefferson, Lee, St. Francis, Poinsett, Mississippi, and Lonoke.

Programs of Excellence

Teamwork to Solve a Fertility Problem

In 2000, Hickory Ridge soybean producer David Wilson had a field of soybeans that, at first, had the appearance of being sprayed with the wrong herbicide, or at least having something drift onto them from an adjoining field. The only problem was that plants growing on levees and drainage ditches from the previous crop did not show such symptoms. The following year, Mike Wood experienced the same problem on a field

approximately 3 miles from Wilson's. Growers in Poinsett and Woodruff counties were also seeing the same problems. Yield reduction due to this problem was as high as 50 percent of their typical yields.

With the joint efforts of University of Arkansas county Extension agents from the affected counties and Extension and Research Soil Scientists, the problem was determined to be boron deficiency. Boron, a micronutrient normally applied only to cotton fields, aids in fruit set and is not normally seen as deficient in other crops. The identification of this nutritional deficiency and associated research and demonstration trials raised awareness of the problem such that area producers started watching their fields for symptoms of Boron deficiency. Research work in the area is still ongoing and symptoms of Boron deficiency, although not as common as before, are still being reported in the area.

Producers are taking note of this work and with the information obtained through soil testing, done at the University of Arkansas' Soil Test Lab in Marianna, they are taking appropriate steps to prevent the appearance of boron deficiency in their soybean fields. The educational work conducted by the Extension Service has helped sustain or increase yields in more than 45,000 soybean acres in the area.

General Program Information – Each season, county Agents inform Extension specialists about emerging issues in their respective counties, issues that can potentially impact optimum crop growth. Extension specialists and research faculty then take the necessary steps to address such issues. In this particular instance, county Agents and Research and Extension faculty worked together to secure funding and conduct the necessary research to develop boron fertilization recommendations. Educational efforts to disseminate the findings have included county and regional meetings, newspaper articles, and newsletters.

Location – This success story highlights the Cross, Poinsett, and Woodruff counties program

Impact Numbers – An area that includes nearly 45,000 acres of soybeans in Woodruff, Poinsett, and Cross counties has been affected by a boron deficiency. In several instances, reported yield losses have been as high as 50 percent of expected yields. This problem has also been reported in Craighead, Greene, Jackson and St. Francis counties on a smaller scale.

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

During the 2002-2003 wheat growing season, approximately 700,000 acres of wheat were seeded, a reduction of nearly 160,000 acres from the previous season, and was primarily due to a wet fall that hindered seeding. Average wheat yield was 50 bushels per acre, an increase of 4 bushels per acre from the previous year. Corn acreage in the state continues to increase and the 365,000 acres seeded in 2003 was the greatest corn acreage since 1959. Corn yields continue to increase and a statewide yield average of 140 bushels per acre was achieved in 2003. Corn acreage expansion will likely slow in 2004 as the high cost of nitrogen fertilizer and high prices for other commodities make other crops economically attractive. Grain sorghum acreage was down 20,000 acres from 2002 with 225,000 acres seeded. Grain sorghum yields were excellent with a statewide average of 82 bushels per acre, an increase of 5 bushels per acre from 2002. Educational programs addressing cultivar/hybrid selection, soil fertility requirements and timing, crop rotation benefits, and irrigation timing were key factors involved with the increasing grain yields seen in the state this past year.

Stakeholder Input

County Agriculture Councils planned educational programs consisting of demonstrations, participated in the Wheat Research Verification Program and Corn and Grain Sorghum Verification Programs, and conducted educational meetings to address the long-term sustainability of corn, grain sorghum, and wheat production. In addition, Extension was called upon to deal with emerging issues of 2003 that were unforeseen and had to be dealt with through impromptu educational programming as the crop season progressed.

Overview

Wheat

Arkansas wheat farmers harvested 570,000 acres of wheat, averaging 50 bushels per acre in the 2002-2003 growing season. Wet conditions during the fall delayed planting in many instances and poor stands resulted in many fields. The combination of poor stand establishment and wet growing conditions resulted in nearly 130,000 acres being destroyed and planted to other crops. Wheat harvest was also plagued with wet conditions and harvest was not complete until July in many parts of the state. There were reported incidences of grain sprouting in the head because of the wet weather at harvest.

The Wheat Research Verification Program (WRVP) included 12 fields in the 2002-03 wheat season. The fields were located throughout the state. Fields enrolled in the WRVP averaged 63.7 bushels per acre. 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 grown in rotation with rice, nitrogen management on clay soils, and disease control.

Numerous wheat variety demonstrations were conducted in 2002-03, and these locations were used in countywide field days to emphasize newly released varieties with superior test weight, disease resistance and yield. Six widely adapted wheat cultivars were used to evaluate optimum spring nitrogen rates for wheat being grown following irrigated or dryland soybean, grain sorghum, rice, or summer fallow. The spring nitrogen studies were conducted at the Cotton Branch Station, Pine Tree Station and the Rice Research and Extension Center.

Corn

Arkansas farmers harvested 350,000 acres of corn in 2003 with an average yield of 140 bushels per acre. The Corn Research Verification Program was conducted on 8 fields. The average yield was 187 bushels per acre. 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 210,000 acres with an average yield of 82 bushels per acre. In 2003, Arkansas was the third leading producer of grain sorghum in the United States. Two Grain Sorghum Research Verification Fields were established in 2003. The fields averaged 130 bushels per 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 or in fields where soybean cyst nematode has been a problem.

Extension Program Results and Accomplishments

Output Indicators

- 12 Fields enrolled in the Wheat Research Verification Program (WRVP).
- 5 Field days and wheat variety demonstrations conducted on WRVP fields.
- 1 Wheat Update publication on variety selection.
- 1 Corn Update publication on hybrid selection.
- 1 Grain Sorghum Update publication on hybrid selection.
- 8 Corn fields enrolled in the Corn and Grain Sorghum Verification Program (CGSRVP).
- 2 Grain sorghum fields enrolled in the CGSRVP.
- 1,000 Phone calls addressing feed grain production questions from clientele.
- 100 Field calls to individual growers.
- 50 Presentations at grower meetings and field days.
- 15 Field days.
- 10 Popular press articles or interviews.
- 3 Consultant training sessions.
- 15 Newsletters on crop production.

Outcome Indicators

- 63.7 Average bushels per acre of wheat enrolled in the WRVP.
- 187 Average bushels per acre of corn enrolled in the CGSRVP.
- 130 Average bushels per acre of grain sorghum enrolled in the CGSRVP.
- 25 Increased corn yield (bushels per acre) by educating producers on irrigation scheduling computer program.

Source of Funds

Funding was provided by the Arkansas Wheat Promotion Board, Corn and Grain Sorghum Promotion Board, gifts (various crop protection companies and seed suppliers), and Extension (Smith-Lever Act).

Scope of Impact

Dissemination – Information is disseminated to any interested party through e-mail, personal communication, producer meetings, postal mail, conferences, seminars, and field days. Newsletters were distributed weekly to update clientele on crop status and any concerns. Crop performance information collected from yield trials is distributed yearly. Promotion Board reports were also made available.

Scope of Program – State Specific: 15 Counties (Arkansas, Clay, Craighead, Desha, Jefferson, Johnson, Lawrence, Lee, Lincoln, Logan, Monroe, Poinsett, Pulaski, St. Francis, and Yell)

Programs of Excellence

Increased Corn Harvesting Efficiency

Success Story – 2003 is a year many Arkansas corn farmers will fondly remember. Statewide yields averaged 140 bushels per acre, which was just short of a state record of 145 bushels per acre set in 2001. Jackson County corn producers also had near record yields due to timely rains throughout the growing season and proper management. Mr. Tommy Young of Newport, a producer formerly enrolled in the corn research and verification program also had an excellent corn crop. In late July severe thunderstorms with high winds hit the Newport area, which resulted in many fields of corn being lodged, including approximately 200 acres of Mr. Young's corn. Mr. Young called his county Extension agent Randy Chlapecka about what he could do to harvest lodged corn in his fields. Randy organized a meeting with Extension specialists and area corn producers who were facing similar problems with lodged corn to discuss possible corn header attachments to increase harvesting efficiency. Several corn header attachments were discussed and Mr. Young purchased the attachment recommended by the Cooperative Extension Service. Using the corn header attachment, Mr. Young was able to harvest an additional 25 bushels of corn per acre from 200 acres. The ability to harvest an additional 25 bushels per acre of corn over 200 acres resulted in nearly \$12,000 (\$2.30/bu) additional income that would have been lost without the use of the corn header attachment.

General Program Information – County Extension agents organize emergency meetings when farmers in their respective counties face problems that can potentially reduce expected yields. In this case, corn lodging was an issue of concern for farmers in the area.

Locations – This success story highlights the Jackson County program.

Impact Numbers – Corn lodging due to strong winds was a problem faced by several farmers in the Newport area in Jackson County. One of the corn growers in the area was able to harvest 5,000 additional bushels that could have been lost.

CES Section Contact Person – Jason P. Kelley, Extension Agronomist - Wheat and Feed Grains, 501-671-2164, jkelly@uaex.edu

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 2003, rice was grown on 1.455 million acres with an estimated average yield of 6590 pounds/A (147 bushels per acre). Rice acreage decreased just over 3 percent from the 2002 acreage. The estimated 2003 state average yield is the highest average yield on record, which is a remarkable accomplishment considering the unusually cool spring and heavy rainfall and associated flooding encountered during 2003. However, the record yields can be attributed to improved varieties, improved management practices, and favorable weather during critical times during the growing season. This is the third consecutive year that record crops have been achieved. The 2003 crop marked the first time in approximately 8 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. The most significant 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 that are covered are relevant to the producers in each particular county. Planning sessions were conducted with consultants and other industry personnel to discuss educational issues relevant to their needs. Research and demonstration projects are coordinated similarly, by implementing projects geared to the needs of the producers for each county. A survey was conducted among growers, consultants, and county Extension agents regarding the priorities for rice research and extension programs.

Overview

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

- **Variety Selection** – 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.

- **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 decrease soil and nutrient runoff is great.

Integrated Pest Management

- New technology is now available for controlling red rice, the number one weed problem in Arkansas rice fields, directly in the rice crop. Clearfield rice was produced on approximately 5 percent of the rice acreage in Arkansas and is expected to exceed 10 percent of the acreage in 2004.
- 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 disease problems, particularly sheath blight, panicle blight, and rice blast, continue to be a problem, causing yield and quality reductions. Variety selection, best production management practices, field scouting, and informed decisions regarding fungicide applications are all part of the educational approach to managing these diseases.

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 pre-flood 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 P fertilizer recommendations for rice production in Arkansas continues to be a significant issue.
- Boron deficiency, observed in many soybean fields, needs to be evaluated for these same soils when rice is produced.

Extension Program Results and Accomplishments

Output Indicators

In efforts to meet the needs of clientele the following were implemented in 2003:

Demonstrations

- 11 Rice Research Verification
- 24 Variety Performance
- 2 Seeding Rates
- 17 Icon Seed Treatments
- 2 Agrotain Urea Stabilizer
- 1 Phosphorus Fertilization
- 10 Nutrient Diagnosis/Fertilizer Response
- 3 Weed Control

Educational Meetings

- 28 County Production Meetings
- 8 IPM Meetings
- 9 Field Day/Crop Tours
- >100 Field Visits with Producers

Applied Research Studies

- 2 Phosphorus
- 1 Simulated Hail Injury
- 2 DD50 Threshold Development

Outcome Indicators

Arkansas harvested 147 bushels of rice per acre from 1,455,000 acres for a total production of 96 million cwt in 2003. Arkansas is consistently among the leaders in the Mid-South in rice production, ranking first in acreage and production.

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

Approximately 4,000 farms in Arkansas produce rice, 95 percent of which was dry seeded, 38 percent utilizing conservation tillage, and 25 percent 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 percent each year for the past 5 years. Precision leveling continues to increase each year, with approximately 42 percent of the rice produced on precision-leveled soils. These shifts benefit producers by reducing costs and conserving soil and water. Thus, it improves productivity as well as the environment.

The University of Arkansas Cooperative Extension Service rice educational program provided farmers with current recommendations on variety selection, fertility management, pest control (disease, insect and weed), cultural practices, water management, and stored grain management. Rice educational information was disseminated through county and area production meetings, county field days and turn row meetings, the DD50 rice management computer program, fact sheets, the Rice Production Handbook (MP192), soil testing and fertilizer recommendations, and county and Agricultural Experiment Station Field Days. Production demonstrations and replicated applied research studies were conducted in grower fields and at four Agricultural Experiment Stations. Extension rice publications and applied research results were available on the Extension Crop, Soil, and Environmental Sciences section web site in 2003, allowing growers to review information at any time from their homes.

A summary of county Extension programs during the 2002-2003 year showed that in excess of 7,093 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 2003 Rice DD50 program was used by 1,552 producers representing 673,693 acres. The DD50 program was updated to include information for five new varieties and was updated to include several new research-based recommendations concerning fertilization and disease control to growers. The DD50 now supports 53 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.

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 42 percent of the state's acreage. Rice varieties developed by the University of Arkansas were planted on almost 60 percent of the acreage in Arkansas, including Wells (42 percent), Francis (6.3 percent), LaGrue (2.6 percent), and Ahrent (2.3 percent). New herbicide technology, specifically the Clearfield rice production system, has allowed producers to grow rice that had previously been unprofitable due to heavy infestation of red rice. Clearfield rice was produced on nearly 5 percent of the Arkansas rice acreage, contributing to increased yields and quality by reducing the negative yield and quality impact of red rice. Other varieties supported by the DD50 program that were grown in Arkansas, including the percentage of the 2003 rice acreage, were Bengal (11 percent), Cocodrie (22 percent), and Rice Tec XL8 hybrid (1 percent).

Soil testing is a fundamental aspect of sound nutrient management. Soil samples analyzed by the University of Arkansas Soil Testing Laboratory for Rice soils totaled 10,230 representing 437,134 acres. This represents 30 percent of the rice acreage in Arkansas in 2003 and constitutes approximately 90 percent utilization by rice farmers who are encouraged to sample every three years.

Applied research was conducted on new conventional varieties (Banks, Cybonnet, Medark, Cheniere), hybrids (XL 8, XP 710, XP 712) and experimental lines with herbicide resistance technology (CL XL8) to develop DD50 thresholds for the 2004 DD50 program and University recommendations for production practices. The RICESEED computer program was updated in 2003 to include new varieties, updated seed weights, and can be run from the Internet.

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 11 counties. Multiplier fields were also conducted by agents in several counties, involving several producers. Yields in the Rice Verification Program averaged 172 bushels per acre in 2003, approximately 25 bushels

better than the statewide average of 147 bushels per acre. Net income for these fields averaged \$271 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 \$207,000 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 websites, personal communications, Extension publications, news media, and producer meetings, seminars, and conferences. Publications and Extension Support Materials developed include:

- 4 Rice Information Sheets
- 1 Fact Sheets
- 5 Web-based Educational Materials
- 9 Articles in Research Bulletins
- 10 Other Educational Materials
- 15 Individual Articles
- 36 Article Interviews
- 5 Television and Radio Interviews
- 2 Computer Software
- 3 Teaching Aids

Program Adoption – The majority of the rice program is state specific and directed to Arkansas rice producers. The program impacts at least 35 of the counties in Arkansas. Rice producing counties include: Arkansas, Ashley, Chicot, Clark, Clay, Conway, Craighead, Crawford, Crittenden, Cross, Desha, Drew, Faulkner, Greene, Independence, Jackson, Jefferson, Lafayette, Lawrence, Lee, Lincoln, Little River, Lonoke, Miller, Mississippi, Monroe, Philips, Poinsett, Pope, Pulaski, Prairie, Randolph, St. Francis, Woodruff, and White counties. This program impacts all counties in Arkansas where rice is produced. Multi-state Integrated Research and Extension efforts exist between MS, MO, LA, and TX for variety testing, integrated pest management recommendations, and nutrient management.

Programs of Excellence

Scouting Equals Success

Each week, during the growing season, the county agent in charge of the Rice Research Verification Program (RRVP), the RRVP coordinator, and the cooperator scout the field for any possible problems and discuss any practice that needs to be done. Face-to-face discussion with the cooperator while in the field is a unique quality of the program in that it allows the cooperator to see what the problem is or why a certain practice needs to be done. In years prior to enrolling in the Rice Research Verification Program, Mr. Tony Wilke had been averaging approximately 125 bushels per acre yield on 450 acres of rice. By following Extension’s recommendations, he averaged 165 bushels per acre on his 83-acre field enrolled in the program in 2003 and 155 across the 450-acre farm. He managed the entire farm according to recommendations for the field officially enrolled in the Rice Research Verification Program. As would be expected, Mr. Wilke has expressed great satisfaction with the program and wants to participate again in the future.

With a 30 bushel per acre increase in yield and a price of \$4.20 per bushel for rice, Mr. Wilke added \$126 per acre (\$10,458 across the farm) in gross returns in 2003 just from increased yield. Much of the increased yields were the result of improved nitrogen management with respect to both, optimum rate and timing. Thus, much of this increase in yield was obtained with little or no additional input costs.

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 – 11 Counties, including Arkansas, Ashley, Chicot, Clay, Craighead, Crittenden, Cross, Jackson, Poinsett, St. Francis and Woodruff.

Impact Numbers – Yields in the fields enrolled in the program ranged from -4 to + 59 bushels per acre when compared to the state average of 147 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 per acre.

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

<p>KEY THEME: ANIMAL HEALTH</p>

Program Response:
Poultry Disease Prevention

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

Situation

Effective disease control education efforts require both disease prevention programs and disease diagnosis and treatment efforts. Disease outbreaks almost always involve economic losses due either to mortality or to impairments in production. In addition, 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, educational programs aimed only at disease diagnosis and treatment are, at best, short sighted. Thus, clientele must be taught the disease prevention principles to curb the causes of disease.

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

- 56 Presentations at local, regional, and state meetings.
- 87 Farm visits.
- 23 Fact sheets, newsletter articles and popular press articles.
- 73 Training sessions and one-on-one consultations.
- 23 Newspaper, radio and television interviews.

Outcome Indicators

- 0 Outbreaks of major poultry diseases in Arkansas.
- 624 Industry leaders received factual information about disease prevention.
- 229 Individuals received disease prevention information.

Source of Funds

Smith Lever

Scope of Impact

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

Scope of Program – The program was presented in Arkansas, Virginia, Texas, Missouri and 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 and Dr. Shane Gadberry, Animal Science Section, 501-671-2169, sgadberry@uaex.edu

Situation

Approximately 31,000 farms in Arkansas produce beef cattle. During 2003, the number of beef cows in Arkansas increased by 33,000 head or 3 percent. Arkansas is the home of 1.9 million head of cows and calves with the number of beef cows nearly reaching 1.0 million head (982 thousand head) in 2003. The average herd size is 30 head, with 80 percent of the farms having less than 50 head. The gross income from Arkansas' beef cattle industry reached \$374 million with a total economic impact over \$1.8 billion.

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 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, replacement heifers and market cow management.

The workshop lasted two nights for two and a half hours each night. The workshop covered enterprise budgets, supplemental feeding, mineral supplementation, forage production planning, cow herd performance testing, and management calendars. Attendance ranged from 15 to 25 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, slide sets 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

- | | |
|--------|--|
| 1 | Farm completed five-year ABIP whole farm program. |
| 2 | Farms enrolled in five-year ABIP whole farm program. |
| 9 | 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. |
| 120 | Number of producers attending ABIP workshops. |
| 10,000 | Number of producers reading the ABIP articles in <i>Arkansas Cattle Business</i> . |

Outcome Indicators

- The average number of cows increased 38 percent (68 to 91 head) on the ABIP whole farms.
- Herd break-even per pound of beef sold decreased 28 percent from \$0.52 to \$0.37 per pound from year 1 to year 5 of the program.
- Beef sold per animal unit during year 1 of the program was 436 pounds and increased by 24 percent to 539 pounds by year 5.
- Specified cost per animal unit decreased 23 percent from year 1 (\$226) to year 5 (\$174).
- The average mature cow calf crop percentage in year 1 was 85 percent and improved to 93 percent by year 5.
- The average supplemental feed cost per animal unit in year 1 averaged \$48 and by year 5 it was reduced to \$24.
- In one case, soil potassium levels were very low and bermudagrass stands were declining. The forage specialist recommend a fertilization rate to improve soil potassium, and by year 5 the percent stand of bermudagrass improved from 83 percent to 93 percent and the percent bare ground declined to 0 percent.
- One cooperator's cow herd started with a 205-day adjusted weaning weight of 445 pounds. By year 5, the average 205-day adjusted weaning weight improved to 501 pounds.

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. 25 counties: Benton, Conway, Crawford, Dallas, Faulkner, Franklin, Howard, Izard, Johnson, Lawrence, Logan, Madison, Nevada, Perry, Polk, Pope, Saline, Searcy, Sebastian, Sevier, St. Francis, Union, Washington, White and Yell.

2) Multi-State. AL, KY, LA, MO, MS, OK, TN, TX

Programs of Excellence

ABIP Breeding and Calving Season Project

General Program Information – To demonstrate and document the beef cattle management changes and the impact of those changes when adjusting from a yearlong breeding program to a short (90 days) breeding season.

Number and Names of Counties Involved – 3: Dallas, Howard and Union

Impact Numbers – The average number of years it took to reach the cooperator's desired breeding and calving season goals was 4.6 years.

The percentage of cows calving in the desired calving season increased from year 1 (40 percent) to the final year of the project (100 percent).

The average length of the calving season decreased from 282 days to 97 days.

When averaged across all farms, break-even cost decreased 38 percent.

Specified cost per animal unit dropped from \$180 to \$122.

Income over specified cost per animal unit improved 75 percent from \$78 to \$135.

CES Section Contact Person – Dr. Tom R. Troxel, Animal Science Section, 501-671-2188, ttroxel@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 in order 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 – 3: Marion, Sevier and Polk

Impact Numbers – The number of heifers exhibiting estrous cycles prior to the breeding season improved from 60 percent in year 1 to 82 percent in year 2.

The feed cost per pound of gain for year 1 and 2 was \$0.48 and \$0.32, respectively.

The total cost per pound of gain for year 1 and 2 was \$0.69 and \$0.50, respectively.

The total cost of raising heifers to breeding (including the value of the heifer) ranged from \$732 to \$782 per head.

CES Section Contact Person – Dr. Tom R. Troxel, Animal Science Section, 501-671-2188, ttroxel@uaex.edu and Dr. Shane Gadberry, Animal Science Section, 501-671-2169, sgadberry@uaex.edu.

ABIP Market Cow Management Project

General Program Information – The project’s purpose is to demonstrate the management necessary to improve the value of market (cull) cows. Cull animals can make up to 15 percent to 20 percent of the gross income for a cow-calf producer. Determining management factors to enhance the value of these animals can mean increased returns for the producer.

Number and Names of Counties Involved – 1: Boone

Impact Numbers – The net return of wintering market cows and selling them in the spring was \$48 per head.

CES Section Contact Person – Dr. Tom R. Troxel, Animal Science Section, 501-671-2188, ttroxel@uaex.edu and Dr. Shane Gadberry, Animal Science Section, 501-671-2169, sgadberry@uaex.edu.

ABIP Producer Workshop

General Program Information – The ABIP Producer Workshop communicates the knowledge gained from the ABIP demonstrations. The workshops have proven to be an excellent educational method to transfer this knowledge to producers on a larger scale.

As a result of ABIP demonstrations, a producer workshop was developed to transfer ABIP knowledge gained. The workshop addresses cow-calf budgets, forage testing, supplemental feeding, mineral supplementation, cow herd performance, forage production planning, grazing systems, controlled breeding seasons and timing of management practices. It consists of two evenings of two and a half hours per evening.

Number and Names of Counties Involved – 9: Cleburne, Cleveland, Faulkner, Montgomery, Perry, Pulaski, Saline, Van Buren and Yell

Impact Numbers – The average attendance for the ABIP workshops was 24 producers.

The producers rated the workshop 4.4 (1 = none to 5 = very) when asked how meaningful the workshop was.

When asked if they liked the way the workshop was taught, 100 percent of the respondents indicated “yes”.

CES Section Contact Person – Dr. Tom R. Troxel, Animal Science Section, 501-671-2188, ttroxel@uaex.edu; Dr. John Jennings, Animal Science Section, 501-671-2350, jjennings@uaex.edu; and Dr. Shane Gadberry, Animal Science Section, 501-671-2169, sgadberry@uaex.edu

Program Response: Beef Cattle Management

Contact: Dr. Tom R. Troxel, Animal Science Section, 501-671-2188, ttroxel@uaex.edu; Dr. Shane Gadberry, Animal Science Section, 501-671-2169, sgadberry@uaex.edu; Dr. John Jennings, Animal Science Section, 501-671-2350, jjennings@uaex.edu; and Doug Kratz, Animal Science Section, 501-671-2179, dkratz@uaex.edu

Situation

Approximately 31,000 farms in Arkansas produce beef cattle. During 2003, the number of beef cows in Arkansas increased by 33,000 head or 3 percent. Arkansas is the home of 1.9 million head of cows and calves with the number of beef cows nearly reaching 1.0 million head (982 thousand head) in 2003. The average herd size is 30 head, with 80 percent of the farms having less than 50 head. The gross income from Arkansas' beef cattle industry reached \$374 million with a total economic impact over \$1.8 billion.

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 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' Conference.

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 2003, 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 be competitive in beef production.

Calves were placed on feed at Oklahoma Feeders, Inc., 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. Therefore, a reducing winter feed cost focus program was implemented during the fall of 2002. 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.

The Arkansas Cattle Growers' Conference is an annual event held at the Clark County Fairgrounds. The one-day program is organized and planned by a committee of producers and Extension and allied industry personnel. Producers from Arkansas, northern Louisiana and northeast Texas attend. Speakers from all over the south-central United States present 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. This conference is rapidly gaining the reputation of

being the premier annual educational event for stocker cattle producers within 150 miles of Clark County.

Extension Program Results and Accomplishments

Output Indicators

1,636	Number of clientele enrolled in the Beef Quality Assurance Program.
53	Number of clientele who are Beef Quality Assurance Certified.
350	Number of calves enrolled in Arkansas Steer Feedout Program.
23	Number of producers who enrolled steers in the Arkansas Steer Feedout Program.
100	Number of producers attending the Arkansas Cattle Growers' Conference.
99,319	Number of producers attending educational programs or who were contacted by Extension.
1,402	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.
23,532	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 management and forage production.
70,186	Number of producers attending educational meetings, demonstrations, farm visits and/or field days or who were contacted by Extension to educate clientele on reducing winter feed cost.

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.
\$29	Average dollar amount winter feed cost was reduced due to stockpiling forages.
\$38	Average dollar amount winter feed cost due to rotational or strip grazing.
\$3.50 to \$12	Average dollar amount winter feed cost due to forage testing the hay supply and determining a balance supplement.
99	The average number of days grazing for rotational grazing compared to 40 days of continuous grazing.

- 49 The average number of days cattle grazed stockpiled forages.
- 119 Producers that adopted management practices to reduce winter feed costs.
- 1,610 Number of producers that changed beef cattle and forage management practices to improve efficiency.
- Steers enrolled in the Arkansas Steer Feedout graded 51 percent Choice, had an average daily gain of 3.01 pounds per head per day and had a feed cost of gain of \$0.60 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. Fifty-one percent of the steers fit the combined standards. Steers that met the industry standards had higher average daily gain (3.10 vs. 2.96 pounds) and averaged \$115 per head more than those not fitting the industry standards.

Source of Funds

Smith Lever and 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. 44 counties: Baxter, Benton, Boone, Calhoun, Carroll, Clark, Cleburne, Cleveland, Crawford, Dallas, Faulkner, Franklin, Fulton, Garland, Greene, Hempstead, Hot Spring, Howard, Independence, IZARD, Johnson, Lincoln, Little River, Logan, Lonoke, Madison, Marion, Miller, Nevada, Perry, Polk, Pope, Pulaski, Saline, Searcy, Sebastian, Sevier, Sharp, Stone, Union, Van Buren, Washington, White and Yell

2) Multi-State: AL, KY, LA, MO, MS, OK, TN, TX

Programs of Excellence

Winter Annual Demonstration

Success Story – Winter feed costs are a major expense for cattle producers. Reducing this cost can increase profits for producers in Hempstead County. A ten acre test plot was established on Don Kennemer’s farm in Spring Hill. Five acres were planted in Marshall ryegrass, and the other five acres were planted in Ribeye ryegrass. The ten acres were cross fenced into two five-acre paddocks so that cattle would graze each paddock containing half Marshall and half Ribeye. The cattle gains were superior and by planting the ryegrass, the cooperator saved \$378 in hay cost.

Number and Names of Counties Involved – 1: Hempstead County

CES Section Contact Person – Dr. John Jennings, Animal Science Section, 501-671-2350, jjennings@uaex.edu.

Forage Producer Increases Hay Production

Success Story – Local beef producer Luther Edwards of Lewisville was assisted with a forage fertilization plan to increase his hay production. He had previously applied a spring application of 13-13-13 to two hay meadows at a rate of 300 pounds per acre. Yields for the last two years had declined to 3 tons per acre of bermuda/dallisgrass mix. Intensive soils testing (grid sampling) identified low pH and K on the fields. Edwards followed Extension recommendations for N, K, and limestone applications. His hay production went from 116 large bales to 269 bales. He was very happy with the results and can do a better job of wintering his cow herd.

Number and Names of Counties Involved – 1: Lafayette County

CES Section Contact Person – Joe Vestal, County Extension Agent - Staff Chair, 870-921-4744, jvestal@uaex.edu.

Utilizing Stockpiled Fescue to Reduce Winter Feed Cost

Success Story – This Searcy County demonstration was conducted near Marshall and Big Flat townships. Two producers followed Extension’s recommendation on how to manage stockpiled fescue. One producer stockpiled 18 acres with a stocking rate of 19 animal units resulting in 77 animal unit grazing days on the 18 acres. This producer saved \$37.60 per animal unit in winter feed costs with a total savings of \$714.40.

The second producer stockpiled forages and continuously grazed his pasture with 79 animal units on 73 acres for 37 days. The cows were nursing small calves, and even during the stockpiled grazing period, the cows maintained their body condition. This producer saved \$21.11 per animal unit in winter feed cost with a total savings of \$1,668.

Number and Names of Counties Involved – 1: Searcy County

Impact Numbers – Producer saved \$37.60 per animal unit in winter feed costs with a total savings of \$714.40.

Producer saved \$21.11 per animal unit in winter feed cost with a total savings of \$1,668.

CES Section Contact Person – Danny Griffin, County Extension Agent - Agriculture, 870-448-3981, dgriffin@uaex.edu.

Arkansas Cattle Growers’ Conference

Success Story – Producers, county agents and specialists meet annually to develop the program content. This program addresses the educational needs of the professional

stocker cattle operator. It has quickly become the premier stocker cattle conference in the Southeast.

In 2003, allied industry recognized the educational value of the conference to the point that they provided funds to support the activity. Approximately 150 producers attended the meeting. This past year's conference theme was "Receiving – The Most Critical Period During Ownership."

Number and Names of Counties Involved – 8: Clark, Dallas, Grant, Hempstead, Hot Spring, Montgomery, Nevada and Pike

CES Section Contact Person – Jerry Clemons, Clark County Extension Agent, 870-246-2281, jclemons@uaex.edu

Program Response: Dairy Cattle Management

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

Situation

Approximately 255 dairies with 30,000 dairy cows are located in Arkansas. The number of dairy herds continues to decrease. With an average milk production per cow of 12,281 pounds in commercial herds, the Arkansas dairy industry produces about 400 million pounds of milk per year. Milk income is \$60 million per year, and total economic impact of the dairy industry with heifers and dairy products was \$459 million in 2002. Depressed milk prices, waste management and efficiency of milk production continue to be major concerns of Arkansas' dairy industry.

Stakeholder Input

Cooperative Extension Service worked with many dairy-related businesses and government agencies, including Arkansas Farm Bureau, feed companies 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 U.S. and all of fulltime agriculture.

A major concern of the dairy industry is the fluctuation in milk prices and the present depressed prices. Although production costs in Arkansas are less than many states that have higher investment costs per cow, milk production per cow in the state and bordering states is among the lowest in the U.S. 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 with western states that lead the U.S. in milk production per cow and trends for increasing total milk production.

A dead animal composting demonstration was conducted in Washington County with Agricultural Engineering to illustrate the disposal of dead dairy animals. It will soon be approved as a method of large animal disposal by the Arkansas Livestock and Poultry Commission. With the new regulations prohibiting the slaughter of non-ambulatory animals following the detection of a cow with BSE in the U.S., this method of disposal will be of much significance as there are no rendering plants in Arkansas.

State regulations require that dairies have a waste management permit or a management plan to control waste runoff. Recently, most dairy meetings have contained results from the nutrient management demonstration that illustrated the economic net value of manure as fertilizer at about \$50 per cow. A cooperative effort through Agricultural Engineering with the Natural Resources Conservation Service (NRCS) and other government agencies has resulted in most of the dairy farms in Arkansas initiating plans to construct improved waste management facilities to comply with animal liquid waste regulations. A model heavy use area utilizing fly ash as the surface material to provide additional support for the cows looks satisfactory and a field day was conducted in the fall of 2003. Although most dairy producers received cost-share to assist with regulatory compliance, the regulations are considered burdensome and are used as an excuse to exit the industry.

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 new 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.

Multi-disciplinary demonstrations involved heat stress in the holding pen and feeding area and fly control on the dairy utilizing parasitoids. Parasitoids have offered a method

of fly control that appears to be beneficial, especially on clean dairies, and with the opportunity to decrease the likelihood of pesticides in the milk supply.

Two dairies that milk 1,000 to 1,200 cows per farm are now in Arkansas. Both dairies cooperate extensively with Extension personnel, and they have planned demonstrations for next year. These dairies are among the most modern in the U.S., which affords Extension the opportunity to inform other producers in Arkansas of their technology.

Extensive contact with many industry leaders and future leaders was made through work with the Arkansas State Fair dairy shows for cattle and goats. Assistance was provided for county and district youth dairy shows plus the Mid-South Fair dairy shows at Memphis, TN. Dairy promotion efforts continued with Dairy Frolics at the State Fair, the dairy foods contest with Farm Bureau and Domino's Pizza Ranch with the Southwest Dairy Museum.

Dairying remains an economically important enterprise in Arkansas as it had a total economic impact of \$459 million in 2002. The direction of the dairy Extension program includes continuing programs for dairy producers that allow them to provide as much milk as efficiently as possible for processors and working with other states on tours and demonstrations to exhibit new technology. As Arkansas produces less than one-half of the milk products that are consumed in the state, dairy farming has potential for expansion and increased economic impact in the state. The dairy industry affords one of the few opportunities for numerous independent agricultural producers to obtain a sound return on their investment in the Ozarks and close-by rolling hills. Coleman-Turner Dairy is constructing a new facility with potential to process more milk in spite of decreased milk production in the state.

Extension Program Results and Accomplishments

Output Indicators

16,466	Number of producer-contacts attending educational programs (including Extension-related industry meetings), field days, etc., and receiving educational materials.
39	Number of educational meetings.
9	Number of demonstrations and/or field days held to educate clientele.
12	Number of educational newsletters produced.
79	Number of herds involved in DHIA program, 26 percent, is highest percentage recorded.
22	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 2002, the average milk production per cow for DHIA herds was 16,591 pounds compared to the state average of 12,281 pounds.
- The greater milk production from DHIA herds amounted to increased income of about \$600 per cow or \$60,000 per herd and over \$4 million per year in Arkansas.
- A survey of producers at the Ark-Tenn field day in 2003 indicated that 62 percent of producers had fans and sprinklers in their holding pens, up from almost none a few years ago.

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, Izaard, Logan, Madison, Marion, Pike, Pope, Pulaski, Saline, Scott, Searcy, Stone, Van Buren, Washington, White and Yell

Programs of Excellence

Dairy Herd Improvement Program

Success Story – 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. Herds in Arkansas are tested through the Heart of America DHIA and processed through Dairy Records Management Systems. Dairy herds enrolled in DHIA increased milk production and profits. In 2002, the average milk production per cow for DHIA herds was 16,591 pounds compared to the state average of 12,281 pounds. The greater milk production from DHIA herds amounted to increased income of about \$600 per cow or \$60,000 per herd and over \$4 million per year in Arkansas. DairyMetrics, a new 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.

General Program Information – Herds in Arkansas are tested through the Heart of America DHIA and processed through Dairy Records Management Systems.

Number and Names of Counties Involved – 15: Benton, Boone, Carroll, Columbia, Conway, Faulkner, Franklin, Logan, Madison, Marion, Pope, Van Buren, Washington, White and Yell

Impact Numbers – In 2002, the average milk production per cow for 79 DHIA herds was 16,591 pounds compared to the state average of 12,281 pounds. The greater milk production from DHIA herds amounted to increased income of about \$600 per cow or \$60,000 per herd and over \$4 million per year in Arkansas.

CES Section Contact Person – Dr. Jodie Pennington, Extension Dairy Specialist, 501-671-2190, jpennington@uaex.edu

Program Response: Forage Production and Management

Contact: Dr. John Jennings, Animal Science Section, 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. Two 2 million acres of bermudagrass, fescue and mixed grasses (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

A forage database containing forage samples and poultry litter samples that were analyzed from 1985 to 2003 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 in this database can be sorted in a variety of ways: 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 having 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 forage 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 2002-2003 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 30 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.

Alfalfa acreage in Arkansas has declined from a high of over 112,000 acres to around 10,000 acres currently, which is the lowest on record for the state. Recent producer interest has shown a need for an educational program on alfalfa management.

The acceptance of alfalfa will depend on ease of establishment and the low risk of forage production loss. New establishment techniques are being investigated to learn if alfalfa can be grown in living bermudagrass sod. The purpose of this project is to determine if forage quality can be improved in a low-risk and low-cost manner. As the alfalfa stands thin over time, the companion bermudagrass will spread to fill the stand. Thus, there is little risk of losing forage production due to premature stand loss of alfalfa. First year results are good and indicate that this may be an effective establishment practice. Treatments being studied to improve establishment include planting date, seeding rate, bermuda residue management and insect control.

Many bermudagrass fields have high soil phosphorus (P) due to repeated applications of swine or poultry waste. The only way to effectively reduce high soil P is to remove P in the forage. Many producers find it too expensive to purchase enough commercial nitrogen fertilizer to produce high yields of bermudagrass for lowering soil P. Since alfalfa does not need nitrogen fertilizer, it has the potential to reduce high soil phosphorus levels by allowing production of high quality forage at a low fertilizer cost compared to a grass-based system.

Winter feed costs are a major expense for beef cattle production. Extension Animal Science faculty developed a demonstration program in 2002 that emphasized four practices that can help producers reduce these costs. Reducing Winter Feed Costs is a statewide effort developed as an Extension Focus Program. It includes four focus areas, which are stockpiled forages, winter annual forages, supplemental feeding based on hay quality and rotational or strip grazing. An in-service training was conducted for county agents in February 2002 to allow them to select demonstration farms. Demonstrations began in fall 2002. Production and financial data are being collected. This information will allow other producers across the state to see how effective these practices are in reducing winter feed costs.

Rotational grazing improves forage utilization. The practice of strip-grazing employs portable electric fence to limit cattle access to only enough pasture for two to three days at time.

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 saved money. 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. Producers having good quality hay saved more per head than producers feeding low quality hay and supplement.

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 2002 and 2003 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 three 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

- 4,146 Number of educational meetings, demonstration farm visits and/or field days held to educate clientele on forage production and grazing management.
- 2,126 Number of educational meetings, demonstration farm visits and/or field days held to educate clientele on beef cattle nutrition.
- 55 Number of grazing schools conducted during 1996-2003.
- 2,550 Number of participants in Grazing Schools from 1996-2003.
- 46 Number of Reducing Winter Feed Cost farm demonstrations conducted in 2002-2003.
- 70 Number of Reducing Winter Feed Cost farm demonstrations underway for 2003-2004.
- 7 Number of producers using strip-grazing for their stockpiled forages.
- 15 Number of youth teams that competed in the State Grassland Evaluation Contest.
- 56 Number of youth participants in the State Grassland Evaluation Contest.

Outcome Indicators

- 2,910 Number of participants who changed their forage and grazing management production practices.
- 1,896 Number of participants who changed their beef nutrition management practices.

- In the winter of 2002-2003, 10 producers saved an average of \$20.47 per head and an average of \$942 per farm when grazing stockpiled fescue in winter instead of feeding hay and supplement.
- Seven producers using strip-grazing for their stockpiled forages gained 53 more animal-unit grazing days than those that allowed cattle unlimited access to the stockpiled pasture. This increase was worth an average of \$859 per farm.
- In 2002-2003, the average savings per head was \$7.75 for producers that developed feeding programs based on the quality of their hay.
- Producers with good quality hay that did not require supplementation had an average feed cost of \$0.68 per head per day whereas producers whose hay quality was low and needed supplementation had an average cost of \$1.22 per head per day.
- The average feeding period for these farms was 118 days. Producers having good quality hay saved \$63.72 per head more than producers feeding low quality hay and supplement.

Source of Funds

Smith Lever, Arkansas Grazing Lands Advisory Committee funds

Scope of Impact

Dissemination – Program activities were available at county 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 and Yell

Programs of Excellence

Nontoxic Endophyte Infected Fescue Improves Cattle Gains

Success Story – A Faulkner County producer established a field of nontoxic fescue in September of 2002. In the spring, 41 heifers were allowed to graze for 30 days. At the end of the 30-day grazing period, the net gain was 3,737 pounds for the 41 heifers (3 pounds per head per day). Normal heifer rate of gain is 2 pounds per head per day. A net gain of \$925 was realized over normal grazing gains. No toxicity problems were associated with the grazing of the endophyte friendly fescue. In July, 66 pairs were turned in and allowed to graze until August. In August, the cattle were pulled and the remaining grass was cut. This information will be utilized with producers statewide to promote the use of permanent cool season grass pastures.

General Program Information – Beef producers tend to establish small grains and ryegrass each year to provide supplemental grazing during cool seasons. Fescue infected with a toxic endophyte fungus used for permanent grazing in the past has resulted in poor animal performance and animal health problems. Establishment of a permanent cool season grass without endophyte toxicity problems will cut down on the cost of winter grazing, assist in increasing gains and maintaining herd health.

Number and Names of Counties Involved – 1: Faulkner County

CES Section Contact Person – Jennifer A. Hawkins, County Extension Agent - Agriculture, 501-329-8344, jahawkins@uaex.edu

Stockpiled Forages Reduce Winter Feed Costs

Success Story – Producers in Pope and White Counties participated in Extension demonstrations to reduce their winter feed costs by stockpiling forages for winter grazing. This program reduced the winter feeding cost for producers in both counties. One producer stockpiled fescue and fed 51 cows on the fescue for 46 days. The producer reduced the feeding cost per head per day by \$.83. The cows maintained good body condition during the project indicating the forage was good quality. In the stockpiled bermudagrass project, the producer reduced his winter feeding cost by \$.56 per head per day. The cattle were grazed 154 days on the bermuda and gained an average of 85 pounds per head.

In White County, a producer was able to reduce winter hay feeding time by 52 days. The nutrient value of the stockpiled fescue was considerably higher than his hay and the cows increase a full body condition score from 4 to 5.

Information gleaned from the projects were developed in a PowerPoint presentation and presented at two county beef production programs and one beef field day. In 2003, 20 producers have adopted this practice. The information from these projects was shared with over 200 producers through educational programs, newsletters, and media outlets.

General Program Information – Feeding beef cattle in the winter is the single most expensive expense for beef cattle producers. Stockpiled fescue is a way to reduce feed cost in the winter months, by grazing instead of feeding hay or supplements.

Number and Names of Counties Involved – 2: Pope and White Counties

CES Section Contact Person – John R. Payne, County Extension Agent - Staff Chair, 479-968-7098, jpayne@uaex.edu and Brian W. Haller, County Extension Agent - Staff Chair, 501-268-5394, bhaller@uaex.edu

Program Response: Horse Management

Contact: Steve Jones, Animal Science Section, 501-671-2067, sjones@uaex.edu

Situation

The horse industry is growing in Arkansas. Approximately 60,000 households own 160,000 to 170,000 horses. Although recreation is the number one reason for horse ownership, the horse industry is a \$3 billion industry.

Stakeholder Input

The Arkansas Department of Corrections may be the largest horse operation in Arkansas with an inventory of 567 head; a breeding herd of 55 mares and 6 stallions, with the balance being saddle horses, weanlings, yearlings and two-year-olds. On any given day, the Department of Corrections may use 130 saddle horses at the various units around the state. The Extension equine specialist was asked to develop four programs: one for the inmates that do the horse breaking and training and three for all the officers that ride horses.

The Arkansas Legislature passed Act 540 in 2001 that requires all horse events to have an EIA Verifier. The Arkansas Cooperative Extension Service, Arkansas Livestock and Poultry Commission and the Arkansas Horse Council were mandated to administer the EIA Verification Program.

Overview

Arkansas has an approximate equine population of 160,000 to 170,000. Approximately 60,000 households have horses. A combination of horse maintenance costs, capital investment and support costs makes this a \$3 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 local

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. In 2003, PREP II was implemented, which is an advancement of PREP I. This program teaches advanced horsemanship skills and incorporates clientele instruction with their horses.

The program designed for the Arkansas Department of Corrections, for the inmates, was conducted at the Wrightsville Unit over a three-day, eight hours per day period. The program included basic training using horse psychology, behavior and social structure of the herd. Each participant was supervised while they saddled and rode a previously unriden horse.

The second program was designed and taught as an in-service training for all officers that ride horses. The eight-hour program included basic horsemanship, bits and their functions, saddle fit, firearm safety while on horseback and working with problem horses. Each officer rode and was evaluated.

A third program was developed at the request of the Arkansas Department of Corrections. In 2003, ADC requested that the Extension horse specialist design and implement advanced horse-training classes for officers responsible for supervising employees that ride horses daily. A five-day, 40-hour curriculum was designed and implemented in April 2003. Each class attendee started a two-year-old from first handling to basic riding. Barn supervisors selected an unriden two-year-old colt at the beginning of the class. It was intended that all horses would be ridden with some basic horsemanship principles applied by week's end.

A fourth program was developed at the request of the Arkansas Department of Corrections. ADC requested the Cooperative Extension Service specialist to develop a Horse Care and Horsemanship curriculum to be implemented at the training academy. The curriculum was developed and will be implemented in fiscal year 2004.

The Cooperative Extension Service specialist responsible for horse programs worked with the other two cooperating organizations to plan the EIA Verification Program. The specialist wrote the teaching curriculum, designed and produced the visual aids and trained the Arkansas Livestock and Poultry Commission personnel that taught the classes.

In 2002, the Arkansas Cooperative Extension Service agreed to be responsible for the educational component of the EIA Verification Program. CES received a \$30,000 grant

from Arkansas Livestock and Poultry Commission to conduct the program. The Cooperative Extension Service in 2003 assumed sole responsibility for this program.

Extension Program Results and Accomplishments

Output Indicators

- 10 PREP training sessions conducted.
- 1,500 Number of clientele attending PREP courses.
- 6 Number of Horsemen's Short Courses taught.
- 11 Number of Arkansas Department of Corrections inmates participating in basic horsemanship workshop.
- 10 Arkansas Department of Corrections horsemanship in-service sessions for officers.
- 160 Number of participants in the Arkansas Department of Corrections horsemanship in-service sessions.
- 10 Number of Arkansas Department of Corrections barn supervisors attending horse training classes.
- 1,657 Number of participants receiving EIA Training and Certification.
- 57 Number of county agents trained as EIA program verification instructors.
- 67 EIA training sessions conducted.
- 2,400 Number of producers attending educational programs (including Extension-related industry meetings), field days, etc., and receiving educational material.
- 275 Number of educational meetings, demonstrations, farm visits and/or field days held to educate clientele on general horsemanship and equitation.
- 160 Number of educational meetings, demonstrations, farm visits and/or field days held to educate clientele on horse nutrition.
- 490 Number of educational meetings, demonstrations, farm visits and/or field days held to educate clientele on pasture management and hay quality.
- 175 Number of educational meetings, demonstrations, farm visits and/or field days held to educate clientele on horse health.
- 35 Number of educational materials produced.

Outcome Indicators

- 750 Number of participants who improved their equitation and horsemanship skills.

- 412 Number of participants who changed their horse nutrition management practices.
- 500 Number of participants who changed their horse grazing management practices and improved hay quality.
- 700 Number of participants who changed their horse health management practices.
- 100% of participants in the Arkansas Department of Corrections horse training in-service were successful in applying horsemanship riding principles.

Source of Funds

Smith Lever, Arkansas Livestock and Poultry Commission, Industry Sponsorship (Purina Feeds and Nutrena Feeds).

Scope of Impact

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

Scope of Program – State Specific. 29 Counties: Arkansas, Baxter, Boone, Carroll, Clay, Craighead, Cross, Desha, Greene, Hempstead, Izard, Jackson, Jefferson, Johnson, Lincoln, Logan, Madison, Monroe, Polk, Pulaski, Saline, Searcy, St. Francis, Stone, Union, Van Buren, Washington, White and Yell

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 always interested in management tools that will help them produce birds more efficiently. 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.

Extension Program Results and Accomplishments

Output Indicators

- 5 Field and applied research trials.
- 8 Popular press or newsletter articles.
- 10 Presentations at local, regional or state meetings.
- 5 Training workshops for area poultry producers.
- 57 Farm visits and one-on-one consultations.

Outcome Indicators

- 2,507 Poultry producers were instructed on water quality management.
- 827 Poultry producers changed their water quality management practices.
- 4 Poultry production complexes improved bird performance saving an 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 within the state

Scope of Program – This program was delivered in Arkansas and Texas.

Program Response: Poultry Breeder Management Training

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

Situation

The success of any poultry complex depends largely on how well breeder birds are managed. Yet annual genetic improvements mean that the management requirements of breeder birds also change. In addition, there is a dearth of individuals who understand current management requirements information available to poultry producers and production personnel.

Stakeholder Input:

The breeder management meeting was established in 1998 at the request of industry production personnel. The seminar was well received and more intensive training was requested. Breeder roundtable meetings were established in three locations within the state and 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

- 10 Intensive workshops conducted.
- 26 Meeting presentations.

28 Follow-up visits.

4 Breeder roundtable meetings.

Outcome Indicators

310 Breeder managers received training.

37 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 management workshops were conducted in Arkansas and Texas.

Scope of Program – Breeder management training is available to any breeder producer interested.

Program Response: Poultry Hatchery Management Training

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

Situation

Hatchery management has always been an acquired skill. Modern hatcheries are increasingly complex because of the changing genetics of breeder birds and increasingly complex machinery.

Stakeholder Input

Informal discussions with hatchery managers indicated the need for additional training. In addition, a quarterly hatchery managers' roundtable was established, which provided 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

- 12 Intensive workshops conducted.
- 27 Meeting presentations.
- 24 Follow-up visits.
- 4 Hatchery roundtable meetings.

Outcome Indicators

- 310 Hatchery managers received training.
- 24 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 management workshops were conducted in Arkansas and Texas.

Scope of Program – Hatchery management training is available to any hatchery worker interested.

Program Response: Poultry Producer Education Program

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

Situation

As the U.S. poultry industry meets the challenge of being competitive in a highly competitive global market, it will rely more on educational opportunities provided by the Extension service to choose wise investments and develop better production strategies. Global competition has resulted in profit margins that are very narrow, and the poultry industry has cut costs by increasing the responsibilities of live production personnel. This makes it difficult for production personnel to have the time and resources to learn and understand the value of the latest technologies. Extension has developed a crucial role in

providing unbiased and sound technology through quality educational programs. Since the role of Extension is education and not selling products, the clientele served has a high level of trust and confidence in the information provided.

Stakeholder Input

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

Overview

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

Extension Program Results and Accomplishments

Output Indicators

- 4 Poultry Expo Programs.
- 24 Management related newsletter or popular press articles published.
- 67 Farm visits or one-on-one consultations.

Outcome Indicators

- 2,500 Producers received the latest production information.
- 73 Producers learned proper bird management techniques.

Source of Funds

Expo registration fees, Smith Lever

Scope of Impact

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

Scope of Program – This program was presented in Arkansas.

KEY THEME: DIVERSIFIED/ALTERNATIVE AGRICULTURE

Program Response: Alternative Forest Products

Contact: Tamara Walkingstick, Ph.D., Extension Specialist - Forestry; 501-671-2197, twalkingstick@uaex.edu; Mr. Billy Moore, Extension Alternative Agriculture Specialist, Environment and Natural Resources, 479-675-5585, bmoore@uaex.edu; Mr. Caroll Guffey, Extension Instructor, 870-460-1549, guffey@uamont.edu.

Situation

Farmers and ranchers, especially on small farms, across the state are facing severe economic stress in some cases and the simple need to diversify their income in others. In the past, farmers and ranchers have looked to their remaining woodland for extra spending cash. There are, however, other opportunities that might provide extra income. The UACES developed an alternative enterprise program to enhance economic vitality of various landowners through managing either existing forest resources or through initiating new forest resource management. The specific goal of this program is to promote the use of alternative forest products including pine straw and shiitake mushrooms as economically feasible operations.

Stakeholder Input

Input comes from clientele, county agents, research scientists at an ARS station, and county Extension Advisory Councils.

Overview

Research into pine straw harvesting and shiitake mushroom production has been a focus of UACES and other partners, specifically the Agriculture Research Station at the Booneville Small Farm Research Center. Pine straw and shiitake mushroom demonstrations and research suggest that both are viable options for producers. Extension personnel have provided technical support to producers and educational programs for a wide audience including homeowners, forest landowners, poultry producers, and other individuals. Fact sheets are being revised and new programs being developed that look at marketing enhancements for pine straw. The ARS and CES will continue working collaboratively in this arena.

Extension Program Results and Accomplishments

Output Indicators

- 13 Number of UACES landowner education meetings conducted that included information about pine straw, shiitake mushrooms, and/or managing forest resources from farmland.
- 350 Number of forest landowners, industry, and/or agency personnel attending oak sustainability educational programs.
- 2 Number of UACES fact sheets being developed.

1 Number of radio programs conducted with the Arkansas Ag Network.

1 Number of news articles written.

Outcome Indicators

A forest landowner in SW Arkansas is now harvesting pine straw for market based on assistance from the county agent and state specialists.

Source of Funds

Smith Lever 3b & 3c, RREA

Scope of Impact

The programs are available to all interested landowners, individuals, forestry and other natural resource management professionals

<p>KEY THEME: MANAGING CHANGE IN AGRICULTURE</p>
--

Program Response: **The Future of Contracts in Agriculture**

Contact: Janie Simms Hipp, J.D., LL.M., 479-575-6935, Environment and Natural Resources; H.L. Goodwin, Ph.D., 479-575-2283, Department of Agricultural Economics and Agribusiness.

Situation

In order to become more competitive, modern agriculture has been moving into what may be known as the “contracts age.” Contracts between producers and processors have been at the forefront of the rapid structural change to U.S. agriculture. Contracts dominate and guide the interrelationships of parties throughout the modern production system. First adopters of new technologies and production methods are in the forefront of examining positive and negative impacts of those adoptions.

The Oklahoma, Arkansas, Missouri region is the home of many of the country’s leading poultry processing companies and has become the home of many concerns regarding the environmental impact that production operations may be having on the environment. A growing number of lawsuits have been filed in this region concerning those issues. While this has been occurring, the federal regulatory bodies have been considering, but have later dropped, the effort to tie environmental regulation to the contractual relationship

that ties the producer and the processor together. In a unique move, and not unrelated to the environmental litigation occurring in the area, the Oklahoma Attorney General issued an opinion that under certain circumstances the relationship between the parties to a poultry production contract may be one of employer/employee as opposed to the traditional position taken by the parties to that contract as it being grounded on an independent contractor status. That opinion is at issue in one of the pieces of litigation pending in this region.

Should this opinion be upheld and the nature of the relationship between the parties shift to one of employer/employee, there will be implications to the larger structure of agriculture, particularly in the areas of: tax liability, environmental liability, financial/credit access and related implications, entitlement to farm program payment benefits, entitlement to employment related benefits, insurance and general tort liability and management implications across companies and farms. Exploring the implications of such change through an informed dialogue and involvement in a more public setting of the various stakeholders' perspectives is needed.

Stakeholder Input

Initial project partners in this effort were the Farm Foundation, the National Association of State Departments of Agriculture, the American Farm Bureau Federation and the Arkansas Farm Bureau. The Division of Agriculture provided leadership and support. The entire program effort thus far has been grounded on bringing the discussion into a multi-stakeholder arena. The first efforts of this program effort were a successful conference that was specifically designed to encourage maximum cross-issue stakeholder input and involvement.

Overview

Truth or Consequences: The Future of Contracts in Agriculture was a nationally publicized event conducted in September 2003 in Kansas City. The event brought together a broad audience of interested parties to begin the public dialogue that would form a comprehensive approach to the use of contracts in agriculture. The use of contracts is pervasive, however, there are numerous public and private entities and organizations that have been urging change in the way contract relationships within the agricultural arena are regulated. The University of Arkansas Division of Agriculture partnered with the Farm Foundation, the National Association of State Departments of Agriculture, the American Farm Bureau Federation and the Arkansas Farm Bureau, to begin this dialogue. The agenda for this event and PowerPoint presentations of speakers can be found currently at the Farm Foundation web site and the release of a CD incorporating this and transcription of proceedings is forthcoming. A follow-up on NRI grant application has been submitted with other key players including the Missouri contracts study center CORI and the ERS. Follow-ups on conferences are in the planning stages around the issues of supply chain management, access to capital, federal and state policy responses and conflict management within the contract system.

Extension Program Results and Accomplishments

Output Indicators

A CD incorporating conference PowerPoint presentations and proceeding transcription is under final editing for release. Program contact personnel issued two "white papers" in conjunction with two previous meetings (2002 and 2003) of the ongoing conference efforts of organizers of the Economics of Contracts in Agriculture (involving a major

university in the U.S. and a major university in the E.U.) Additional products will flow from follow-up on activities. In addition, project coordinators were interviewed for forthcoming articles in Reuters and *Successful Farming*.

Outcome Indicators

We are encouraged by the initial response to the conference that occurred in September 2003. Additional litigation around these issues will occur in a variety of jurisdictions. Our efforts are to increase the knowledge base for those persons affected by contract usages and our efforts to engage a broader research and academic community with the regulatory community is already having positive impact in that numerous additional follow on grant applications have occurred and additional dialogue continues.

Source of Funds

Funding for the September 2003 program effort was provided through the Farm Foundation, the National Association of State Departments of Agriculture, the American Farm Bureau Federation, and the Arkansas Farm Bureau, as well as support from the University of Arkansas Division of Agriculture.

Scope of Impact

Dissemination – CD and web site materials are accessible nationwide through the Farm Foundation web site and through the University of Arkansas Fayetteville web site. Over 5,000 mailings advertising the event were sent out. The four follow-ups on conferences are preliminarily scheduled for four different regions of the country and as the planning for those events progresses, additional mailings and public access to information will occur.

Scope of Program – While the initial litigation spurring interest in this program effort is involving citizens of Arkansas and Oklahoma, the effect of such contemplated and argued changes will be felt nationally and globally. Therefore, the scope of the program is national in nature.

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 380 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 disbursed; in other states 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 increase in 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 managers, the educational managers, 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 recently a three-year grant to continue these sorts of efforts at risk management education targeting the Native American Women in Agriculture throughout the southeast, midsouth 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 are updating and will be reprinting this guide for further dissemination within Arkansas and Mississippi 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 will be publishing 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.

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. Additional mailings will occur after the Intertribal Agricultural Council article that is scheduled in early 2004. 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 is broadening to Oklahoma, Arkansas and Mississippi. Additional states that will be involved during the CSREES project will be all those in the southern United States and ultimately we intend to address these educational needs at the national level.

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

The reported incidence of foodborne illnesses from pathogenic bacteria is increasing. Naturally occurring bacteria and other food pathogens are a major concern. Events of 9/11 have heightened the awareness of potential food contamination and the utilization of terroristic food chain disruption. A key to reversing the trends of increased disease is education to consumers and food handlers throughout the food production and marketing system. The paradigm of safe food may not be taken for granted. Education about intentional food contamination and a heightened awareness by all to this potential may avert additional incidents in the future.

Millions are impacted annually by illness from food they consume. Many deaths may be attributed to food consumption each year – particularly from the young, elderly and immune compromised. More and more people are eating food that is prepared away from home. Introduction of pathogens and their survival has a much higher potential in these environments than food that is properly prepared in the home. The key educational efforts focus around proper selection, storage and preparation of foods for both nutritional and safety aspects.

According to USDA statistics, the poultry industry in Arkansas produced slightly over 5.8 billion pounds of poultry meat in 2002. Although the meat produced is highly nutritious and per capita consumption approached 100 pounds, food safety remained an area of concern. While federal HACCP regulations have reportedly reduced the food safety risks associated with poultry meat, the high turnover rate in poultry plants means that processors must constantly train new workers. In addition, poultry processors have, on several occasions, been forced to recall millions of pounds of product because of inadequate procedures. Clearly, there remains a need for efficient, high quality food safety and HACCP training programs for the poultry processors.

Arkansas producers store vast quantities of grain on the farm. Proper in-bin drying and management throughout the storage period are essential to maintain quality. Moderate temperatures in this region open up the possibility for numerous attacks by insects. Insect damage reduces the quality and marketable value. In extreme cases, insect-damaged grain may not be marketable at all. Research and on-farm demonstrations have shown that temperature management is a very effective tool for use in insect control strategies. Evaluations of this type technology will help provide an alternative to chemical usage.

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 Internet and other broad scale broadcasting techniques have assisted with increasing contacts.

Total FTEs
6.28

Total Budgetary Amount
\$700,389.91

KEY THEME: FOOD QUALITY

Program Response: Food Processing Extension

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

Situation

Food processing is a large business in Arkansas. About 25 percent 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 big 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 mailout surveys and the interviews were very similar as far as the top three requests. Listed below is the percentage of positive responses for the main three activities requested.

<u>Activity Requested</u>	<u>% Response from Mailout Survey</u>	<u>% Response from Interviews</u>
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 telephone calls from entrepreneurs, their requests range from information of starting a food business to finding a copacker to various assistance we already offer (pH determination, nutritional labeling, etc.).

A new stakeholder has recently come forth requesting assistance. The Arkansas Department of Health is currently undergoing some reorganization and is inquiring into the possible development of online educational programs to train their inspectors as well as educational programs for restaurants and food processing establishments.

Overview

Prior to the fall of 2002, Food Processing Extension (0.5 FTE) consisted of having one Better Process Control School per year, conducting two workshops 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, mailout surveys to all food processors in Arkansas and interviews with large food processors in Arkansas as discussed in the 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". Based on surveys, interviews and new information continuously becoming available, the following initiatives were developed and implemented in 2003 or are planned to begin in 2004.

- 1) Food Processing website/Newsletter – launched January 2003
- 2) Web-Based Educational Programs – Started in May 2003. To be completed by July 2004. This consists of 52 one-hour PowerPoint presentations with narration, available free on the web. This program will need strong promotion in Summer 2004.
- 3) Support Services – such as pH, nutritional labeling, finding copackers, etc., are in place.
- 4) Workshops – Planned for Fall 2004. By using the educational web-based programs, a series of workshops mainly involving food safety and starting a food business will be initiated in the fall.
- 5) Applied research for larger packers – To be started in Fall 2004.

Extension Program Results and Accomplishments

Output Indicators

- 231 Number of telephone calls from the food industry and entrepreneurs requesting assistance

- 1 Number of independent workshops
- 3 Number of workshops assisted with but not as a primary coordinator (mostly producer groups)
- 143 Number of support services provided (pH, nutritional labels, etc.)
- 250 Hits on website
- 12 Acted as High Acid Processing Authority
- 16 Number of 1-hour educational programs developed

Outcome Indicators

- 32 Certificates issued for Better Process Control School held in accordance with FDA provisions in Nov 2003.
- 14 Businesses started due to Extension assistance (pecans, cheese spread, 12 at Taste Buds, Inc., as copacker).

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 big 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 on 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 second year of a joint research project with food processing engineers and the staff at ADC to investigate alternative ways to control

insects in rice storage other than using chemicals. This research effort has expanded this year to two other farms in the state.

A major training session is planned for October of this year to review on-farm practice recommendations. Sessions are planned for 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.
- 8 Popular press articles.
- 350 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, Rice Research Promotion Board grant

Scope of Impact

Dissemination – This is a statewide and regional program that has been made available to all producers.

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

**KEY THEME:
FOOD SAFETY**

Program Response: Food Safety Education Programs

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

Situation

There are many challenges facing public health and the food supply. While the American food supply is among the safest in the world, each year millions of people in the United States are stricken by illness caused by the food they eat. Some, mostly the very young, the elderly and immune-compromised, die every year as a result. According to the President's Council on Food Safety, hospitalization costs for these illnesses are estimated

at more than three billion dollars annually and costs from lost productivity are much higher.

Americans are eating more meals away from home. It is estimated that forty-seven cents of every food dollar is spent on food prepared outside of the home. Food is not only purchased from grocery stores and restaurants, but is consumed in schools, hospitals, nursing homes, day care centers and other institutional settings. The chances for disease-producing errors increase as fewer people are involved in preparing their own meals.

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

The reported incidence of food-borne illness from pathogenic bacteria is increasing. According to figures from the Centers for Disease Control, food-borne illness occurs in Arkansas at a rate of 50 to 60 cases per 100,000 population. These illnesses may be life threatening or trigger chronic disease. According to the report "Food Safety from Farm to Table," the increase in food-borne disease can be partially attributed to the emergence of new food-borne pathogens and existing organisms becoming more virulent or finding new ways to evade immune defenses. In addition, changing patterns of consumption, an aging population, more persons with chronic illnesses and wide 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.

Programming in food safety education 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.

Extension Program Results and Accomplishments

Output Indicators (Consumers)

- 3,388 Number of consumers participating in educational short courses or meetings related to sanitation and safety in food handling.
- 47,622 Number of people reached through food safety awareness programs, demonstrations or displays.
- 81 Number of media articles produced on food safety issues.

Outcome Indicators (Consumers)

- 3,112 Number of consumers who report improved sanitation in food handling.

Output Indicators (Producers)

- 280 Number of participants in educational programs leading to certification for food handlers (i.e., ServSafe programs and Better Process Schools).
- 49 Number of non-certified programs for food handlers.

- 8 Number of food safety educational programs for growers, producers, distributors or retailers.
- 1,151 Number of participants attending non-certification programs for food handlers.
- 205 Number of growers, producers, distributors or retailers attending food safety educational programs.

Outcome Indicators (Producers)

- 122 Number of food handlers certified.
- 128 Number of food service managers who report improved food handling practices within a commercial establishment.
- 42 Number of growers, producers, distributors or retailers implementing one or more practices to minimize food safety hazards.

Source of Funds

Smith Lever and program registration fees for ServSafe

Scope of Impact

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

Scope of Program – ServSafe is conducted through 16 county clusters. Counties conducting ServSafe programs in 2003 included Pope, Johnson, Greene, Union, Columbia, Calhoun, Crawford, Sebastian, Boone, Little River, Miller, Howard, Washington, Benton, Craighead, Pulaski, Baxter and Stone. 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

- 12 General aviation meetings to review safety procedures.
- 12 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.

Scope of Program – This program has been made available to all the Arkansas aviation community.

<p>KEY THEME: FOODBORNE PATHOGEN PROTECTION</p>
--

Program Response: Thermal Process Validation Workshop

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

Situation

Poultry further processing plants produce nearly a billion pounds of ready-to-eat poultry products annually and consumers depend on the safety of these foods. Yet recent experience has shown that the personnel in some plants do not understand the principles necessary to verify the production of safe foods. As a result, millions of pounds of product have been recalled and consumers have sometimes been sickened by contaminated foods.

Stakeholder Input

When public health is involved, little stakeholder input should be required. Nonetheless roundtable discussion with further processing plant officials provided specialists with initial guidance. In addition, these discussions have continued on a monthly basis at a gathering called the HACCP Roundtable. The roundtable includes representatives from every major poultry processor in Arkansas and provides a continuing source of guidance.

Overview

Specialists developed a 2.5-day workshop that presents scientifically valid, practical methods for validating that products have been correctly processed.

Extension Program Results and Accomplishments

Output Indicators

2 Thermal Validation Workshops Conducted

Outcome Indicators

14 Multinational corporations represented at the workshops

27 National corporations represented at the workshops

- Companies producing an estimated billion pounds of ready-to-eat products learned scientifically valid methods of ensuring product safety

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 – This program was presented in Arkansas and Indiana.

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.edu

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 an HACCP plan. This regulation created tremendous educational needs within the industry since there is tremendous 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

- 10 HACCP Workshops
- 35 Plant HACCP Implementation visits

Outcome Indicators

- 341 Workshop participants learned HACCP principles
- 15 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 – This program was delivered in Arkansas, Indiana and 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 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 high school students, almost 16 percent are at risk of becoming overweight and 14 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.

Total FTEs
112.1

Total Budgetary Amount
\$5,219,188.80

KEY THEME: HUMAN HEALTH

Program Response: Reducing Risks for Chronic Disease – Physical Activity

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

Situation

Regular physical activity has multiple health benefits including reducing the risk for heart disease, stroke, diabetes, obesity, certain cancers and osteoporosis. Yet even with all the known benefits, only 25 percent of adults in the United States report engaging in recommended levels of physical activity. According to the Center for Disease Control, one of every four Arkansas adults does not participate in any regular physical activity.

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

Extension's health programs, such as *Walk Across Arkansas*, help Arkansans incorporate physical activity into their lives.

Extension Program Results and Accomplishments

Output Indicators

- | | |
|--------|---|
| 612 | Number of educational programs offered that relate to physical activity. |
| 8,635 | Number of participants attending educational programs related to physical activity. |
| 92,602 | Number of people reached through awareness programs, exhibits and media outlets based on topics related to physical activity. |
| 9,413 | Number of educational resources prepared related to physical activity. |
| 8,422 | Number of people who participated in the <i>Walk Across Arkansas</i> walking program. |

Outcome Indicators

- 6,714 Number of people who plan to increase physical activity.
- 3,844 Number of people who increased physical activity.
- 387,125 Number of miles walked by Extension program participants.

Source of Funds

Smith-Lever

Scope of Impact

Dissemination – The Walk Across Arkansas program is available to all counties. Information regarding the program has been disseminated through direct mailing 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 – Counties conducting program in FY03 included Ashley, Boone, Bradley, Calhoun, Carroll, Clark, Conway, Crawford, Cross, Drew, Grant, Jackson, Johnson, Lafayette, Lawrence, Lincoln, Madison, Mississippi, Perry, Pike, Poinsett, Polk, Pulaski, Scott, Searcy, Sebastian, Sevier, Stone, White, and Yell. Approximately 30 counties have indicated interest in implementing this program during FY04.

<p>KEY THEME: HUMAN NUTRITION</p>

Program Response: **Expanded Food and Nutrition Education Program**

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

Situation

Arkansas is a poor state. Arkansas ranks seventh in the nation for the highest percent (15.8 percent) of persons living in poverty according to Census 2000. 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 was the eleventh worst state in the country in the level of food insecurity (12.6 percent of all Arkansas households were food insecure). When food and nutrients needed to sustain physical and mental well being are chronically inadequate, hunger leads to high medical, educational, psychological, economic and social costs.

Stakeholder Input

County Extension agents identify and build linkages with community agencies and organizations that provide services and other assistance to limited-resource persons. These collaborations help the county staff to determine educational needs of low-income families in their county and to develop, implement and evaluate educational programs. The partnerships enhance nutrition programs in a number of ways including, but not limited to, serving on the county program advisory committee; referring families to the program and assisting in the recruitment of participants; providing space and meeting sites for lessons; providing 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 16 counties in Arkansas. The programs are free, informal and available at convenient locations and times in the home and community. Program assistants, who are indigenous to the target population, deliver intensive, multi-session nutrition education programs. In general, each participating county uses one or more of the methods listed below to deliver nutrition education:

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

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

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

Extension Program Results and Accomplishments:

Output Indicators

- 17,002 Total number of persons in EFNEP program families.
- 4,845 Families participated in nutrition education programs.
- 2,161 Youth participated in nutrition education programs.
- 1,717 Participants completed 12 or more lessons of intensive nutrition education.

Outcome Indicators

The 1,717 intensive nutrition education program participants were given pre- and post-evaluation instruments that evaluated behavior changes over the course of the program. The evaluation results are as follows:

Nutrition (Dietary Quality) Practices

- 1,507 (93%) Participants showed improvement in at least one or more nutrition practices.
- 1,007 (62%) Participants thought about healthy food choices more often when deciding what to feed their family.
- 777 (48%) Participants prepared foods more often without adding salt.
- 1,190 (73%) Participants used food labels more often to make healthier food choices.
- 554 (34%) Participants reported that they and their children ate breakfast more often.

Food Safety Practices

- 1,220 (75%) Participants showed improvement in one or more of the recommended food safety practices.
- 540 (32%) Participants more often followed the recommended practices of not allowing meat and dairy foods to sit out for more than two hours.
- 483 (28%) Participants always follow the above recommended practice.
- 1,169 (69%) Participants more often followed the recommended practice of not thawing foods at room temperature.
- 736 (43%) Participants always follow the above recommended practice.

Food Resource Management

- 1,511 (91%) Participants showed improvements in one or more of the recommended food resource management practices.
- 1,092 (66%) Participants planned meals in advance more often.
- 921 (56%) Participants compared prices more often.
- 776 (47%) Participants ran out of food before the end of the month less often.
- 1,147 (69%) Participants used a list for grocery shopping more often.

Source of Funds

Smith Lever Funds

Scope of Impact

Dissemination – The core curriculum and other resources, including handouts written at an appropriate reading level, have been made available to each EFNEP county.

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

Program Response:

Food Stamp Nutrition Education Program (FSNEP)

Contacts: Rosemary Rodibaugh, Extension Nutrition Specialist, 501-671-2111, Family and Consumer Sciences, rrodibaugh@uaex.edu; Beverly H. Hines, Food Stamp Nutrition Education Program Associate, 501-671-2325, Family and Consumer Sciences, bhines@uaex.edu; Jackie Yarbrough, Food Stamp Nutrition Education Program Associate, 501-671-2070, Family and Consumer Sciences, jyarbrough@uaex.edu

Overview

The main focus of the UACES FSNEP was teaching healthy food, nutrition and physical activity practices to school-age children. Dietary Quality and Food Safety were the primary core elements addressed. School enrichment programs have focused on making healthy food choices from each food group on the Food Guide Pyramid, hand washing and food safety. Emphasis is on eating a variety of foods from the Food Guide Pyramid; eating more fruits, vegetables, whole grain foods and foods providing calcium; trying new foods; hygiene/hand washing; and choosing fewer high sugar foods/beverages.

School enrichment classes and hands-on learning experiences were the primary methods used in reaching youth through the public schools. The train-the-trainer model was used in seven counties for program delivery. County Extension agents (CEA) trained teachers and provided them with curriculum and other teaching materials. Some teachers incorporated brief periods of exercise in their lessons and talked about exercise each time they taught nutrition. In the majority of counties, based on the needs of the partners, teachers assisted the CEA or Program Assistant as they taught the lessons. Teachers reinforced lessons with additional nutrition education activities. Teachers reported lessons taught, time spent and student outcomes to CEAs on a monthly basis. Many CEAs reached students' parents with nutrition and food safety information through newsletters sent home with the children.

Food demonstrations, small group discussions and educational displays with accompanying handouts provided one-time food and nutrition information to food stamp recipients/applicants at DHS offices and at the Health Unit with WIC clientele. Regular educational programs and educational displays at Senior Citizen Centers reached low-income older adults. Adults were also reached through newsletters and food demonstrations at Commodity Food Distribution Sites.

Extension Program Results and Accomplishments

Output Indicators:

180,609	direct contacts
23,818	indirect contacts
204,427	total contacts
11,989	individual lessons were taught statewide through school enrichment programs, food demonstrations, and hands-on learning experience methods.

Outcome Indicators

56,431	youth learned something new about their diet based on the Food Guide Pyramid
53,063	youth might change eating habits based on the Food Guide Pyramid
21,210	youth learned something new about eating more fruits
18,891	youth might change eating habits by eating more fruits
19,937	youth learned something new about eating more vegetables
18,611	youth might change eating habits by eating more vegetables
17,104	youth learned something new about eating more foods with whole grains

14,461 might change eating habits by eating more foods with whole grains
16,586 youth learned something new about eating fewer high fat foods
14,705 youth might change eating habits by eating fewer high fat foods
13,602 youth earned something new about eating more calcium-rich foods
11,181 youth might change eating habits by eating more calcium-rich foods

- 17,859 youth learned something new about eating fewer high sugar foods
- 15,418 youth might change eating habits by eating fewer high sugar foods
- 17,567 youth learned something new about trying new foods
- 14,863 youth might change eating habits by trying new foods
- 17,240 youth learned something new about eating breakfast every morning
- 15,465 youth might change eating habits by eating breakfast every morning
- 33,678 youth learned something new about increasing physical activities
- 31,512 youth might change eating habits by increasing physical activities
- 21,233 youth learned something new about practicing good hand-washing techniques
- 17,967 youth might change habits by practicing good hand-washing techniques
- 15,442 youth learned something new about practicing food safety techniques
- 12,763 youth might change habits by practicing better food safety techniques

Dietary Quality

- 2,155 adults increased their fruit and vegetable consumption
- 583 adults increased their level of physical activity
- 369 adults increased consumption of whole-grain products
- 632 adults increased consumption of calcium-rich foods
- 966 adults decreased consumption of fat/saturated fat in their diet.
- 576 adults reduced portion sizes.
- 160 adults increased use of the information on food labels to make healthier choices.

Food Safety

- 60 adults less often let food sit out more than 2 hours
- 76 adults more often keep raw meat separate from other foods
- 1,156 adults increased the number of times they practice good personal hygiene.
- 944 adults increase the number of times they follow correct hand washing procedures.

295 adults increased the number of times they avoid foods from unsafe sources.

Partnerships

116 number of new collaborating partnerships

963 number of meetings with group collaborations

In April of 2003 a teacher survey was designed to support planning and program improvement efforts. The survey was mailed to a total population of 402 participating teachers statewide. The goal of the survey was to engage teachers in the evaluation of the program, to inform the program about teacher attitudes, and to assess what teachers need from us as partners. CES received 194 responses for an overall response rate of 48%. Data was sorted and analyzed to assess county, district and statewide needs and program status. Almost a third of participating teachers had never incorporated nutrition education into their classroom prior to this FY03 FSNE program. On a scale of one to ten, the statewide mean score on how teachers rated the value of the FSNE program to their students was 8.46. Twenty-five percent of the teachers surveyed said that the program had motivated them to eat healthier and be more physically active.

Source of Funds

The Food Stamp Nutrition Education Program (FSNEP) is a reimbursable, federally funded program. The University of Arkansas Cooperative Extension Service (CES) contracts with the Department of Human Services (DHS) to provide nutrition education for the target audience.

Scope of Impact

Dissemination – Annually counties are invited to prepare and submit a plan proposal including goals and objectives for reaching the target audience and a proposed budget. Plans are reviewed at the state level and then compiled and submitted by July 15 to the Department of Human Services for review and approval. The plan is then sent to the regional Food Nutrition Service office for final approval. A statewide training is held in February to provide counties with program requirements, training on curriculum resources, and an overview of the plan proposal process. Additional training is held in the summer months to provide training on evaluation and reporting. Program guidelines, resources, forms and other supporting documents are posted on the FSNEP web site located on the Extension Intranet under the Family and Consumer Science Department page.

Scope of Program – Forty-six counties in Arkansas participated in UACES FSNEP during FY 2003 including Baxter, Boone, Carroll, Chicot, Clark, Clay, Cleveland, Cleburne, Columbia, Conway, Craighead, Crittenden, Dallas, Faulkner, Franklin, Grant, Greene, Hempstead, Hot Spring, Howard, Izard, Jackson, Lafayette, Lee, Little River, Logan, Marion, Miller, Mississippi, Montgomery, Nevada, Newton, Phillips, Poinsett,

Polk, Prairie, Pulaski, Randolph, Saline, Searcy, Sharp, Stone, Union, Van Buren, Washington, and Yell.

Programs of Excellence

Success Story – Of special note in one case study is the systems and environmental change impacts that were realized as the result of this agent’s interventions and partnership with the Bradley School District in Lafayette County. The Bradley Elementary parent teacher organization changed the foods/beverages they provide for extra-curricular activities to healthier options. These changes affected all students and teachers K-6. Also in Bradley, school personnel provided nutrition information to parents by sending parent letters provided by FSNEP home with all students. The letters encouraged healthier eating habits, such as lowering fat and sugar, and increasing physical activity. The Bradley school cafeteria historically served only whole milk. Now, as a result of the FSNEP partnership, the school provides 2%, 1%, and low fat chocolate milk. The parent-teacher organization served soft drinks and cupcakes to students once a month. Currently, the items served are fruit and/or nut muffins with 100% juice or water.

Program Response: Healthy Weight for Arkansans

Contact: Dr. Rosemary Rodibaugh, Extension Nutrition Specialist, 501-671-2111, Family and Consumer Sciences, rrodibaugh@uaex.edu

Situation

The typical Arkansas diet has too few fruits, vegetables and whole grains and too much fat. In conjunction with insufficient physical activity, this dietary pattern contributes to the development of serious lifestyle-related health problems. The latest mortality statistics for Arkansas show that approximately 31 percent of deaths are from heart disease, 22 percent from cancer, 9 percent from stroke and 2 percent from diabetes. Over half of Arkansas adults are overweight or obese. One-fourth of young children and one-third of adolescents are at risk for overweight or are overweight. Overweight and obesity are risk factors for the major chronic diseases afflicting Arkansans.

In rural Arkansas the poverty rate is 43 percent higher than the U.S. average (17.8 percent vs. 12.4 percent). The poverty rate is highest in the Delta where the average rate of 22.5 percent is nearly twice the national average. Low educational attainment levels and poor access to public services exacerbate the problems brought on by poverty. The incidence of diet-related health problems is greater in the Delta counties than in the rest of the country and is highest among those who have less than a high school education, particularly African Americans.

In FY02, Arkansas served 433,716 people in 168,756 households through the Food Stamp Program at a cost exceeding \$256,352,332 million. Among Arkansans receiving

food stamps, 50 percent were children and approximately 5 percent were 65 years of age or older. Latest estimates (2001) showed that 62 percent of families eligible actually participated in the program.

In a recent report by the U.S. Department of Agriculture, it was revealed that 12 percent of all Arkansas households were food insecure. More than 146,000 children in Arkansas are at risk of being hungry and malnourished because of the poverty level in the state. The prevalence of overweight is higher among women who are food insecure, resulting in the potential for increased incidence of obesity-related chronic disease.

Research has shown the importance of nutrition to the developing brain and learning capability of children. Students who eat a nutritious breakfast have improved academic achievement, fewer visits to the school nurse, and better behavior in the classroom. Fifty-two percent (593 schools) of the 1,133 Arkansas schools participating in the National School Lunch Program, have 50 percent or more of their student enrollment eligible for the free or reduced-price lunches.

The Food Stamp Program and other nutrition assistance programs contribute significantly to maintaining and improving the nutritional well-being of low-income households. Studies have shown that nutrition assistance programs help low-income households achieve nutrition security, but not necessarily diet quality. Nutrition education and food preparation assistance are important parts of a comprehensive food assistance effort to give children a healthy start, and to help low-income Americans get the most food value from limited-resources. The Food Stamp Nutrition Education (FSNE) program teaches skills that help food stamp recipients better manage their resources and decrease their risk of hunger and diet-related chronic diseases.

The Dietary Guidelines for Americans are ten research-based recommendations to help Americans build healthful eating habits and lifestyle practices that will decrease their risk for these chronic diseases. The Dietary Guidelines stress achieving and maintaining a healthy weight; increasing physical activity; increasing consumption of fruits, vegetables and whole grains and moderating consumption of fat, saturated fat, sodium and sugar. Extension's nutrition programs are designed to help Arkansans implement the recommendations of the Dietary Guidelines.

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 comes from statewide councils and committees addressing chronic health issues including the Cardiovascular Health Program, Diabetes Control Program, Arkansas Nutrition Advocacy Council, and Arkansas Action for Healthy Kids. In 2003, the Arkansas general assembly passed Act 1220: An Act to Create a Child Health Advisory

Committee to address the child obesity problem in the state. University of Arkansas Cooperative Extension Service is represented on the 15-member committee. Committee members, university faculty, invited experts, state agency representatives, school administrators and other interested parties provided information that helped shape our program.

Forty-six of seventy-five counties in Arkansas participated in Food Stamp Nutrition Education program during FY 2003. County agents in these counties receive input on FSNE programming needs from partner agencies such as public school personnel, local DHS staff, Commodity Food Distribution site staff, Senior Citizen Center staff, Head Start Program staff, County Health Unit WIC program staff, county Extension councils and Food Stamp participants.

Overview

Overweight and obesity, which increase the risk of many chronic diseases, are increasing among Arkansans of all ages. Approximately 61 percent of Arkansas' adults are overweight or obese. Additionally, 26 percent of children under five and 30 percent of teens in Arkansas are at risk for becoming overweight or are overweight. 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 FY03, the emphasis of the human nutrition program was on helping Arkansans achieve or maintain a healthy weight. Programs reached Arkansans from pre-K through older adults through training Extension agents, child care providers and parent educators about the child obesity crisis and ways they can provide healthy food, physical activity and nutrition education to children in their care; providing school-based nutrition education programs for children and adolescents; and conducting a 15-week weight management program for adults.

Extension Program Results and Accomplishments

Output Indicators

1,932	Child care providers received training on child obesity and prevention strategies.
848	Educational sessions were related to healthy weight.
20,789	Participants attended programs related to healthy weight.
19	School/after school programs were related to healthy weight (non FSNE programs).
381	Non-FSNE participants reached through school/after school programs related to healthy weight.
270	Newsletters included information on healthy weight.
54,633	People received newsletters with healthy weight information.
359	Print media articles related to healthy weight.
184	Radio spots related to healthy weight.
21	Television spots related to healthy weight.

Outcome Indicators

280	Participants correctly identified standard servings of foods from each of the Pyramid food groups.
216	Participants reported they altered their behavior to follow standard serving sizes for one or more of the Pyramid food groups.
336	Participants lost an average of 11 pounds.
3,721	Total pounds lost by program graduates.
21,075	Miles walked by program graduates.
86%	Percentage of graduates who improved blood pressure.
71%	Percentage of graduates who improved blood cholesterol.
52%	Percentage of graduates who improved blood glucose.

Source of Funds

Smith-Lever

Scope of Impact

Dissemination – 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.

Scope of Program – 54 Counties reported conducting programs on healthy weight in FY03: Arkansas, Ashley, Baxter, Bradley, Calhoun, Carroll, Clark, Clay, Cleberne, Cleveland, Columbia, Conway, Craighead, Crawford, Crittenden, Cross, Desha, Drew, Faulkner, Fulton, Grant, Greene, Hempstead, Independence, Jefferson, Lawrence, Lee, Little River, Logan, Madison, Marion, Miller, Mississippi, Monroe, Nevada, Newton, Perry, Pike, Poinsett, Polk, Pope, Prairie, Pulaski, Randolph, St. Francis, Scott, Searcy, Sevier, Stone, Union, Van Buren, White, Woodruff, Yell (Ozark = 17, Delta = 25 and Ouachita = 22).

Programs of Excellence

Reshape Yourself - State Specific

Obesity is a growing health problem in Arkansas where over half of adults are overweight. Being overweight or obese is a risk factor for several chronic diseases such as heart disease, stroke, certain types of cancer and diabetes. Reshape Yourself is a 15-week weight management program focusing on healthy eating and regular physical activity that helps Arkansans achieve and maintain a healthier weight.

“I have lost 14 pounds on this program. I have learned a lot about how important nutrition and exercise are to a better well being. I enjoyed everything about this program and have recommended it to all my friends and have tried to teach what I have learned to my daughter and friends.”

“Since taking this program (twice) I have improved in many ways. Not only have I lost weight physically, but I’ve lost weight, mentally!! I’ve lost a total of 27 pounds in weight, but mentally, I’ve lost 100! I feel so much better about myself.”

“I have lost 32 pounds on this program. I have done diet pills and other gimics to lose weight and have always gained it back. This is the first time in my life to lose weight without anything except eating healthy and exercising. I feel because I have lost weight in this manner I will have success in keeping the weight off. I had high blood pressure and high sugar levels before I started losing weight. They are both normal now.”

Positive feelings like these were experienced all over Arkansas. Seventeen counties reported that 336 graduates in 21 classes lost 3,721 pounds by changing their eating habits and walking 21,075 miles. Of graduates who checked blood pressure, cholesterol and glucose before and after the 15-week course, 86 percent reported improvement in blood pressure, 71 percent reported improvement in cholesterol and 52 percent showed improvement in blood glucose levels.

Locations – Counties conducting Reshape Yourself in FY03: Arkansas, Ashley, Bradley, Cleveland, Crawford, Crittenden, Cross, Drew, Garland, Independence, Little River, Newton, Phillips, Prairie, Randolph, Union, Van Buren.

Contact – Dr. Rosemary Rodibaugh, 501-671-2111, Family and Consumer Sciences, rrodibaugh@uaex.edu

Delta H.O.P.E Tri-State Obesity Initiative – Multi-State

The Delta H.O.P.E (Healthy Options for People through Extension) is a multistate effort involving faculty from University of Arkansas, Mississippi State University and Louisiana State University Extension Services. In Arkansas, a pilot project to implement the Take 10! curriculum in second grade classrooms was initiated in five schools in the Delta region. Take 10! integrates physical activity and nutrition education into core subject areas 10 minutes at a time. Twenty-five teachers were trained to deliver the program for 13 weeks. Overall, teachers liked the curriculum, but indicated they did not have time to implement it three times a week as requested. The project will expand to additional grades (K-5) in currently participating schools in school year 2004 -2005.

Source of Funds – Smitl Lever, Kellogg Foundation

Locations – Three counties Ashley, Drew, Woodruff

Contact – Dr. Rosemary Rodibaugh, 501-671-2111, Family and Consumer Sciences, rrodibaugh@uaex.edu

Goal 4 – Greater harmony between agriculture and the environment.

Integrated pest management is an important aspect of agriculture in Arkansas. Pest management is an essential part of cotton production in the state in helping producers farm more efficiently and reduce reliance on pesticides. Stink bugs have emerged as a primary pest of cotton as a result of the use of transgenic cotton that has reduced insecticide use that previously controlled this pest. 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. Another crop, soybeans, is an intensively managed crop requiring timely irrigation, fertilizer and pesticides 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.

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 stink bug 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. In White County, these insects are serious pests of the table grape production. 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.

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 Arkansas aircraft for pesticide applications at 12 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 re-certified 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 nearly 6,000 individuals are trained each year.

The scope of Urban Integrated Pest Management in Arkansas is very diverse, involving insect pests that can directly impact all citizens of the state. West Nile Virus is a mosquito-borne arbo-virus that was first recognized in the western hemisphere during the summer of 1999. An Extension program stressing awareness of West Nile Virus was launched in conjunction with other state agencies that made Arkansas citizens knowledgeable about this threat. 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. 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.

Water conservation is a major emphasis of Arkansas Extension's educational efforts. The Irrigation Scheduling Program has been rapidly adopted by farmers to conserve water during irrigation while improving yields at the same time. Five other states are using the program. The Multiple Inlet Irrigation System has gained major acceptance by farmers. It has demonstrated a potential average water and energy savings of 25 percent and very substantial labor savings.

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, education for county agents, natural resource, 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. Arkansas has partnered with Louisiana State University and Mississippi State University to conduct the Master Farmer program, an environmental education program for farmers.

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. 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 four 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 environmental safe methods to dispose of waste.

Total FTEs

70.78

Total Budgetary Amount

\$3,734,199.52

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 32,000 dairy cattle on approximately 250 farms and over 300,000 head of swine placed at one time on about 360 farms. Annual broiler production is 1.2 billion birds. Turkey production is 30 million birds annually. There are 1.9 million head of beef cattle on Arkansas farms. Annual Arkansas farm gate income from livestock and poultry is \$3 billion before support services, industry or further processing are added.

A 1997 study indicated that animal production in Arkansas generates approximately 3.4 billion tons of manure on a dry weight basis each year. Annually the beef cattle, poultry, swine and dairy industries generate about 1.8, 1.3, 0.1 and 0.2 billion tons of manure, respectively.

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 are 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.

However, the regulatory requirements are in the process of changing with the implementation of new EPA Concentrated Animal Feeding Operation regulations and new state laws that regulate the utilization of nutrients, both manure and commercial fertilizers, in certain sensitive water sheds.

Extension Program Results and Accomplishments

Output Indicators

1,203 Producers, industry, or agency personnel attended educational programs.

- 28 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.
- 27 Educational meetings, field days and/or demonstrations held to educate clientele on liquid and dry animal waste management.
- Approximately 700 individuals representing over 500 farms attended 14 annual liquid animal waste refresher trainings hosted by Extension and required by state regulations. Most of these individuals were owner/operators of swine, dairy and poultry farms with liquid waste permits. However, there were also agency personnel attending.
- 1,591 Contacts were made via individual, group, and newsletter mailings.
- 272 Printed news releases were generated and released.

Outcome Indicators

- Over 1,000 manure samples were analyzed by the University of Arkansas Agricultural Diagnostic Laboratory. 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.

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 476 permitted liquid waste systems received their state mandated annual training. The University of Arkansas processed 1,000 manure samples to provide producers information necessary to better manage their manure.

Program Response: Impact of Environmental Training for the Livestock Industry

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

Situation

Concentrated poultry production has been targeted as a culprit in the degradation of water quality in many areas of the state. The goal of the Environmental Education for the Arkansas Livestock Industry program was to increase the understanding of poultry producers on environmental issues and how their production practices could influence water quality. By increasing the understanding of poultry producers of how nutrients should be managed after the nutrients leave the production barns, producers can reduce the risk of nutrient or phosphorus runoff to rivers and streams. Also by educating producers on best management practices that can be used in their operation, they can better utilize their resources to enhance overall farm profitability. Providing information on new environmental laws also helps producers understand and, therefore, comply with the regulations.

Stakeholder Input

Poultry companies and producers know that they must be good environmental stewards in order to maintain a viable industry in Arkansas. Therefore, they are interested in understanding what the environmental laws are and what they need to do to be good stewards of the environment.

Overview

Environmental education has been provided through programs and newsletters. In addition, a class was offered through the University of Arkansas Center of Excellence for Poultry Science for industry personnel and water quality technicians who needed a rounded environmental education.

Extension Program Results and Accomplishments

Output Indicators

- 5 Fact sheets, popular press or newsletter articles
- 2 Poultry producers meetings
- 25 Farm visits and one-on-one consultations

Outcome Indicators

1,561 Poultry producers were educated on good environmental practices.

Source of Funds

Smith Lever

Scope of Impact

Dissemination – This program is available to any poultry producer in the state

Scope of Program – This program was presented in Arkansas.

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; Mr. Carroll Guffey; Extension Instructor, 870-460-1549; guffey@uamont.edu

Situation

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. More than half of the state's 18,778,660 acres of forestland is owned by private non-industrial forest landowners. 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. The most critical information needs and issues include:

Forest Management – More than 60 percent of the annual timber harvest comes from NIPF lands and this will likely rise as major corporations divest in their forestland; e.g., several large forest product industries sold large holdings in 2002 and 2003. 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.

Many landowners, especially in north Arkansas and the Delta have limited knowledge about timber marketing, harvesting, planning, and reforestation.

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.

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 Continuing Education

Advisory Board, the Arkansas Forest Resources Center, the US 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 and state level. County agents develop and host their own 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.

Master Tree Farmer – The Southern 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 and Paper Association, state forestry associations, and participating industry representatives. The Master Tree Farmer course in 2003 focused entirely upon managing wildlife habitat and wildlife biology. Eight counties were involved in planning for the 2003 course.

Ozark Foothills RC&D Landowner Education Initiatives – The Ozark Foothills Resource Conservation and Development (RC&D) council, working with the UA Cooperative Extension Service, the Arkansas Forestry Commission, the Natural Resource Conservation Service, the Arkansas Game and Fish Commission, and other state and local agency partners developed a forest landowner education program to meet the educational needs of forest landowners in the 10 county RC&D council area. The overall goal of the project is to encourage productive and sustainable private forest management while maintaining and/or enhancing the economic viability of the forest products industry in the Ozark Foothills council area. Newsletters, workshops, fact sheets, presentations, and developing county level program committees are all components of the 3-year project. One innovative aspect of the project is the support given to the Arkansas Forestry Commission's Stewardship program.

Multi-County Forestry and Wildlife Mini-Grants – Eight county Extension offices received funding through the Arkansas Forest Resource Center to help expand their forest and wildlife educational efforts. Funding was used to purchase materials, tools, and resources for demonstration and research projects, or was used to sponsor landowner education workshops and field days. In many cases, this work would not have been possible without the support of the extra funding.

Extension Program Results and Accomplishments

Output Indicators

10	Number of educational meetings held with forestry industry representatives, State and Federal agency personnel, Arkansas Forestry Association, and UA Cooperative Extension faculty to identify forest landowner education issues and plan education programs.
26	Number of landowner education meetings conducted.
5,819	Number of landowners attending workshops and educational meetings.
32	Number of demonstrations conducted.
1,351	Number of individuals attending demonstrations.
2	Forestry Field days.
295	Number of individuals attending field days.
20,000	Number of landowners identified as part of an 11-county education initiative in partnership with Ozark RC&D council receiving quarterly newsletter.

- 3,400 Number of clientele receiving newsletters about forestry and forest management.
- 100 Number of county agents, state and federal agents, and other natural resource professional receiving the Arkansas Timber Market Report.
- 5 Number of radio stations carrying quarterly Arkansas Timber Market Update.

Outcome Indicators

- 100 Number of landowners indicating an increased knowledge of forest management for wildlife.
- 120 Number of landowners receiving certificates for completing a 7-week short-course.
- \$75,000 Dollars allocated to augment the Arkansas Forestry Commission’s Forest Stewardship Program as part of landowner education project with the Ozark RC&D council.
- 175 Number of landowner requests for Stewardship plans through the Ozark Foothills Forest Landowner Education Program.

Source of Funds

Smith Lever 3b & 3c; USDA Forest Service; CSREES; 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 Tree Farmer short course broadcast via satellite to 7 different sites across the state. Weekly radio program broadcast to 5 stations through the Arkansas Ag. Network.

Counties involved in forest resource education – Counties in the Ozark Foothills Forest Landowner Education Project: Cleburne, Fulton, Independence, Izard, Jackson, Lawrence, Randolph, Sharp, Stone, White, Van Buren. Other counties with forest resource management education programs: Hempstead, De Queen, Drew, Washington, Polk, Pope, Cleveland, Madison, Newton, and Union.

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

Program Response: Sustainable Forest Management

Contact: Tamara Walkingstick, Ph.D., Extension Specialist - Forestry; twalkingstick@uaex.edu; Becky McPeake, Ph.D., Extension Specialist - Wildlife, Environment and Natural Resources; 501-671-2197, rmcpeake@uaex.edu; Mr. Carol Guffey; Extension Instructor, 870-460-1549; guffey@uamont.edu.

Situation

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. Although this is especially true on federal and state controlled lands, other forest landowners are beginning to pay attention to these interrelationships. 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.

In Arkansas, several years of drought, overstocking, poor soils, inadequate management, insect damage, and declining vigor are severely affecting the oak forests of the National Forest system. The U.S. Forest Service estimates more than 300,000 acres are affected by this combination of factors. Research during the summer of 2001 suggests that 70 percent to 80 percent of the oak trees in the National Forest are dead or dying. One of the most significant factors is the red oak borer. Under “normal” circumstances, one or two red oak borer attacks per tree are common. Under the current circumstances, researchers are finding 500 to 600 red oak borer larvae per tree. Although the most severe outbreaks have occurred on National Forest lands, evidence suggests that the red oak borer occurs statewide and could present a threat to private forestlands in the future.

Stakeholder Input

Input comes from the State Forest Stewardship Committee, the Arkansas Forestry Association landowner education committee, the forestry division of the Arkansas Farm Bureau, the Oak Sustainability Working group, and county extension advisory councils.

Overview

Extension specialists have worked with the other forestry professionals to develop guides and programs designed to heighten landowner and public awareness of the importance of protecting water and environmental quality during forest management activities. A workshop was hosted to increase awareness and understanding about and how to measure biodiversity. More workshops will be planned in the future.

An informational tour for professionals, a web site, and a statewide symposium focused on upland oak ecology and sustainability were held. A proceedings paper and management guide are currently being developed. Presentations about oak decline and red oak borer are being delivered to numerous county, Master Gardening, and other meetings. Articles about the red oak borer have been developed for radio and newspaper distribution.

Extension Program Results and Accomplishments

Output Indicators

- 8 Number of UACES landowner education meetings conducted that included information concerning red oak borers.
- 500 Number of forest landowners, industry, and/or agency personnel attending oak sustainability educational programs.
- 8 Number of educational meetings held with forestry industry representatives, State and Federal agency personnel, and UA Cooperative Extension faculty to identify forest landowner education issues and plan education programs.
- 7 Number of landowner education meetings conducted with focus on forest best management practices,
- 151 Number of landowners, natural resource professionals, and other public attending forest best management practices meetings.
- 1 Number of UACES fact sheet developed.
- 3 Number of radio programs conducted with the Arkansas Ag Network.

Outcome Indicators

Symposium proceedings and management guide are currently being developed.

Source of Funds

Smith Lever 3b & 3c, USDA Forest Service, AG&FC; USDA Forest Service, NRCS, Arkansas Forest Resources Center, UA-Fayetteville

Scope of Impact

The programs are available to all interested landowners, individuals, forestry and other natural resource management professionals.

Dissemination – Statewide distribution of red oak borer information via web and Internet to all county offices. Fact sheet about red oak borer developed in collaboration with Pest Management section, and the AFC. The AFC's Best Management Practices Manual distributed to all county offices and a numerous landowner education meeting

Auburn University, Oregon State, and UA CES worked together to host a forest biodiversity workshop for land managers, foresters, and landowners.

Program Response: Urban Forest Management

Contact: Tamara Walkingstick, Ph.D., Extension Specialist - Forestry, 501-671-2346;
Mr. Carroll 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. 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 windstorms, tornadoes and wildfire. Winter storms, tornadoes, wildfire, and poor forest health destroy or damage thousands of urban trees a year. For example, the December 2000 ice storm destroyed or damaged over 68,000 urban trees that cost over \$83,000,000 to remove and to replace. 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.

The past several years of drought and the debris from the ice storms potentially create a tremendous fire hazard, especially for those homes built in the urban-rural interface. Although interface fires do not occur at levels seen in the West, they are becoming an issue in Arkansas at least to fire protection professionals. The public remains largely unaware of the potential danger of building in the interface although homes have been destroyed in the past from wildfire.

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. Few county agents, tree service or landscape professionals are trained in these arenas. County agents received numerous calls about urban tree health, tree appraisal, and tree selection.

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 Wildland-Urban interface fires and Fire Wise Landscaping.

Extension Program Results and Accomplishments

Output Indicators

- 3 Number of educational meetings conducted for different homeowner groups, Master Gardeners, arborists and the public concerning damage to trees and wildlife at the urban-rural interface.
- 8 Number of educational programs held focusing upon urban tree care and urban forestry concepts.
- 300 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.
- 80 Number, county Extension, state agency, and federal government personnel attending educational programs.

Outcome Indicators

- 80 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 available via the web.

Each county with Master Gardening programming responsibility incorporates some level of urban forestry education. Three radio programs conducted concerning insects, ice and wind damage, and planting trees to Arkansas Agriculture Network that are broadcast to at least five stations throughout the state.

Clemson University, University of Georgia, and the International Society of Arboriculture hosted an urban tree health care workshop in cooperation with the UA Cooperative Extension Service.

KEY THEME: INTEGRATED PEST MANAGEMENT

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 almost one million acres in Arkansas this year with an average yield of about 914 pounds of lint per acre, setting a record high yield for the state with production of 1.8 million bales. Arkansas ranks fourth in acreage and production in the United States. Insect losses due to arthropods (insects and mites) are estimated at about 7 to 9 percent each year for a loss of about \$43 million. Management costs to prevent or minimize the impact of these pests are estimated at almost \$129 per acre for Arkansas producers. The cost of control and loss for cotton production in Arkansas is estimated at over \$169 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 Bt 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 less applications being made for control of the bollworm/budworm complex and boll weevil. However, another concern surfacing this year is the increasing tolerance of bollworms to Bt. cotton. In 1996-97 growers averaged just over one application for bollworm control in Bt. cotton, in 2002 growers averaged three 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.

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 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 Bt cotton. 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.

Extension Program Results and Accomplishments

Output Indicators

1,292	Growers, consultants others attending presentations
1,937	Phone calls addressing insect questions from clientele
1,510	Field calls to individual growers
71	Presentations at grower meetings and field days
97	Field demonstrations
17	Counties participating in Cotton IPM Program
13	Field days
90/2,879	Newsletters on Cotton IPM/Audience
23	Insecticide Evaluation Reports
35	Consultant training sessions
5	Major Extension Publications
31	Presentations at Professional Meetings
3	In-service trainings for county agents (in the field)
85	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.

Source of Funds

Smith-Lever 3d IPM funds
Grants (Arkansas Cotton State Support Group of Cotton Inc.)
Gifts (Various Crop Protection Companies)
FSL-CES

Scope of Impact

Dissemination – The Cotton IPM Program is available statewide to all counties through “hands-on” presentations, training, field days, IPM meetings held in six counties, field calls and visits, printed publications, and the Extension web site at www.uaex.edu.

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 \$55,000 distributed in county IPM grants.

Program Response:

Diversified Integrated Pest Management

Contact: Kelly M. Loftin, Extension Entomologist, Livestock, 501-671-2361

Overview

Diversified Integrated Pest Management (D-IPM) includes pest problems not associated with traditional row crop production. D-IPM programs primarily include livestock and urban pest problems. This portion of the overall IPM program is relatively new for Arkansas but has expanded considerably. In 2003, \$12,000 was allocated to fund competitive county diversified IPM programs. Sixteen of 17 county D-IPMs were funded. Four proposals involved fruit, nut and vegetable production (peach, tomato, grape and pecan). Six county funded programs involved livestock (beef cattle, dairy cattle, sheep and goat) pests. Three proposals were urban IPM (community fire ant abatement demonstrations and mole control). One proposal was both urban and rural in nature involving new monitoring and application methods for Texarkana’s black fly abatement program. The remaining two dealt with pasture weed management and IPM of varroa mites in honeybee production. County submissions for D-IPM in 2004 increased to 23 with 22 deemed fundable.

The horn fly, *Haematobia irritans L.* is the major pest species of beef cattle in the south. 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, which results in lesions forming along the belly.

Horn flies can produce a new generation as often as 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 as a method of countering insecticide resistance. An alternative method of control using a walk through mechanical trap (no insecticide) is in its second year of evaluation and comparison to conventional methods such as ear tags. Results have shown both grower acceptance and efficacy. Horn fly numbers from herds using the trap were 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 to 200 horn flies per animal. This evaluation will be repeated again in 2004.

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 the fly breeding on most dairy farms occurs in calf housing and cattle resting areas where manure and bedding materials can accumulate for months before clean-out. 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, which follow predictable seasonal patterns in the northeastern areas of the U.S. Producers often try to control the resulting fly infestations by making frequent insecticide applications, but this approach aggravates insecticide resistance problems and may limit the development of robust populations of parasitoids and predators. Interest in biological control agents for the suppression of flies on dairies is growing. Aware of the increasing cost of insecticides, decreasing availability of new chemicals and the development of insecticide resistance in resident fly populations, farmers recognize the cost effectiveness of integrated pest management strategies.

As a result of the success of the Dairy Filth Fly IPM program (SARE and D-IPM sponsored program) in Van Buren and Searcy Counties, Washington County (a major dairy producing county) initiated a similar program. This applied research and education

program compares the cost and effectiveness of manure management along with using parasitoids against house and stable flies versus conventional insecticide control coupled with manure management. Additionally, walk through horn fly, *Haematobia irritans*, traps and population monitoring were incorporated into the IPM system. Preliminary results from 2003 from Washington, Searcy and Van Buren Counties have shown that this method of horn fly control is accepted by dairymen, used by the cattle and helps keep horn fly numbers below economic threshold.

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 tremendous livestock losses including death occur. Because of severe economic losses to the cattle industry and the International Paper Mill (gnats in paper reduce quality) Miller County, Arkansas and Bowie County, Texas are involved in a long-term area 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 time to treat by monitoring the population of immature buffalo gnats developing in the river. Through support from the D-IPM program, larval sampling for buffalo gnats has been improved by standardizing the collection methods through use of artificial substrates. Both immature sampling and actual treatments now employ use of GPS to determine optimal sampling and treatment sites along the river. In 2003 adult trapping systems using carbon dioxide and octanol were used to better determine the buffalo gnat dispersal from breeding sites. Adult trapping along with larval sampling will continue in 2004.

2003 was the third year of a grape insect pest management program using a pheromone disruption technology for grape berry moth and mass trapping of grape root borers. Results indicate savings and reduction in the number of pesticide applications. Work in 2003 also involved validation of modeling for black rot infection. Using weather data collected by the WatchDog weather system and the Spotts model black rot, downy mildew and botrytis infections were predicted during 2003. The county agent involved has taken extensive data on the project, and the producers have been pleased with the results.

Crawford County initiated a D-IPM grant to manage filth flies associated with alternative livestock (goats and sheep). This program included a fly surveillance and identification program at 8 farms to determine species composition and abundance. Additional focus included comparing the release of commercial parasitoid wasps versus conventional insecticide treatment and fly baiting in terms of efficacy and costs. The youth component of this project involved 7 youth (4 4-H record books and 2 science fair projects). This project will be repeated in 2004 with the addition of determining house fly parasitism by parasitic wasps. Cooperators were pleased with initial results and enthusiastic that CES was becoming involved in answering their concerns.

Several insecticide impregnated ear tag trials were conducted by county agriculture agents in various locations. Most of the county agents involved are using data from these

demonstrations in county educational meetings such as county cattlemen's association meetings. Support for these demonstrations was provided in the form of insecticide ear tags from the animal health industry.

Two applied research projects concerning red imported fire ants were conducted during 2003. One of the projects was a five-insecticide treatment trial. This trial evaluated three experimental products against fipronil as broadcast treatments against red imported fire ants and lasted approximately six months. The other trial was a nine-treatment trial evaluating contact insecticides as individual mound treatments against red imported fire ants. Its purpose was to compare new experimental formulations of cyfluthrin and beta-cyfluthrin to several products currently labeled for red imported fire ant management. Both trials involved assistance from county agents. Results will be presented at the 2004 IFA Conference. These trials received industry support in the form of unrestricted gifts of approximately \$18,000.

The first Livestock Pest In-Service training to be held in several years occurred in June 2003. It included pest and management information of major dairy, horse and beef cattle pests, arthropod borne diseases of horses, weed and pest management of pastures and internal parasites of cattle and horses. Presenters were Extension and research faculty from Pest Management and Animal Science within the University of Arkansas System. The in-service was attended by 21 county agents, 5 Extension specialists and 2 research faculty. A similar in-service has been approved for 2004; to date 26 have signed up for the in-service. The emphasis for 2004 will include poultry and alternative livestock pests.

Stakeholder Input

Stakeholder input (from ranchers, farmers, master gardeners, neighborhood organizations and county Extension councils) is often the primary driving force behind county agriculture agents applying for diversified IPM (D-IPM) grants to address specific pest problems. Client feed back from calls and office visits is also a driving influence on D-IPM program initiation.

Extension Program Results and Accomplishments

Output Indicators

- 16 Counties participated in the D-IPM program.
- 17 Field days/Farm tours (includes 5 urban).
- 917 Producers attended D-IPM training meetings (includes 189 urban).
- 19 Newspaper articles (includes 10 urban).
- 10 Newsletters addressing D-IPM.
- 61 D-IPM demonstrations (includes 23 urban).
- 43 Miles of Sulfur River monitored for immature black flies on 11 sampling dates.
- 9 Youth directly involved in D-IPM projects (science fair projects and 4-H record books).
- 6 Poster presentations (Regional, Local and National Professional meetings).
- 128 Livestock and dairy producers monitor pest populations prior to initiating control and employ manure management practices to lessen impact of fly pests.
- 1 Program evaluation survey conducted.

Program Impact

- 12 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.
- 9 Additional beef producers have adapted horn fly surveillance as part of their horn fly control program.
- 6 Fruit producers adopted new insect management technology.
 - Because demonstrations have show Amelia tomato variety has comparable yield and quality to the standard variety, many tomato producers in southern Arkansas will plant Amelia (resistant to TSWV) instead of non-resistant Mountain spring (standard).
- 1 Buffalo gnat management program (area management). Protects livestock in Miller and Bowie Counties (Texas) and protects paper mill.
- 1 new neighborhood fire ant abatement program established.
- 3 Pasture weed management projects.

- In the first year of a varroa mite surveillance program, three commercial beekeepers in NE Arkansas saved about \$18,000 in miticide by reducing mite treatments by one. Since varroa mites have shown some resistance to labeled miticide treatments this project may help delay the onset of miticide resistance.
- Black fly abatement program (area two state program) has been greatly enhanced by improved the surveillance system and use of GPS technology for more accurate insecticide treatment to the river.

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.

Scope of Program – Sixteen counties have implemented this program and include White, Searcy, Van Buren, Franklin, Miller, Bradley, Cleveland, Craighead, Crawford, Drew, Lafayette, Lincoln, Polk, Sebastian, Washington, and Yell Counties. Danny Griffin in Searcy County, Mike Andrews in Van Buren County, Doug Petty in Miller County, John Gavin in Bradley County, Carey Wall in Crawford County and Sherry Wesson in White County have implemented very successful programs and are excellent contacts for program development consultation.

Programs of Excellence

Success Story – Craighead County. A majority of beekeepers treat for varroa mites twice yearly without regard to treatment thresholds. As a result producers may make needless insecticide applications and resistance to two miticides registered to control varroa mites has been noted. This D-IPM project involved using sticky boards to monitor mite abundance. If low levels of mites were found, hives are not treated with a miticide. As a result of this D-IPM project three of the four beekeepers cooperating in the project eliminated one miticide treatment resulting in saving of approximately \$18,000. Results from this project were presented at the Northeast Arkansas Beekeepers Association. Beekeepers belonging to this association represent about 65 percent of all beehives in Arkansas and produced over \$3,000,000.00 in honey and wax in 2002.

Success Story – Bradley County. Southeast Arkansas' tomato industry consists of 700 to 900 acres of fresh market tomatoes with an annual economic impact of \$8 to \$10 million. Tomato Spotted Wilt Virus (TSWV) caused substantial losses to southeast Arkansas in 1996 when 40 percent to 80 percent of the crop was damaged. Several producers did not recover from their losses and went out of business. Crop losses also occurred in 1998, 2000, and 2001, with losses ranging from 30 percent to 80 percent. Most producers plant Mountain Spring tomatoes despite their low tolerance to TSWV

because of their yield and quality. In 2003, a D-IPM project was initiated to evaluate TSWV resistant varieties for TSWV tolerance, yield and quality. Eleven breeding lines and two TSWV resistant varieties were compared to Mountain Spring. Amelia, a TSWV variety, demonstrated comparable quality and yield to Mountain Spring. As a result of this project and getting the information out producers in 2004 will plant about half their crop in Amelia to ensure a crop in case TSWV is a problem in 2003. Results from this project were shared with tomato producers in Bradley, Drew, Ashley and Cleveland Counties through local producer meeting, and *Southeast Arkansas Tomato News*. Results from this project will be presented in the 2004 National County Agent Association Meeting and the 2004 Southern Region American Horticulture Annual Meeting. In addition results have been posted on Dr. Randy Gardener's (a respected tomato breeder at NCSU) web site.

Success Story – Crawford County. Alternative livestock (goats and sheep) operations are becoming numerous in Arkansas in areas where such operations were once very rare. As a result educational outreach to these producers is somewhat behind other more traditional livestock (cattle and poultry). Crawford County's Livestock Ag agent initiated a D-IPM program to manage filth flies associated with alternative livestock (goats and sheep). This program included a fly surveillance and identification program at eight farms to determine species composition and abundance. Additional focus included comparing the release of commercial parasitoid wasps versus conventional insecticide treatment and fly baiting in terms of efficacy and costs. In 2004, percentage of house fly parasitism of control farms versus farms using parasitic wasps will be added. Results from 2003 were given at the Arkansas State Sheep Council Annual meeting and will be published in the Arkansas State Sheep Council Newsletter and spring edition of the Arkansas Goat Producers Newsletter. The county agriculture agent is also giving a poster presentation at the National Association of County Agriculture Agents. Cooperators were pleased with initial results and enthusiastic that CES was becoming involved in answering their concerns

The youth component of this project was the most successful of 2003 D-IPM projects. Seven youth used this project in either science fairs or as 4-H record book projects. Both science fair participants used fly count data in the zoology section. One science fair project qualified for the Regional Science Fair and the other received an Honorable Mention. Entomology activities associated with the project were used by 5 youth for 4-H Record Books.

Program Response: Fire Ant Management

Contact: Donna Shanklin, Pest Management Section, 870/460-1893, shanklin@umont.edu; Kelly Loftin, Pest Management Section, 501/671-2361, kloftin@uaex.edu; John Hopkins, Pest Management Section, 501/671-2000, jhopkins@uaex.edu

Situation

Fire ants cost Arkansans money; 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. There are also medical costs associated with the sting of the fire ant. The transportation industry is impacted due to the increased erosion due to fire ant trails across gravel roads. The incorrect use of pesticides and home remedies for fire ant management can contaminate surface and ground water that can be a great environmental cost.

Our 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.

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 is also a 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

Extension's role to educate Arkansans is vital to the development of a fire ant management program. An educated Arkansan knows that eradication of this pest is not possible, and becomes receptive to methods used in the management of this pest. The red imported fire ant (*Solenopsis invicta*), is a pest of both rural and urban Arkansans. It impacts the urban dweller in Little Rock with its painful sting and the hay producer in south Arkansas due to the mounds it builds in the hay meadow. To date, the red imported fire ant can be found in well over 40 Arkansas counties. Thirty-one Arkansas counties are in the Federal Fire Ant 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 to non-infested counties adjacent to quarantined counties.

Education is critical, because the management of fire ants is not simple. The potential misuse of pesticides and other toxins used by individuals trying to control fire ants, the potential health hazards of the ants, and economic significance of this pest need to be understood by an individual or community trying to control this pest. The educational tools being used include videos, public service announcements, the world-wide-web,

public presentations, public demonstrations, and printed material. In the past several years these tools have been used successfully in many Arkansas counties. Many of the success stories relating to the fire ant education effort can be found in many of the newly infested areas, but also can be found in areas known to have fire ants for over 20 years.

The distribution of fire ant education materials continues throughout all the fire ant infested areas through the county offices. However, since 1997, many of the publications can be accessed via the world-wide-web on the Red Imported Fire Ant Home Page through the main web site at www.uaex.edu. A collaborative effort within the fire ant infested region resulted in the publication "Fire Ant Management in Urban Areas" and "Fire Ant Management in Agriculture." These publications were printed in Arkansas, and have been very well received.

"The Ant Underground," a youth-oriented cd-rom is completed after almost five years of work. "Hands-on" is the educational method of choice today, and the cd-rom was developed to do that. The program covers the history, biology and management of fire ants. Teacher lesson plans are included in the project.

Fire ant control demonstrations were conducted in a majority of 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. Five agents attended the National Imported Fire Ant Research Conference in Palm Springs, California, to present results of their work.

Cooperative research projects with pesticide manufacturing companies developing new fire ant management products is enabling Arkansas to become familiar with several products prior to their potential labeling as a 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.

The release of two biological control agents in 2002 increased Arkansans awareness of fire ant management options on a state and federal level. Cooperatively with USDA-ARS and USDA-PPQ the phorid fly *Psuedacteon tricuspis* and the *microsporidia Thelohania* were released in three counties. The fly was released in Pike and Bradley Counties, while the *microsporidia* was released in Miller County. Agents from several counties were involved in the release process. Learning about the release process and actually participating in the releases increased their confidence. In 2003, the fly was found to have survived in Pike County, but no flies were discovered in Bradley County. Approximately one-quarter of a mile away from the Pike County release site flies have been found. A second release of the fly was implemented in late September 2003 at the Bradley County site. We continue to be hopeful about the success of the release of the biological control organisms.

Public meetings throughout the state and fire ant educational displays at public venues such as county fairs are important to reaching people also. People need to see and hear first hand about fire ants and the methods recommended to control them. The Extension Service's agents at the county level are aware of the fire ant problem, and are comfortable in the leadership role in educating their clientele of the options available in managing for this pest.

An emphasis area of our educational effort is fire ant abatement. The Texarkana program in Miller County has over 500 homes and the program is in its eleventh year of existence. Arkansas City in Desha County is a program established and run by the residents of the community. The city government has really "bought into" the fire ant abatement program and the citizens like the results of the program. Rebecca Bock Thomas, Grant County Agent - Agriculture sites the program as an example of Extension truly at work. Extension presented the program idea, the citizenry took ownership of the program, and the program continues with Extension personnel involved in an advisory capacity only. There are other more neighborhood-oriented programs throughout the state. There are fire ant abatement programs in Faulkner, Grant, and Nevada Counties.

Extension Program Results and Accomplishments

Output Indicators

- 15 Number of educational publications (multi-state) and materials produced including videos, CD-ROMs, slide sets necessary to conduct the statewide fire ant educational program.
- 200 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.
- 17 Number of fire ant educational programs in public schools.
- 26 Number of fire ant abatement demonstrations in residential, agricultural, and public industrial areas.

12 Number of TV, radio, and Internet programs to increase fire ant awareness.

8,500 Number of people attending educational meetings, programs, and seminars.

Outcome Indicators

The people 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, and Prescott prove that once people apply many of the management options introduced to them by county agents and other Extension educated people that 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

State appropriation

Scope of Impact

Dissemination – This program is available to all the counties in the state. However, an emphasis is made on those counties within the Federal Fire Ant Quarantine area. Materials 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

Fire Ant Research and Education – New IPM Tool Resides in Pike County

General Program Information – Integrated Pest Management is a system of management that promotes the use of more than one method to combat a pest. In the fight against fire ants, another method has been added to the management options to manage for them – biological control. A phorid fly, *Pseudacteon tricuspis*, was released in Spring 2002, and has been found one-quarter of a mile from its release site in Pike County. Extension entomologists are hopeful that this organism will reduce the impact of the ant on Arkansans. The fly doesn't directly kill that many ants, but its presence reduces the ant's activities, and it is hoped increases the success of native ants in their battle for food and space.

Names of Counties or Locations Involved – Pike, Miller, Bradley, and Clark

CES Section Contact Person – Donna Shanklin, Extension Entomologist - Fire Ants,
870-460-1893, shanklin@uamont.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 optimum 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 come 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

Mr. Mark Trent (M.S., Oklahoma State University) and Ms. Kimberly Hurst (B.S., Arkansas State University) joined our project this 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 2003 Soybean Cultivar Performance Tests.

Screens Conducted in 2003

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 2002 screen) conducted by Cliff Coker at Dermott, AR.

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 UAF.

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 2004 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, 2004.

Outcome Indicators

- Soybean producers statewide are utilizing our information in cultivar selection for the 2004 season. Soybean industry personnel are also using this information to update or supplement the information they supply to the public relative to specific soybean cultivars they market.
- 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: Management of Stink Bug in Cotton

Contact: 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 or 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 or Gus Lorenz, Ph.D. Associate Professor/Extension Entomologist/IPM Coordinator, Cooperative Extension Service, LRSO, Little Rock, AR, 501-671-2191, glorenz@uaex.edu

Situation

Arkansas agriculture faces many issues related to insect management that have the potential to greatly impact profitability for many producers. One of the most significant issues concerns shifts in insect pest status. The stink bug complex is an excellent example of a pest group that has shifted in importance and continues to draw attention. Stink bug management has increased in importance in many major crops in Arkansas, including cotton, soybeans and rice. Stink bugs are often associated with emerging pests following eradication of the boll weevil in cotton. Economic thresholds for stink bugs need to be updated in changing production systems and producers educated on biology and control. Many important species have developed tolerance to commonly used insecticides and availability of alternative chemistries is important to the future management of stink bugs.

Stakeholder Input

Producers, county agents and Extension specialists recognize that this issue will continue to be of great importance as an educational program.

Overview

Thresholds – In cotton with limited broad-spectrum insecticide use for tobacco budworm, *Heliothis virescens*, and cotton bollworm, *Helicoverpa zea*, (i.e., Bt cotton)

and in areas with significantly reduced insecticide use for control of boll weevil, *Anthonomus grandis*, severe infestations of stink bugs can develop and cause considerable losses to yield and fiber quality. High amounts of stink bug damage to developing bolls can result in yield losses exceeding hundreds of pounds per acre and price reductions due to inferior lint quality. Further development and validation of monitoring methods, thresholds and control strategies for stink bugs in Arkansas/Mid-South cotton will facilitate the implementation of recommendations concerning their management in the future.

Insecticide Efficacy – Limited or reduced broad-spectrum insecticide use for major pests of cotton such as tobacco budworm, *Heliothis virescens*, cotton bollworm, *Helicoverpa zea*, and boll weevil, *Anthonomus grandis*, promotes infestations of secondary pests such as stink bugs. Typically, populations of stink bugs are controlled coincidentally with insecticides applied for major pests, but in cotton with reduced insecticide usage (i.e., Bt cotton and weevil-eradicated areas), stink bugs can develop and cause considerable losses to yield and fiber quality. In addition to the need for development and validation of thresholds for stink bug control in Arkansas cotton following BWEP, we continually need information concerning the efficacy of insecticides currently and potentially available for cotton insect control.

In many areas of the Cotton Belt, successful eradication of the boll weevil, expanding use of transgenic Bt cotton and advances in lepidopteran-specific insecticide chemistry have all contributed to a changing pest complex in cotton. As a result of these events, use of broad-spectrum insecticides has declined considerably and provided the opportunity for secondary pests to avoid coincidental control. Stink bugs have emerged as an extremely important group, and monitoring and management techniques have been evolving to deal with this problem. To aid in this effort, information is needed concerning the extent of specificity of emerging materials designed for control of worm pests. Data demonstrating the efficacy of new cotton insecticides on stink bugs have been generated, but additional data are needed. Also, data are needed that evaluate commonly used broad-spectrum insecticides for differences in stink bug control, especially between species.

Extension Program Results and Accomplishments

Output Indicators

- 1,500 Growers, consultants and other clientele attending meetings where information was presented.
- 150 Phone calls addressing questions from clientele.
- 75 Field calls to individual growers.
- 35 Presentations at grower meetings and field days.
- 10 Field demonstrations where stink bug management was involved.

- 15 Popular press articles or interviews released and utilized by numerous outlets.
- 10 Insecticide evaluation reports.
- 10 Consultant training sessions.
- 2 Extension publications on stink bug identification – FSA7058 and MP438.
- 7 Presentations at professional meetings.
- 3 In-service trainings for county agents.
- 75 Number attending Cotton Insect Scout Schools.
- 15 Number of educational meetings held with industry representatives, state and federal agency personnel and University of Arkansas research faculty to identify and discuss stink bug management issues.
- 5 Number of training meetings conducted for agents and producers.

Outcome Indicators

- Written recommendations produced concerning insecticide control of stink bugs in cotton in MP144.

Source of Funds

Greene, J. K. 2003. Evaluation of insecticides for control of stink bugs. Cotton Incorporated – CORE-funded project. \$8,000. Principal Investigator.

Greene, J. K., D. R. Johnson, J. D. Hopkins, G. Lorenz and W. Robertson. 2003. Validation of Boll Injury Thresholds for Stink Bugs in Cotton. Cotton Incorporated – state-supported project. \$15,500 annually for 3 years.

Efforts for education on management of stink bugs in cotton were funded by grants from the Arkansas Cotton Research and Promotion Board, gifts from various crop protection companies and FSL-CES budgets.

Scope of Impact

Dissemination – Statewide availability of program to interested counties. Insect management information is available through publications and presentations at county meetings.

Scope of Program – Educational meetings were held in most cotton producing counties including Chicot, Ashley, Drew, Desha, Lonoke, Pulaski, Lee, Lincoln and St. Francis. Some producers in these counties implemented the management plan during 2003, and many more will adopt it for 2004, following additional trainings and meetings.

Program Response: Management of Stink Bug in Rice

Contact: Glenn Studebaker, Assistant Professor & Extension Entomologist, 870-526-2199, Pest Management, gstudebaker@uaex.edu

Situation

The occurrence and population levels of the rice stink bug and other stink bugs have increased throughout the state over the last 2 to 3 years. Many factors may contribute to make environmental conditions favorable to population increases. These may include thriving populations of grass hosts growing wild along roadsides and field margins, incomplete control of grass hosts such as barnyard grass, broadleaf signalgrass, and several others within rice fields, and a possible decline in natural control agents such as parasites and predators. The rice stink bug has several known natural enemies including the egg parasite, *Telenomus podisi*, that has a major role in control and two parasitic flies that have a minor role in control. Insecticides in rice will certainly disrupt the role of these biological agents in control of the rice stink bug. The role of insecticides in outbreaks of rice stink bug may be difficult to verify. However, the parasite levels in fields may be used as an indicator of insecticide impact on beneficial insects in rice fields. A survey of parasitism levels in different rice production areas was conducted to determine occurrence and density of the parasite.

Rice is grown on 1.4 million acres in Arkansas each year with an average yield of 6,000 pounds per acre. Farm value of this production varies from \$500,000,000 to \$750,000,000 per year depending on market prices. The control of rice stink bugs has created many questions this past year as a result of the losses to stink bug in 2001. Losses as a result of rice stink bug damage alone in 2001 were estimated to be approximately \$17 per acre or roughly 23.8 million dollars. Losses in years following 2001 have been significantly reduced because of increased awareness of growers as a result of educational efforts by University of Arkansas personnel on insect management in rice.

Stakeholder Input

Industry, producers, county agents and Extension specialists recognized the importance of rice stink bug management and provided guidance on approaches to management of rice stink bug. During the summer of 2001, the rice stink bug problem was pointed out by county agents, specialists and consultants. Additional attention was drawn to the rice stink bug problem when industry representatives from Riceland, Producers, Busch and others expressed concerns to the Division of Agriculture about the low quality of the crop as a result of rice stink bug damage. As a result, a plan was devised to educate and make the producers of Arkansas aware of the need of scouting and proper management of rice stink bug in rice.

Overview

Rice stink bugs continue to be a threat to the rice industry and infest rice in differing degrees each year. The infestations are of concern to rice producers because of the obvious expense and loss of revenue due to low quality created by rice stink bug feeding on kernels of rice in the field. The problem must be addressed by grower understanding of the biology and control of the insect. A thorough understanding of scouting, monitoring techniques and insecticide performance are required for growers to manage rice stink bug. In addition, an extensive Extension and research program designed to develop biological and cultural controls of rice stink bugs is necessary in addition to traditional insecticide control methods.

Extension Program Results and Accomplishments

Output Indicators

- 2,570 Growers, consultants, and other clientele attended meeting where information was presented.
- 3,000 Phone calls were accepted by personnel.
- Numerous field visits were made to address rice stink bug problems.
- 6 Field demonstrations on stink bug control involving 12 agents and consultants.
- 25 Counties participated in Rice IPM programs.
- Popular press articles were released and utilized by numerous outlets.

Program Impact

- Rice stink bug damage was maintained at a low level and no damage noted in 2003 compared to a 23.8 million dollar loss in 2001.
- Insecticide costs were based on scouting and rice stink bug populations.
- Reduced rates of insecticides will be used in the future as a result of demonstrations.

Source of Funds

Efforts for education on rice stink bugs were funded by grants from the Arkansas Rice Research and Promotion Board, gifts from various crop protection companies and FSL-CES budgets.

Scope of Impact

Dissemination – The rice insect situation in 2003 was not as intense as the previous years. Rice was infested by rice stink bug but not to the extent as seen in 2001 but equal to the previous year. Overall, the rice stink bug educational effort involved many county meetings, several news articles and approximately 6 county stink bug management demonstrations. Many producers were interested in purchasing sweep nets for sampling rice stink bugs. County Extension Agents trained producers and stressed rice stink bugs as a problem. A fact sheet was developed on rice stink bug that was distributed to agents and placed on the Extension web site. A weekly newsletter also included several articles on rice stink bug that stressed control measures and sampling. In addition, over 180 consultants and agri-business personnel were trained at the annual consultants training meeting.

The county demonstrations resulted in a significant shift to using Karate, Fury and Methyl Parathion as the insecticide. The best performing insecticides were combinations of Karate and Fury with Methyl Parathion. The stink bug demonstrations have indicated a reduced effect of Karate and Fury on overall populations especially adult stink bug.

Scope of Program – Educational meetings were in all rice producing counties as a part of the rice education effort. Public awareness newsletters, popular press articles and facts sheets were developed to stress rice stink bug management for 2003. In addition, 6 counties conducted rice stink bug management demonstrations. Rice IPM programs are conducted in 25 Arkansas counties.

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 re-certified by attending educational programs on pesticide safety, integrated pest management, endangered species protection, groundwater protection, the Worker Protection Standard, and other appropriate topics.

Federal requirements stipulate that multi-state educational activities should be implemented for various Extension programs. Arkansas, Louisiana, and Mississippi have chosen Pesticide Applicator Training as multi-state cooperative effort. .

Stakeholder Input

Using a discussion and priority setting process, the County Extension Councils in nine Arkansas counties have identified this issue as a major emphasis for their long-range education program.

In order to produce food and fiber and protect the environment and human health, safe use of pesticides is essential

Overview

Initial certification and re-certification 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 for both groups last approximately 3 to 4 hours. The sessions include information on spray drift management, pesticide labeling, safety precautions, first aid, protective gear, storage, handling, disposal, integrated pest management, environmental concerns, application equipment and calibration, groundwater protection, heat stress management, pesticide record keeping, and nitrogen management.

There are approximately 20,000 private applicators and 3,600 commercial/non-commercial applicators in Arkansas that are certified/re-certified via the Extension Service's Pesticide Applicator Training Program.

Extension Program Results and Accomplishments

Output Indicators

- 9 Number of educational publications, slide sets, study guides and other materials produced as needed to conduct the program.
- 110 Number of educational meetings held to certify or re-certify commercial and private applicators.
- 5,974 Number of individuals attending pesticide educational programs.

Outcome Indicators

- 1,589 Number of commercial applicators certified and re-certified.
- 4,385 Number of private applicators certified and re-certified.

Source of Funds

Smith Lever 3b and 3c

Scope of Impact

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

Program Adoption – All counties in the state.

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 1.455 million acres of rice, 570,000 acres of wheat, 945,000 acres of cotton, and 2.89 million acres of soybeans harvested in 2003, 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
- 460 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 2002-2003.
- 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 is available on the University of Arkansas Extension web site. Relevant publications in 2003 included MP154, *Plant Disease Control Product Guide for Arkansas*, FSA7530, *Black Spot of Rose*, FSA-7525, *Daylily Rust*, FSA-7527, *Rhizoctonia Large Patch Disease of Zoysiagrass and Bermudagrass*, FSA-7529, and *Control Root Knot Nematodes in Your Garden*. More emphasis on ornamentals and other horticulture crops is planned for 2004. Handouts prepared relating to sample collection and plant disease references for all major commodity crops in Arkansas. Over 150 digital images of plant disorders have been received into the clinic for 2003. 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 Application

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.

Overview

Over 1,000 aircraft pattern analyses were performed on more than 150 Arkansas aircraft for both spray and granular type applications at 12 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 led the way with a section 24C label for aerial application of Command7 herbicide to rice. Aircraft in the 250,000 acres that were in this program were calibrated and certified at Extension workshops. No off target or performance resulted from the applications of Command7.

Drift reduction field demonstrations were conducted at 7 aerial application workshops this year to help applicators determine the effects of several different operating parameters. 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 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.

Application guidelines were developed and presented as an ongoing part of pesticide license re-certification for all types of commercial and private applicators. Arkansas engineers provided leadership during the planning and conducting of a nationwide Drift Educators * PAT conference held in Sacramento, California.

Arkansas engineers have provided leadership with the “National Drift Minimization Coalition” and served as the technology co-chair for that group. 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. Much of the application technology session being presented in this program this year came from Arkansas Extension materials. This program was presented to 487 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 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. Arkansas engineers completed an EPA grant project to design and build two on-farm pesticide rinse and containment facilities in Arkansas. The plans from these facilities will be used to develop a national training guide for other programs.

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.
- 33 Educational meetings with applicators and producers on chemical application technology.

Outcome Indicators

- 1,000 Aircraft calibrations.
- 30 Producer and operator facilities under construction using methods and techniques illustrated in demonstration projects.

Source of Funds

FSL, user fees \$150/aircraft/year, EPA 319h grant.

Scope of Impact

Dissemination and Scope of Program – These are statewide activities. Several participants come from surrounding states – Mississippi, Louisiana, Texas, Missouri, Tennessee and Oklahoma.

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 produces the most rice of any 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 methods have encouraged heavier applications of nitrogen fertilizer and pesticides to achieve the highest yield. However, research has shown that the most profitable rice production occurs when using 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 was initiated in 1998 to encourage use of integrated pest management principles 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.

Stakeholder Input

Input is solicited from county agents, County Extension Councils, consultants and additional 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 the IPM program, everything from soil testing for improved plant health to reduced-rate fungicide demonstrations. From the beginning, many rice producers have experienced “hands-on” Rice IPM education 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 and mailing, etc.

Extension Program Results and Accomplishments

Output Indicators

22	Number of Rice IPM County Programs.
34	Grower meetings in Arkansas featuring Rice IPM.
626,300	Rice production acres represented by stakeholders at education meetings.
2179	Stakeholders attending meetings/field days with IPM featured.
269	Field demonstrations funded by the Rice IPM program.
16	Field meetings, field days and workshops featuring Rice IPM.
97	Crop newsletters featuring Rice IPM.
5,907	Stakeholders receiving newsletters featuring Rice IPM.
835,250	Rice production acres represented by stakeholders receiving newsletters.
181	Popular press articles, radio spots and interviews featuring Rice IPM.
513,864	Rice acres soil-sampled in Rice IPM counties.
624,572	Rice DD50 acres in Rice IPM counties
1,580	Rice acres enrolled in 4-H Rice for Ducks program in Rice IPM counties.
1,078,540	Rice acres harvested in Rice IPM Counties
1,434,000	Total rice acres harvested in Arkansas during 2003
41	Percent of rice acres treated in 2003 with fungicides
31	Percent of rice acres treated in 2003 with insecticides
100	Percent of rice acres treated in 2003 with herbicides

Outcome Indicators

- Number of counties participating in the Rice IPM program average 20-25 each year.
- Rice DD50 and soil sampling acreage have increased.
- Education efforts leveled off in 2003.
- Total acres treated with fungicides increased in 2003, however rate per acre remained the same or fell in certain areas.

- Total acres treated with insecticides increased in 2003.
- Use of flood depth to control rice blast increased in 2003 (lowered fungicide use).

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 apply for grant funds and implement 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 *Weed Control Handbook*, MP144 *Insect Control Handbook*, MP154 *Plant Disease Control Product Guide for Arkansas*, MP192 *Rice Production Handbook*, and *Pest Management Newsletter* (University of Arkansas Cooperative Extension Service Pest Management Section, Little Rock, 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 109,820,000 bushels on 2.89 million acres, our largest crop in recent history. This year's 2.89 million acres was slightly below the trend of the five years, as the soybean acreage in the state averaged 3.1 million acres during 1999-2003. However, this year's average yield of 38 bushels per acre is now the highest recorded average yield, and bumps Arkansas' ranking above the 2002 level of ninth largest soybean producing state in the U.S. 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 ai of various herbicides are applied to every acre of soybean production in the state each year, and this number has decreased 5 pounds ai 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 17 top soybean counties, representing 61.3 percent of Arkansas soybean acreage with 85 percent of this acreage implementing IPM practices.
- Soybean meetings featuring IPM totaled 58 during 2003.
- Meeting attendance was 1,371 soybean producers, about 38 percent of Arkansas soybean farmers of which 85 percent implement IPM practices.

- Participating county agents conducted 112 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 (7).
 - Multiple management approaches to weed control in soybean (21).
 - Use of lower rates of seed treatments to evaluate seedling disease management.
 - Appropriate use of fungicides to minimize foliar disease (10).
 - Use of disease resistance in soybean production in Arkansas (35).
 - Nematode sampling to identify and improve nematode management in problem fields (9).
 - Reduced use of pesticides through scouting and decision thresholds (21).
 - Monitoring soybean leaf beetles and stink bugs in soybean (16).

Program Impact

- Participating counties held 47 workshops or field tours featuring IPM, with 1,475 attendees.
- County participants wrote or distributed 95 newsletters on soybean and soybean IPM, with 4,063 growers receiving each of them.
- Soybean IPM topics were featured in 132 popular press items among the participating counties, including radio and TV programs and newspaper articles.
- Participating counties reported that only 8 percent of the soybean producers use private consultants on 8 percent of the acreage.
- Participating counties reported pesticides use on their acreage as 50 percent received a seed treatment, 14 percent received a foliar fungicide, 50 percent received an insecticide and 100 percent of their acreage received 1.4 applications of an 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 4,461 soybean soil samples collected and analyzed by the University of Arkansas, representing 179,336 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 reported at least 2,835 private and 1,044 commercial pesticide applicators received IPM training.
- Participating counties also reported using the pest management tools a) nematode sampling: 115 fields covering 7,910 acres and b) soybean variety selection computer program – SOYVA: 1,401 fields for 154,136 acres. This program provides better variety choices based on nematode and disease problems as well as herbicide tolerance.

Source of Funds

Smith-Lever 3d IPM funds, grants (Arkansas Soybean Promotion Board), gifts (various crop protection companies), 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 17 counties during 2003. Soybean IPM county participation has held steady at 17 counties with \$15,000 distributed in county IPM grants.

Program Response:

Turf, Rangeland and Pasture Waste Management

Contact: John Boyd, Weed Science Specialist, 479-575-6244, 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 fascicularis*), 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.

Program Impact

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.

Program Response: Urban Pest Management Program

Contact: John D. Hopkins, Extension Entomologist, Urban, 501-671-2232, Pest Management

Situation

The scope of Urban Integrated Pest Management in Arkansas is very diverse, involving insect pests that can directly impact all citizens of the state. These insect pests pose both direct and indirect threats to human health and well being, as well as having the potential to adversely impact property values and the quality of life of all Arkansans.

The Urban Integrated Pest Management program focuses on education of homeowners, agriculturists, youth, the professional pest control industry, Pest Control Section personnel of the Arkansas State Plant Board, and personnel of the Arkansas Department of Health in the area of Urban Pest 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.

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” has been identified and work to address this problem has been undertaken in cooperation with the Arkansas State Plant Board.

West Nile Virus (WNV) is a mosquito borne arbovirus that was first recognized in the western hemisphere during the summer of 1999 (New York). By the end of 2001, WNV had been detected in the bird population in Arkansas through statewide surveillance measures. However, no human cases of WNV were recorded in 2001. During 2002, WNV became epidemic in the United States resulting in the largest arboviral meningoencephalitis epidemic ever documented in the western hemisphere. The number of laboratory positive human cases of WNV that occurred in Arkansas during 2002 reached 43 with 5 deaths recorded. In 2003, WNV positive birds were detected from 48 of Arkansas’ 75 counties, indicating that the disease still poses a health threat to the state. The greatest financial investment for most Arkansans is that of purchasing a home and damage resulting from termite infestation is a concern, not only for homeowners, but also for all who own structural property. The magnitude of the individual investment warrants that termite control measures be applied by properly trained and regulated professionals. In addition to the native species that threaten the property of Arkansans, a new invasive species of termite, *Coptotermes formosanus* (Formosan subterranean termite) has the potential to cause damage in Arkansas. A single colony of Formosan subterranean termites may contain several million termites compared to several hundred thousand termites for native subterranean termite species. A single individual Formosan subterranean termite doesn’t consume more wood than a single native subterranean termite; however, because of its large population size, a Formosan subterranean termite colony can cause more structural damage in a shorter period of time. This species has yet to be identified in Arkansas; however, its distribution in the United States includes Alabama, California, Florida, Georgia, Hawaii, Louisiana, Mississippi, North and South Carolina, Tennessee, and Texas. This termite’s spread to Arkansas is felt to be only a matter of time. It will be highly beneficial to slow or prevent the spread of the Formosan subterranean termite to Arkansas.

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 health and property of the citizens of Arkansas. These programs involve using innovative methods to educate, detect, and protect Arkansans from threatening pest species.

Stakeholder Input

The need to plan and implement an Urban Integrated Pest Management program was identified by the Cooperative Extension Service. As a result, the Extension Urban Entomology Program was initiated on July 1, 2002.

All Arkansas counties identified a need to develop and conduct mosquito management programs in 2003 to help mitigate the threat from mosquito-borne arboviruses, particularly WNV.

The Arkansas State Plant Board identified a need to update educational and training materials for individuals seeking commercial/non-commercial pesticide applicator certification in the areas of "Termite & 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."

Overview

During 2002-2003, cooperative work involving the updating of educational materials relating to professional commercial pest control was begun between Extension Urban Entomology and the Arkansas State Plant Board as a result of a Professional Applicator Training Materials Grant sponsored by EPA and administered by the Arkansas State Plant Board. Considerable progress toward completion of the project has been accomplished with the following training manuals in press: "Termite and Other Structural Pest Control," "Household Pest and Rodent Control," "Food Manufacturing, Processing, and Storage Pest Control," and "Ornamental Tree and Turf Pest Control." The training manual for "Weed Control" is in review and the training manuals for "Golf Course Pest Control," "General Fumigation," and "Food Related Fumigation" are currently in development. This project addresses a significant need in Arkansas for updated and improved training material for commercial pest management professionals requiring licensing by the Arkansas State Plant Board and demonstrates a cooperative interdisciplinary approach (Extension Entomology, Plant Pathology, Weed Science, and Wildlife Biology) toward accomplishing the project goals. Educational programs and other support to counties and commercial pest management professionals were provided through in-service training and various county meetings and presentations.

The Urban Entomology Program also concentrated on continued awareness education regarding mosquito management and mosquito-borne disease prevention. The relationship with the Arkansas Department of Health continued with several opportunities to provide training to health department personnel and with their request to link UACES fact sheets pertaining to mosquito control to their web site. In addition, the Urban Entomology Program provided this educational training through numerous county meetings and personal communications, in-service training, and meetings with commercial pest management companies. During 2002 there were 43 human cases of West Nile fever/encephalitis with 5 deaths. In 2003, following the education program on mosquito control and mosquito-borne disease prevention conducted by Extension Urban Entomology, County Programs, and the Arkansas Department of Health, and the

financial support afforded to County Governments by the Governor of Arkansas, the human cases of West Nile fever/encephalitis have, to date, dropped to 24 with no deaths attributed to West Nile virus infection in the state.

Fire ant control demonstrations involving mound and broadcast applications of commercial products were conducted in Pulaski and Miller Counties with the assistance of Allen Beuerman, CEA Agriculture and Doug Petty, CEA Staff Chair, respectively. Work on fire ant biological control demonstrations continued in cooperation with Loftin, Shanklin, John Gavin, Bradley County CEA Staff Chair, Doug Petty, Miller County CEA Staff Chair, Jerry Clemmons, Clark County CEA Staff Chair, and Mike McCarter, Pike County CEA Staff Chair. Indications are that the fire ant parasite, *Pseudacteon tricuspis*, released in Pike Co. in 2002, has successfully over-wintered and reproduced in the field and is expanding outward from the area of initial release.

The Urban Entomology Program provided support to Extension Horticulture through the conduct of numerous county Master Gardener educational opportunities and educational opportunities relating to Japanese beetle pest management.

Youth and 4-H support was accomplished through involvement with judging and exhibiting youth insect collections at the SE 4-H O-Rama, the mid-South Fair, and the Arkansas State Fair. Also by serving as a Science Fair Judge for the Popular St. Middle School, North Little Rock, Arkansas. Provided an invited presentation on Introductory Forensic Entomology at the Kids College, Harding University/Harding Academy, Searcy, Arkansas.

County Extension support and support to the citizens of Arkansas was also accomplished by providing insect specimen identification and control recommendations relating to Urban Pest Management on demand and by updating appropriate sections of MP144.

Extension Program Results and Accomplishments

Output Indicators

- 1,551 Individuals attending presentations.
- 334 Phone contacts from individuals seeking pest information.
- 31 Presentations at educational meetings.
- 75 Counties participating in Mosquito management program.
- 29 Press articles or media interviews.
- 9 Major Extension publications.
- 6 Presentations at professional meetings.

8 Youth outreach educational activities.

Program Impact

- Number of human WNV cases reduced by 44 percent with no deaths in Arkansas in 2003.
- Awareness of Formosan subterranean termite increased and state remains infestation free.

- Increase in awareness and adoption of IPM methods in areas of the state where the Japanese Beetle is emerging as a significant pest of turf and ornamentals.

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 – All 75 counties have implemented a mosquito larval management program. Through publications and training, counties have implemented very successful programs and are excellent contacts for program development consultation.

A majority of Arkansas' 75 counties have delivered the urban pest management program via ongoing fire ant programs with, approximately 45 participating regularly and through educational opportunities for individual citizens.

Program Response:

Weed Management in Arkansas Crops

Contact: Robert Scott, 501-837-0273 or 501-676-3124, Pest Management, bscott@uaex.edu

Situation

Crop losses due to weeds can exceed \$500 million annually. Herbicide technology for the control of these weeds continues to change and evolve. The addition of herbicide tolerant crops to the mix of technologies that are available to producers has only increased the number of different options available to growers today. While these new options are all valuable tools for producers to choose from, knowing which programs are the best for their particular farm can be confusing. Also, as new technologies emerge certain products have the potential to solve emerging or long term weed control issues under the states section 18 and 24C label options. Weed control work is focused on evaluating new herbicide technologies and their potential fit in the production practices used in the state of Arkansas.

Stakeholder Input

All crops grown in Arkansas receive some form of weed control. County committees, promotion boards and growers always identify weed control as a major issue effecting crop production and a major area of educational focus.

- Grower feedback is collected at each county meeting. Continuous feedback on current needs in the state is provided by county agents. Regular meetings with leaders in the herbicide develop industry provides input on new products. These industry contacts also establish studies to evaluate the new technologies in this program. In addition, numerous meetings are attended each year to seek input from other weed scientists on current trends and new products. The various promotion boards, which help fund this research, also provide valuable feedback.
- Stakeholders are row crop and wheat farmers in the State of Arkansas. Other stakeholders include agricultural professionals with concerns or interest in weed control programs for Arkansas. These individuals are identified through the county agent system and through contacts made by attending professional and trade organizational meetings. Also, by the publication of Extension Bulletins and popular press articles.
- Feedback from growers, promotion board members and county agents is used to develop weed control programs that best represent the needs of the majority of producers. In many circumstances if it were not for this program, producers would have only the recommendation of Industry representatives to rely on. This Feedback is considered on an on-going basis as county meetings, promotion board meetings and meetings with industry representatives take place. Valuable input for this program is also obtain by attending meetings, such as, the Arkansas Crop Management Conference, the Delta Weed Workers Informal Get Together, the Southern Weed Science Society annual meeting and the annual meeting of the Weed Science Society of America. In the case of wheat producers, our work and recommendations represent a significant amount of the total work being done for this small segment of growers in the state.

Overview

Over 7 million acres of crops are grown annually in Arkansas. This program provides growers and other agricultural professionals with weed control recommendations utilizing existing and new herbicide technologies. The focus of these recommendations is to provide the most practical and economical weed control available to assist farmers in maximizing profits on their farms. Herbicide programs are evaluated under a variety of environments and situations. Weed control costs can exceed 30 percent of the total cost of production. Reducing the cost associated with weed control helps to increase production efficiency.

Extension Program Results and Accomplishments

Output Indicators

Over 60 replicated field demonstrations were established in numerous counties. The MP 44 publication was updated and available to growers in January of 2004. Numerous presentations have been delivered at county meetings, professional meetings and field days (+25).

Program Impact

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 over-all costs of their weed control programs. Data from this program resulted in the State of Arkansas receiving a section 24C label for the use of a new technology for rice that allows rice producers to control red rice in a growing rice crop. The “launch” year for this technology was viewed as a success and will save rice producers money in lost income from red rice competition and contaminated grain. We have taken a leadership role among other states to evaluate the use of several new technologies for rice. These include the use of Command herbicide by air and the use of Command tank-mixtures with other products applied by air.

Although unsuccessful, data from this program was used to apply for a section 18 for a new product for use in wheat to control a biotype of Italian ryegrass that is herbicide resistant. The section 18 was not granted by the EPA, however, our research and efforts toward the section 18 have brought attention to this emerging and growing weed problem in the state. This effort has improved chances for a label next fall.

Critical Points

- 60+ county educational meetings for farmers
- Over 1600 farmers attending county meetings
- 80 percent of rice acres in the state where new weed control technology was used
- Over 100,000 acres of rice grown with new technology for red rice control
- Savings of up to \$15 dollars per acre on cotton production practices in 2001
- Savings in weed related costs from red rice and late season grass control

Source of Funds

University of Arkansas Cooperative Extension Service (Smith-Lever Act), Rice Promotion Board, Soybean Promotion Board, Wheat Promotion Board, and Grants from Industry

Scope of Impact

Dissemination – This program is made available to the general public. The primary publication is the MP 44 (12,000 copies). This weed control guide is recognized throughout the South as a valuable decision making tool. All counties are contacted and reports are sent on request. Highlights of research findings are discussed in popular press articles (Rice Journal, Delta Farm Press, etc.), professional papers, research reports and County meetings (over 80). State experiment station field days are also utilized to disseminate information gleaned from this program.

Scope of Program – This program is state specific to Arkansas. All counties that produce rice, soybeans or wheat have disseminated information from our program in the form of the MP 44 *Recommended Chemicals for Weed and Brush Control* publication. Although the program is not officially recognized as being multi-state, our recommendations are followed by many growers in Texas, Missouri, Mississippi and Louisiana.

KEY THEME: NATURAL RESOURCE MANAGEMENT

Program Response: Forestry Continuing Education

Contact: Mr. Carroll 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 boost 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 6 hours of Continuing Education a year to remain registered. The Forestry Continuing Education program works to fulfill these educational requirements of foresters in particular and all other professionals in general. 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 meetings, direct contacts, 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 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

- 550 Number of registered foresters, forest landowners, industry, and/or agency personnel attending educational programs.
- 8 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

- 345 Number of participants maintaining registered forester status.

Source of Funds

Smith-Lever 3b and 3c, 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; Tom Riley, Extension Specialist – Environmental Policy, 501-671-2080, triley@uaex.edu

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

As project partners in the activities involved in this program response area, the Arkansas Soil and Water Conservation Commission, the Arkansas Department of Environmental Quality and the Arkansas State Plant Board review program activities. As this new program response area matures, we will bring more definition to the process by which stakeholder input is solicited, incorporated and reported. Additional non-funding partners include the Arkansas Forestry Commission, the Livestock and Poultry Commission and the office of the Governor. Informal input into program design has also been received from the Arkansas Farm Bureau and the University of Arkansas Little Rock School of Law. Stakeholder input will be designed to ensure that specific suggestions on the most important issues facing the agricultural production community and the rural community at large that are of a legal and regulatory nature are solicited.

Overview

The University of Arkansas Division of Agriculture has partnered with key state agencies in providing funding for a Natural Resource 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 2004 we continue delivery of a public policy education program in coordination with other funding state partners: the Arkansas Soil and Water Conservation Commission, the Arkansas State Plant Board, the Arkansas Forestry Commission and the Arkansas Department of Environmental Quality. Envisioned project tasks include training, preparation of educational materials and conduct of public meetings on substantive issues. The Program will substantively address such legal and regulatory issues as water quality and quantity, environmental and natural resource regulation, private landowner liability, the advantage of public/private relationships in enhancing our natural resource base, the role of private entities such as cooperatives or conservation districts in protecting and enhancing natural resources, the necessities of planning for and assessing actual risks to natural resources, and the impact of regulatory change.

A recent new partner in this effort is the University of Arkansas at Little Rock School of Law. The UALR Law School conducted a very successful water rights conference in 2002. We have entered into a partnership to begin the planning activities for delivery of a second conference on this and other related subjects for 2004 or early 2005. We are discussing the schedule for ongoing efforts of this kind.

Early products of the program have included traditional written fact sheets on landowner liability and the effect of new animal waste-related regulations and additional written fact sheets are under development in broader water rights substantive areas. Ongoing instruction of the agricultural law undergraduate class at the University of Arkansas Fayetteville occurs. Additional public policy program efforts have been funded as parts of larger grant efforts secured both by the public policy regulatory specialist and as a part of a larger team working on natural resource issues. These and other types of program activities will continue as the program develops.

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, with posters accompanying those fact sheets. Additional, with regard to the landowner liability issue, an article appeared in the publication, *Forest Landowner*, and two discussions of these issues have occurred at the University of Arkansas at Pine Bluff annual Rural Life Conference events.

Outcome Indicators

Our efforts are to increase the knowledge base for those persons affected by changing uses of land for recreational access and income producing purposes. Additional calls and inquiries have resulted from the production of the written fact sheet that specifically discusses the landowners' liability exposure and makes recommendations concerning actions that can be taken to prevent problems with entrants onto the land. With regard to the animal waste statutes fact sheet, a large number of producers and affected citizens have been attending and providing input to the regulatory process as those statutes are put in place and the regulatory public hearing process has developed.

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 and landowner liability publications are available via county Extension offices and through the UAEX web site. Programs are available statewide and program efforts under construction will be available statewide.

Scope of Program – Producers living in the western two-thirds of the state were the primary recipients of early program educational material concerning animal waste regulation. The landowner liability educational materials serve producers from all areas of the state. The water conference in planning stages will be a statewide effort.

KEY THEME: RECYCLING

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

Contact: Suzanne Hirrel, Extension Waste Management Specialist, 501-671-2288;
shirrel@uaex.edu

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 million tons of solid waste annually, over a ton per person each year. The state has a limited number of disposal sites or landfills (23 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 2002, 1.39 million tons were recycled, a recycling rate of 34 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

- 27 Number of educational meetings, workshops, demonstrations (sites or exhibits), news articles, radio programs and tours held to educate clientele about the benefits and how-to of composting (backyard, on-farm and municipal).

- 18 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).

- 16 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).
- 5 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.
- 2,724 Number of clientele attending educational programs and receiving educational publications and other materials written and/or distributed on solid waste management.

Outcome Indicators

- 40 Number of clientele who reported changing their solid waste management practices.
- 30 Number of agriculture clientele adopting new disposal practices.
- 4,500**
- 11,048,804* Number of pounds of pesticide containers** and plastic irrigation pipe* collected for recycling (**number reported by county agents, only 1 county reporting).
- 9/621 Number of cleanup events/participation.
- 16 Number of groups participating in adopting streets, parks, highways, streams and similar cleanup programs.

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 are available on the UAEX web site.

KEY THEME:

WATER QUALITY

Program Response:

Water Quality and Watershed Education

Contact: Tom Riley, Extension Specialist – Environmental Policy, 501-671-2080, triley@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

Input comes from 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 individual and groups.

All of this input has been considered and has helped us in the design, implementation, and evaluation of these educational programs.

Overview

We have completed four EPA-funded watershed education projects and are currently concluding two CSREES-funded projects (see below):

- Watershed: 406 Regional watershed
Funding (Fed. Only): \$70,000 per year for 4 years
Location: Statewide
Status: In fourth of fourth year
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 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

- 271 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.
- 1,646 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.
- 11,153 Number of clientele participating in educational events.

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: Wildlife Management on Private Lands

Contact: Rebecca McPeake, Environmental and Natural Resources Section, 501-671-2285, rmcpeake@uaex.edu; Rex Roberg, Environmental and Natural Resources Section, 501-671-2334, rroberg@uaex.edu; Kevin Jones, Family, Youth, and 4-H Section, 501-821-6884, kjones@uaex.edu

Situation

Arkansas is home to abundant 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). In 2001, residents and visitors spent \$1.3 billion on wildlife recreation in Arkansas (2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation). Wildlife enterprises contribute significantly to some local economies, particularly those in the Delta waterfowl flyways. 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.

A combination of abundant wildlife and public interest in wildlife has created a large demand for information about wildlife habitat enhancement and nuisance control on private lands. In Arkansas, nuisance wildlife species contribute an unknown but potentially substantial cost in property damage. For example, an estimated 10,000 deer-vehicle collisions occur annually. 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

Stakeholders include private non-farm landowners, row crop and livestock farmers, aquaculture operators, homeowners, hunters, anglers, wildlife watchers, youth, schoolteachers, 4-H volunteers, Master Gardeners and natural resource professionals. Stakeholder input was solicited through questionnaires distributed at forestry and wildlife workshops and conferences, commodity meetings, water quality meetings, Master Gardener training, youth contests and other natural resource meetings, and newsletters mailed to county landowner and natural resource professional mailing lists. Most stakeholders were identified through contacting county Extension offices with individual questions and in response to wildlife program promotional efforts in newspapers and radio announcements. Some stakeholders were identified through working with county Extension agents on agriculture production or related topics. Other stakeholders were identified through work with partnering agencies and organizations on wildlife projects. Programming needs were identified through county councils, stakeholder attendance and questionnaire responses at workshops, verbal and written feedback from county Extension agents about their needs.

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. For example, FY2003 represents the fifth year of the Wildlife Habitat Improvement Workshop. This program was developed through input from a county agent and his informal conversations with farmers and landowners. He perceived a need for education about wildlife management practices for improving woodland habitat on private property. He enlisted surrounding county agents and called the wildlife specialist to form a multi-county workshop.

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” will be available FY2003 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.

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 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. In FY2002, a new Arkansas-specific guidebook was developed which focuses on native Arkansas wildlife species and contest procedures for Arkansas Junior and Senior 4-H’ers. The 2002 4-H Forestry and Wildlife Camp for 11- to 13-year-old youth included presentations about native wildlife species. 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. 4-H Family Boatbuilding and Aquatic Resources project offers an exciting way to engage older (i.e., senior) youth by incorporating curricula from woodworking, fishing education, wildlife habitat, water quality, GPS, forestry and other topics into an integrated, hands-on project.
- 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.
- 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. This is the newest area for the Wildlife Program. Currently, several proposals are in various stages of development and review. For accomplishing this program direction, we anticipate collaborating with university faculty or other agencies to conduct one or two research studies in the next few years.

Extension Program Results and Accomplishments

Output Indicators

- Number of educational meetings, workshops, demonstrations and/or field days held to educate clientele on enhancing wildlife habitat, prevention and control of wildlife damage and wildlife enterprises.

Number of educational presentations through 4-H clubs and in schools to teach youth wildlife identification, management and habitat practices.

- Number of educational materials written and/or distributed (i.e., fact sheets, news releases, conference proceedings, newsletters, handouts, etc.).
- Number of clientele participating in educational meetings, workshops and seminars.

Outcome Indicators

- 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, USDA EQIP - Education

Scope of Impact

Dissemination – Information is available on the web and printed publications are available upon request.

Scope of Program – This program is available statewide to stakeholders and Extension faculty. Many of these programs can be conducted independently of the wildlife specialists and, therefore, their program activities are unknown to those developing this report. The fifty-seven counties served through FY2003 wildlife programs that are known to wildlife specialists 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. These counties have requested information about wildlife management, developed workshops or demonstrations for farmers and landowners, participated in in-service training or otherwise have performed wildlife education

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. Using the metropolitan/non-metropolitan designation, 50.6 percent of Arkansans live in one of the 63 non-metropolitan counties. As for the nation as a whole, only 19.7 percent of the population resides in non-metropolitan counties, according to the U.S. Census Bureau. While we are rural, we are growing. By 2025 it is projected Arkansas will be the 32nd most populous state with 3.1 million people. Arkansas is expected to gain 31,000 people through international migration between 1995 and 2025, placing it 39th among the net international migration gains among the 50 states and District of Columbia according to projection by the U.S. Bureau of the Census.

Arkansas has 75 counties and over 430 communities, each with their own challenges and opportunities. Metro counties grew at more than twice the pace of rural counties in Arkansas between 1990 and 2000. Furthermore, each region of the state faces different problems. The delta continues to lose population, northwest Arkansas has experienced explosive growth, the Ouachita and Ozark areas struggle with the changing base, and central Arkansas is experiencing growth in the counties around Little Rock.

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.
- Rural areas of the state continue to have lower wage rates than the urban areas.
- Between 1996 and 2000, the average earnings per job across the U.S. increased 10.9 percent compared to 7.5 percent in Arkansas.
- 2000 census figures report that Arkansas ranks 49th among the states in median household income.
- Median household income continues to be much lower in the rural areas of Arkansas compared to urban areas.
- The Delta continues to have the lowest median household income among the rural regions in the state.

While the poverty rate declined between 1989 and 1999, Arkansas continued to have a high rate of poverty in 1999 (15.8 percent) as compared with the U.S. as a whole (12.4

percent). Despite the fact that poverty has become less persistent across Arkansas, rural Arkansans had a substantially higher rate of poverty (17.8 percent) than urban Arkansans (13.8 percent). The Delta had the highest poverty rate of 22.5 percent. 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.

Total FTEs

249.71

Total Budgetary Amount

\$14,890,619.02

**KEY THEME:
CHARACTER/ETHICS EDUCATION**

**Program Response:
Raising Arkansas Youth (RAY)**

Contact: Elizabeth Jones, State Asset Building Program Coordinator, 2301 S. University Avenue, P.O. Box 391, Little Rock, Arkansas 72203; 501-671-2027; 501-671-2294 (fax) ejones@uaex.edu

Situation

Why do some kids grow up with ease while others struggle? Why do some kids get involved in dangerous activities while others spend their time contributing to society? Why do some youth "beat the odds" in difficult situations while others get trapped? In recent years many of our prevention programs have focused on single issues such as substance abuse, violence or teen pregnancy. Reality and research suggest social problems rarely have a single cause or solution. Many factors influence the successful development of young people. Research has shown that 40 developmental assets can help young people make wise decisions, choose positive paths and grow in competent, caring and responsible ways.

Stakeholder Input

The framework of 40 development assets was developed by the Search Institute in consultation with youth development experts during the early 90s. Since that time the asset-approach has been adopted by many national, state and community organizations. Support from the Donald W. Reynolds Foundation created an opportunity for the formation of Arkansas' statewide asset-building initiative known as "Raising Arkansas Youth" (RAY). RAY is a non-profit organization coordinated by the Cooperative Extension Service and under the leadership of a diverse board of directors. To assure adequate stakeholder input, the RAY board represents geographic regions and organization sectors throughout the state. RAY receives input and provides training to educational, governmental, congregational and other youth and family serving organizations. Most importantly, RAY actively strives to give youth a participating voice. Youth have been an instrumental part of training and conference activities and have been recruited for board and leadership positions.

Overview

While the assets are powerful shapers of young people's lives and choices, too few young people experience many of these assets. Twenty-five of the 40 assets are experienced by less than half of the young people surveyed. Youth with the most assets are least likely to engage in high-risk behavior such as problem alcohol use, illicit drug use, sexual activity and violence. In addition to protecting youth from negative behaviors, having more assets increases the chances that young people will have positive attitudes and behaviors. Some of these are the facts that they succeed in school, value diversity, maintain good health and they are willing to delay gratifications. The purpose of RAY is to encourage and applaud activities and interactions that promote the development of assets in children and youth.

As a statewide initiative, RAY is promoting positive youth development through the media, training and collaborative program. A key goal is to infuse an asset philosophy in other programs. A variety of community and state partners are finding ways to incorporate the asset-building philosophy into their policies and program. A few include the University of Arkansas Cooperative Extension Service, Little Rock Schools, 4-H, Big Brothers/Big Sisters, YWCA, Arkansas Promise, Division of Volunteerism, Little Rock Air Force Base, Sheriff's Boys and Girls Ranch and a number of congregations and civic organizations. Each of these organizations is involved in teaching the asset building principles and incorporating the philosophies into their respective programs.

Extension Program Results and Accomplishments:

Output Indicators

- 18 University of Arkansas Cooperative Extension Service counties are directly involved in promoting and delivering asset programs. All other counties are indirectly involved via incorporation of the asset-message into the Best Care and Family and Community Connections programs.

- 56 The number of asset-building programs/trainings and workshops the RAY coalition of asset builders has delivered to over 3,500 people during the past year.
- 9 The number of people from Arkansas who attended the 2003 National Healthy Communities/Healthy Youth National Convention. More than half of the Arkansas delegation was youth.

Arkansas organizations that have reported incorporating the developmental assets into their programs include:

- North Little Rock Boys and Girls Club
- University of Arkansas Cooperative Extension Service
- The Arkansas Sheriff's Ranch
- The Hot Springs YMCA
- Centers for Youth and Families
- P.A.R.K.
- Little Rock Schools
- Home Town Health
- Local 4-H Clubs
- Division of Volunteerism
- Central Arkansas Developmental Council

Outcome Indicators

Raising Arkansas Youth (RAY) and the developmental assets are bringing diverse organizations and groups together to accomplish a group effort toward positive youth development. We are partnering with the Attorney General's office, DHS, PTAs, Arkansas Sheriff Youth Ranches, and Centers for Effective Parenting to promote 10 Positive Things that all Communities can do for their youth.

Source of Funds

Donald W. Reynolds Foundation

Scope of Impact

Dissemination – The program has received many free education materials from Healthy Communities, Healthy Youth and Search Institute. These materials have been distributed to people that attended training sessions and educational programs. RAY also has informational brochures and displays that are available for marketing the developmental assets. Materials are available by contacting Elizabeth Jones at 671-2027

Scope of Program – Arkansas

KEY THEME: CHILD CARE/DEPENDENT CARE

Program Response:

The Best Care: Best Care Connected; Best Care Myths and Magic

Contact: Traci A. Johnston, Child Care Assistant, 2301 South University Avenue, P.O. Box 391, Little Rock, AR 72203, 501-671-2364; 501-672-2294 (fax),
tjohnston@uaex.edu

Situation

The National Academy of Early Childhood Programs defines a high quality child care program as one that meets the needs of and promotes the physical, social, emotional and cognitive development of the children and adults who are involved in the program. For Arkansas' child care to be of high quality, child care providers must understand and implement best practices that promote such development. This requires continued training and education. Providing necessary training to child care providers in all parts of Arkansas, including remote rural areas, is a considerable challenge.

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 is 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

spend substantial amounts of time in nonparental care. Approximately 52 percent of children under three are in nonparental care. The demand for child care had increased in recent years, but the number of quality-approved programs has not kept pace.

Currently 309 of Arkansas' 3,211 licensed child care facilities have achieved a quality rating (Arkansas Kids Count, 2002). This means most of the 23,773 children served by these facilities do not enjoy the quality care desired. A number of challenges make quality difficult to achieve. Pay in child care settings is typically low. The work is difficult and labor intensive, and turnover among child care professionals is high. These conditions make it difficult to keep a well trained staff. And a trained, knowledgeable staff that interacts positively with children is the most important ingredient to achieving quality. Making effective research-based training available at times, locations and formats convenient to child care providers is essential to improving the quality of Arkansas child care.

Stakeholder Input

Understanding the needs of children, parents, caregivers and child care service organizations is critical to developing and implementing quality educational programs. The Cooperative Extension Service (CES) works closely with the 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 three 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 2003, child care providers attended classes on managing time and resources, teaching children money concepts, healthy weight for children, making the playground safe, my amazing body, building developmental assets in young children, fitness fun, playing outdoors, and the preschool scientist. 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. The web-based program targets child care directors and family child care home providers with business applications. 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 2003 the topics included: 1) Building Positive Relations, 2) Guidance for Young Children, and 3) Creating a Physically Healthy Environment.

Best Care Myths and Magic – Best Care Myths and Magic is a five-hour workshop that takes quality training by recognized experts to rural communities via compressed interactive video technology (CIV). CIV allows two-way communication with multiple rural sites throughout the state. The Best Care Myths and Magic program is designed to debunk popular myths surrounding the development of children and to explore the awesome magic of child growth and development. The training is conducted on one Saturday and then repeated on two Monday evening sessions. In 2003 the topics included: 1) Language and Literacy Development for Infants and Toddlers, 2) Ouch! Handling Aggressive Behaviors in Early Childhood, and 3) Three Different Ways of Thinking About Children (and One Big Difference in the Way They Turn Out).

Extension Program Results and Accomplishments

Output Indicators

2003 Program	Providers Reached	Hours of Training	Classes
The Best Care	1,932	327	99
Best Care Connected	494	5 - Spring 5 - Fall	2
Best Care Myths and Magic	156	5 - Spring	1

Outcome Indicators

The Best Care

- 96% of participants *Agree or Strongly Agree* that the trainer was knowledgeable on this topic.
- 95% of participants *Agree or Strongly Agree* that the purpose of the unit was clear.
- 95% of participants *Agree or Strongly Agree* that the information and activities met the purpose of the unit.
- 91% of participants *Agree or Strongly Agree* that the unit was interesting.

97% of participants *Agree or Strongly Agree* that the trainer was open, friendly, and encouraging.

Best Care Connected

65% of participants *Strongly Agree* that the course content was useful.

37% of participants *Strongly Agree* that the course content was challenging.

58% of participants *Strongly Agree* that it was easy to find the way through the web site.

68% of participants *Strongly Agree* that the course materials were well organized.

Best Care Myths and Magic

95% of participants *Agree or Strongly Agree* that the purpose of the unit was useful.

83% of participants said the overall training met their needs (rated *Good or Excellent*).

85% of participants rated the overall training to be *Good or Excellent*.

Source of Funds

All three Best Care child care training projects are funded through a grant from the Arkansas Department of Human Services, Division of Child Care and Early Childhood Education.

Scope of Impact

Dissemination – An announcement of training is done through statewide mailings, county mailings and contacts, state conferences, public service announcements, Division of Child Care and Early Childhood Education newsletter and the Arkansas Early Childhood Professional Development System web site.

Scope of Program – The Best Care training program is conducted statewide. Child care providers from all 75 counties have attended. Best Care Myths and Magic has been conducted in eight different counties, with participants from these eight counties and surrounding counties. Best Care Connected is conducted through the Internet.

<p>KEY THEME: COMMUNITY DEVELOPMENT</p>

Program Response:

Arkansas Procurement Assistance Center (APAC)

Contact: Elinor Sue Coates (“Sue”), Program Director, Arkansas Procurement Assistance Center, University of Arkansas Cooperative Extension Service, 103 East Page St., Malvern AR 72104, 501/337-5355, scoates@uaex.edu.

Situation

In Federal Fiscal Year 2003, the federal government spent about a billion dollars on contracts in Arkansas, for every conceivable commodity and service, although their data will not be published for a few more months. We estimate about 20 percent of that went to small businesses. Over 90 percent of the 61,000 businesses in Arkansas are defined as “small” by the Small Business Administration, and perhaps half are family-owned. Government contracting is fraught with red tape and peculiar methods, so in order to tap into this huge marketplace, Arkansas businesses need help in the form of counseling and technical assistance, and with such non-monetary support, they are extremely successful.

Stakeholder Input

APAC’s stakeholders are referred to as “clients” and “potential clients” as well as “resource organizations”. 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 we have. Potential clients are Arkansas businesses that are or could be government contractors but have not formalized a

relationship with APAC yet. Their input is collected informally through oral surveys at conferences they attend, and through the needs they express when interviewed. Resource organizations include Chambers of Commerce, supplier development councils, professional development associations, government agencies, and the like, which APAC staff participate in and whose events the staff attends. Their input is collected informally through conversations and correspondence.

Overview

APAC's published mission statement reads as follows:

“Our mission is to assist the economy and create jobs in Arkansas while providing quality products and services to government agencies. APAC provides businesses with the marketing know-how and technical tools to obtain and successfully perform on federal, state and local government contracts and subcontracts.”

With a staff of seven, three procurement professionals and four administrative support personnel, APAC operates statewide out of two offices located in Little Rock and Malvern. 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 bid opportunities, an electronic bid-matching service that sends federal and state bid opportunity listings specifically filtered to each client's stated areas of interest, and a variety of other products and services designed to assist Arkansas businesses succeed with sales to public agencies.

Extension Program Results and Accomplishments

Output Indicators

1,959	Total counseling/consultant sessions held with clients
695	Total number of clients counseled/coached
54	Total number of conferences sponsored or participated in
5,234	Total number of attendees at conferences
34,800	Estimated number of newsletters distributed to clients in 50 weeks
10,000	Estimated number of local bid opportunity listings collected and published

Outcome Indicators

1,075	Total number of contracts awarded to clients as reported*
\$60,917,888	Total dollar value of contracts awarded to clients*

1,736 Total jobs created or retained as a result of these contracts*

*We believe that the program impact may exceed what is reported.

Description of Activity, Program, Product

Of 696 active clients that year, 695 received counseling sessions. A counseling session is any conversation, correspondence, or meeting with a client in which the client requests assistance with an issue related to government contracting, and APAC staff responds with advice, technical tools, data, or other information to help the client solve the problem. A typical session is when a client has learned of an opportunity to bid on a requirement published by an agency, and doesn't understand the documents required for submitting a bid; our staff will spend an hour or more explaining what the customer expects and how to respond correctly. Another typical session is when a client has learned of an opportunity to bid and cannot get access to drawings or specifications required to estimate the job; our staff will locate the required documents, teach the client how to find them in the future, and perhaps actually order the documents for the client if they are not available as free public documents. There are as many examples of activities as there are hours in the year. Sessions that are not counted in the statistical data include issuing the newsletter with its technical information and advice, providing electronic bid opportunity listings, ordering technical documents without providing concurrent advice or training, and other non-personal assistance, although these sessions are recorded elsewhere. Client data is confidential, but supporting documentation of any program activities can be provided.

A conference is any event at which clients or potential clients, including the general public, attend to receive information about government contracting. The most common topic presented is "How to do business with" the agency that co-sponsors the event. A conference might be a half-day, a full day, or more. Many APAC conferences are presented in the CES auditorium, but APAC participates in just as many conferences presented by other agencies in their facilities or elsewhere around the state. At all such events, UA-CES is identified as APAC's parent organization, and literature about both is distributed. Examples of conferences that APAC sponsored or participated in included: a booth at the Conway Business Expo, attended by approximately 1,500 people on October 2, 2002; SBA's annual 8(a) conference attended by 60 small disadvantaged businesses on March 20, 2003; a seminar on contracting practices co-sponsored with the National Contract Management Association, attended by 63 people; the Little Rock Chamber of Commerce Minority and Women Business Conference, attended by 150 people on September 9, 2003; the Minority Enterprise Development Week observance and reception in Little Rock, attended by 150 people, on September 11, 2003, Arkansas Business and Technology Expo in Little Rock, attended by 150 people on April 2, 2003, and the Hot Springs Business Expo, attended by approximately 2000 on August 27, 2003.

During the year, the newsletter name was changed to "Arkansas Procurement Briefing", and its appearance was significantly upgraded. It typically includes two to four pages of articles containing technical information and advice about how to do business with public

agencies; one page of events occurring in Arkansas related to government contracting; three to eight pages of local bid listings; and other announcements to help Arkansas businesses navigate through this difficult marketplace. During this reporting period, the newsletter completed its transition from being printed and mailed every week to being sent by e-mail to clients every week. APAC also maintained files of source data that could be sent to clients who requested more information about any bid opportunity listed in the Weekly Flyer.

The local bid opportunity listings that are published in the weekly newsletter are collected by APAC staff every week that consumes one full-time position. They are collected from newspapers, FW Dodge reports, and agency mailings. We pay for our subscription to Dodge and have their permission to publish the title and bidding status of each job. We collect Public Notices from the newspapers, both paper and online versions. Some agencies send us their listings and others we collect from their websites. This very impressive effort is extremely valuable and the information produced is not conveniently available anywhere else in Arkansas. It provides access to a vast marketplace that Arkansas companies need in order to succeed with marketing to state, regional, and local public agencies. During this reporting period, design for a new web-based bid listing site was begun, to go online in the following spring.

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 \$600,098, of which DOD provided \$300,000 cash and the matching funds came from the University's indirect costs, value equal to 5 percent of the salary and fringe for the 75 County Extension Agents, the value of office space donated by Malvern National Bank and Highland Industrial Park, and other non-cash resources. The DOD administers this Agreement under its Grants Administration Regulations, with meticulous program oversight and an audit approximately biennially.

Scope of Impact

Statewide.

Dissemination – The program is available to any company that has its headquarters in Arkansas, with particular emphasis on businesses designated as “small” according to SBA's published size standards. Companies that choose to partake of this service are asked to 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. Not all companies are interested in selling to public agencies, and of those that are, not all meet the agencies' criteria in terms of financial stability, technical capability, and quality performance. APAC helps those that could qualify with assistance and those that already do qualify.

A variety of 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, and the APAC website at uaex.edu.

Scope of Program – This program is specific to Arkansas. It is one of about 85 such centers nationwide sponsored by the Defense Logistics Agency and locally hosted by organizations such as universities, county or state agencies, and non-profit organizations in those states. Some of the centers are statewide, like ours, and some are regional, serving certain counties within their states. (The Congressional legislation under which DOD sponsors this program differentiates between funding for statewide programs that receive a maximum of \$300,000 federal funds, and funding for regional programs that receive a maximum of \$150,000 federal funds.) Our program serves all 75 counties in Arkansas and receives the maximum federal dollars allowed. The County Extension Agents provide outreach by displaying our literature in their offices and referring clients to our office. We serve most of our clients by phone, fax, and e-mail without ever seeing them. We travel to outlying areas in the state to hold office hours and present orientation workshops; these trips vary from one day a month to one or two days a year, depending on demand and perceived need.

Because we are one of a nationwide network of such centers in 48 of the 50 states, we have access to the experience and knowledge in all the centers, by engaging in e-mail chat and semi-annual national conferences. When one of us has a client request we can't answer, we can ask the entire network for advice. We can also compare notes with other centers on techniques that work or don't work, resources that are useful or not useful, and ideas for improving our services. So, although we provide services only to Arkansas businesses, we draw on nationwide resources to do so.

The socio-economic breakdown of revenues generated into the Arkansas economy through government contracts and subcontracts awarded to APAC clients indicates that typically under-served population groups are receiving a significant share of this activity. Small Disadvantaged Businesses (most of which are owned by minorities) receive about half of the total dollars reported, and 227 of our active clients state they meet the criteria for "disadvantaged". Women-owned businesses receive about a third of the total dollars reported, and 189 of our active clients are women-owned. Clients located in HUBzones (Historically Under-utilized Business Zones) receive about a tenth of the total. We are not sure our socio-economic data are accurate, since it is voluntary and cannot be verified. About 41 percent of Arkansas' 75 counties are designated "distressed" which means low per capita income or high unemployment rate. Of our currently active clients, 124 are located in "distressed" counties and 135 are located in HUBzones. About 6.7 percent of the contract dollars reported are to companies in "distressed" counties, resulting in about 117 jobs created or retained there; however, about a quarter of contracts reported were not identified to counties, so the revenues to distressed areas might be higher. We are revising the Monthly Activity Report format that clients are asked to submit to us, and hope to improve the quality of our data. Nevertheless, APAC

strongly focuses on under-served segments of the population, in geographic terms as well as in socio-economic terms.

Programs of Excellence

APAC co-sponsored a training conference with the U. S. General Services Administration, Office of Small Business Utilization, on August 26-27, 2003, in the CES Auditorium. Their Director wrote “Due to your diligence and commitment, the seminar was a success. As I stated in the sessions, your consolidation of the training material was simply outstanding.” Over 125 people attended this series of half-day conferences.

Center State Music Corporation of Little Rock in Pulaski County had not attained the minimum sales under their GSA Schedule contract and sought APAC assistance. The APAC counselor intervened with GSA and the client’s contract was successfully modified to include the products sold to government agencies that had not been counted and the contract was renewed.

Southern Arkansas Food Service of Hamburg in Ashley County received their first government contract, which was a three-year supply contract estimated to be worth over \$100,000 from the Arkansas Office of State Procurement. APAC provided a variety of services to the client, enabling them to qualify as a government contractor, and provided listings of job opportunities to bid on, lists of buyers to contact in the marketing effort, and information from the State’s forecast of future contracting opportunities which directly resulted in the award of this contract. As a result, the firm was able to retain all seven employees on the payroll.

At the request of Lockheed Martin in East Camden, Ouachita County, APAC conducted four training sessions for Lockheed’s small business subcontractors who had not complied with registration requirements because of the intimidating and complex process it entailed. Lockheed provided the facilities and equipment, and APAC staff served as instructors. Two sessions were held on November 19, 2002, and because of its success, two more sessions were held on January 16, 2003. A total of 40 subcontractors signed up for the training, 36 attended, and 28 successfully registered. Lockheed Martin and APAC believe that without the training sessions and subsequent on-line registration assistance provided by APAC, many of Lockheed’s subcontractors would still not be registered in CCR, and would no longer be considered qualified to be subcontractors on government contracts.

Program Response: Citizen Action Produces Strength

Contact: Kim Magee, Instructor, 501-671-2081, kmagee@uaex.edu, Agricultural Economics and Community Development

Situation

Youth in Arkansas have a need for leadership/government/citizenship skills they can use for a lifetime.

Stakeholder Input

Evaluations are collected annually from all delegates, junior counselors, adult leaders and county agents. Suggestions are then incorporated into the following year's program.

Overview

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.

Extension Program Results and Accomplishments

Output Indicators

- Delegates attended the CAPS Workshop
- Adult leaders attended the CAPS Workshop
- Junior counselors attended the CAPS Workshop

Outcome Indicators

- County Action Plans were developed for Arkansas.
- County Action Plans were followed through on and are still in place

Source of Funds

The workshop is funded by fees of \$85 per delegate. Counselors and leaders pay a fee of \$42.50.

Scope of Impact

Dissemination – 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.

Scope of Program – Pulaski and Perry Counties

Program Response: Cooperative Extension Service Home-Based Business Program

Contact: Kim Magee, Instructor, 501-671-2081, kmagee@uaex.edu, Agricultural Economics and Community Development

Situation

Home-based business education and assistance is a needed resource for rural economic development.

Stakeholder Input

Clients are identified when they call the Cooperative Extension Service for assistance with a home-based business. Input is collected from clients as a standard procedure.

Overview

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.

Extension Program Results and Accomplishments

Output Indicators

- 11 Distributed Home-Based Business Workbooks published by Cooperative Extension Service
 - One-on-one consultations (in-office or telephone) conducted.
 - Assisted in the program implementation of a home-based business seminar sponsored by the University of Arkansas at Little Rock's Small Business Development Center.

Outcome Indicators

- Home-based business clients successfully started a business in their home.

Source of Funds

Fund 13301; ORG 8000

Scope of Impact:

Dissemination – 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.

Scope of Program – Pulaski and Washington Counties

Program Response:

National Institute on Cooperative Education (N.I.C.E.)

Contact: Kim Magee, Instructor, 501-671-2081, kmagee@uaex.edu, Agricultural Economics and Community Development

Situation

Educating our youth on the topic of agricultural cooperatives is a goal of the National Institute on Cooperative Education (N.I.C.E.).

Stakeholder Input

The Cooperative Extension Service program coordinator serves on the conference planning committee. The Arkansas Cooperative Extension NICE coordinator also serves as a youth ambassador judge and has major input in the selection of two youth delegates (out of 600) who will represent National Council of Farmer Cooperatives for a period of one year.

Overview

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.

Extension Program Results and Accomplishments

Output Indicators

- Arkansas youth attended the conference.
- Arkansas adult leaders attended the conference

Source of Funds

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.

Scope on Impact

Dissemination – The N.I.C.E program is available to 15 to 21 year-olds involved in one of the following organizations: 4-H, FFA, FHA. We approach the three organizations with informative brochures provided by NCFC, and the selection process is determined by the individual organizations.

Scope of Program – The program is available on a statewide basis, rather than on a specific county level.

Program Response: **University of Arkansas Farm Income Tax School**

Contact: Kim Magee, Instructor, 501-671-2081, kmagee@uaex.edu, Agricultural Economics and Community Development

Situation

Continuing Professional Education Units are required annually for professionals credentialed by the Public Board of Accountancy.

Stakeholder Input

Evaluations are collected at the conclusion of each of the schools. Participants are given a small reward for completing and turning in evaluations. Frequent reminders are given throughout the two-day school. Evaluation data is entered into a computer and results are sent to the University of Illinois as well as CES Administrators.

Overview

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.

Extension Program Results and Accomplishments

Output Indicators

Two-day schools are conducted at the following locations around Arkansas: Harrison, Springdale, Fort Smith, Texarkana, Jonesboro, West Memphis, Monticello, Batesville, Little Rock, and Hot Springs.

Outcome Indicators

Participants received 16 hours of Continuing Professional Education credits

Source of Funds

The schools are solely funded by the registration fees received from the participants.

Scope of Impact

Dissemination – 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.

Scope of Impact – Tax School is delivered in Pulaski, Garland, Craighead, Washington, Boone, Sebastian, Miller, Crittenden, Drew, and Independence Counties.

Program Response: VISION 2010 Program – Building Healthy, Sustainable Communities for the 21st Century

Contact: Mark Peterson, Agricultural Economics and Community Development Section,
501-671-2253, mpeterson@uaex.edu

Situation

At the beginning of the 21st century, Arkansas communities are confronted with great challenges and new opportunities. Community leaders are confronted with the impacts of major changes in our society: globalization, information technologies, demographic changes, the changing nature of work, increasing concern for the natural environment, threats of terrorism, social ills and regional economies. Although we are in the early stages of the knowledge-based economy, new technologies have already impacted how we do things, as well as what we do. In this new era, the early stage of a knowledge-based economy, the rules for success have changed, and the need for community leaders to learn how to think, plan and act strategically has never been greater.

Stakeholder Input

The initial design of the VISION 2010 Partnership Program was based on an extensive, statewide process of citizen involvement and discussion that included six focus groups of local leaders (one of which was of youth), and a detailed survey of LeadAR alumni and Chamber of Commerce directors. (The LeadAR Program is an intensive leadership development program initially funded by the Kellogg Foundation.) Substantive discussions of the Information Age and the challenges and opportunities facing community leaders in this new era were also held with five other significant groups, for a total of 300 individuals. Furthermore the VISION 2010 Partners, representing hundreds of years of professional experience in community, leadership and economic development, have engaged in extensive discussions leading to the design of the VISION 2010 Program.

The implementation of the VISION 2010 program has effective mechanisms to ensure that it discovers and responds to the real issues and concerns of local citizens:

- Before each round of communities, a focus group session is held with the community leaders in each community to surface the most important challenges and opportunities.
- The strategic visioning process that is taught in VISION 2010 and utilized by the participating communities engages the citizens of the community in describing and realizing their desired futures. This input is then used to develop and implement a strategic plan for the future of the community.
- The process taught to the community leaders is holistic, and engages all sectors of the community, including low income and under-represented groups. For example, the Siloam Springs VISION 2010 group held meetings with its Hispanic residents *in Spanish*, to discover what they wanted the community to become.
- In addition, an evaluation was conducted of the VISION 2010 Program by an independent evaluation firm, with these elements: a focus group with each of the seven Round II communities, and interviews with four key leaders in these communities who were not directly involved in the planning process. The evaluation provided valuable feedback on the viability of the program and its responsiveness to the issues facing these communities.

Overview

With a goal of building healthy, sustainable communities for the 21st century, the VISION 2010 program engages over 20 partner organizations in conducting a series of seminars, incorporating an understanding of the Knowledge-Based Economy as a key component in the broad based holistic community development effort. Seminars teach leadership and facilitation skills, provide experiential learning about education and workforce preparation, economic and community development, the power of information technology, a ten step development process for communities and ten principles for strategic leaders. Although strategic plans become out-of-date when the environment changes, the need for community leaders who can think and act strategically never changes.

As the communities develop and implement their plans, technical assistance is given to them to help them effectively engage their communities and identify resources critical to their efforts.

Extension Program Results and Accomplishments

Output Indicators

- | | |
|-------|--|
| 11 | Strategic Visioning Sessions with a total attendance of 121. |
| 1,400 | Citizens were involved in describing their desired futures and how to realize those futures. |

- 2 Conferences with 19 speakers and a total attendance of 171.
- 11 Presentations on strategic leadership and dealing with change to conferences or leadership classes with 257 participants.
- 6 PowerPoint presentations were developed and 4 new handouts.
- 1 Feature articles, 11 newsletter articles, electronic and hard copy newsletters for community features were disseminated to 1,394 individuals. 613 individuals from VISION 2010 communities received information on new resources available, and an educational series on strategic leadership and innovation was initiated.

Outcome Indicators

Through VISION 2010, community leaders learn to engage a broad base of the community in developing their visions for the future. Strategic assets are identified and incorporated into action plans that help the communities realize their desired future. In the last six years, VISION 2010 engaged 21 communities with a combined population of over 320,000 people in the process of developing strategic visions and action plans. Community populations ranged from 503 to 80,000 people. The largest, Garland County, hired a facilitator to implement the VISION 2010 strategic visioning process across the entire county.

Through these efforts, VISION 2010 communities have involved over 7,000 citizens in strategic visioning processes, with a total impact of \$53,147,644 in funds invested in their own communities, grants and appropriations, and tax revenues into local projects. Over a 2-year period, the VISION 2010 Partners donated over \$500,000 of in-kind resources to the VISION 2010 program.

For example, the community of McNabb, population 54, involved citizens in the surrounding community in building a park and holding a two-day festival that drew over 2,000 people to the community. The community now has plans for water and sewer, building a multi-cultural community center, and developing 480 acres of land for commercial and warehouse space.

Source of Funds

Smith-Lever 3b and 3c

Scope of Impact

Dissemination – The VISION 2010 Program is available to all interested communities in Arkansas, with the first point of contact usually being the local county Extension agent. Information is also available on the VISION 2010 web page (v2010.org). Our electronic (and hard copy) newsletter e-VISION is a primary means of dissemination, and sends valuable information to community leaders throughout Arkansas as well as some in other states and countries.

Scope of Program – VISION 2010 is a program in Arkansas that has involved communities in these counties: Conway, Jefferson, Randolph, Pike, Independence, Monroe, Crawford, Crittenden, Carroll, Benton, Scott, Sebastian, Polk, Clark, Calhoun, Hempstead, Garland, Hot Spring, Logan, and Ouachita.

<p>KEY THEME: FAMILY RESOURCE MANAGEMENT</p>
--

Program Response:
Financial Security in Later Life

Contact: Judith R. Urich, Family Resource Management Specialist, 501-671-2066,
Family and Consumer Sciences, jurich@uaex.edu

Situation

The most significant economic issues Arkansas families face 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 an employment search.
- Bankruptcy filing in Arkansas rose 41 percent between 2000 and 2003.
- Low median annual incomes to purchase needs and wants.
- 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.

- Few families have sufficient dollars to save for retirement or plan for the long-term, including making estate plans.

Stakeholder Input

Program planning teams of FCS Agents from all districts and state specialists met three times and identified priority issues in family resource management. Agents and specialists constantly network with local and state groups including Arkansas Advocates for Children and Families, Kids Count, Family Self-Sufficiency Working Group, AARP, Consumer Credit Counseling, DHS, 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 to dedicate funds for retirement savings, calculating the amount of monies needed for retirement, addressing long-term care needs and estate planning. Twenty-three (23) FCS Agents were trained in small groups in the use of the national curriculum materials during January.

Extension Program Results and Accomplishments

Output Indicators

63	Number of educational meetings related to Financial Security in Later Life
3,816	Number of participants attending educational meetings related to Financial Security in Later Life
6,166	Number of persons receiving education information via mail/e-mail/mass mail, newsletters, on-site, by telephone
14	Number of educational publications and other materials developed to educate people about Planning for the Long Term.
1,117	Number of hours spent planning, conducting, marketing and evaluating educational programs related to Financial Security in Later Life.
92	Number of volunteers who spent 323 hours teaching 478 others.
36	Number of collaborations related to Financial Security in Later Life.
65	Number of media efforts related to Financial Security in Later Life.

Outcome Indicators

- 6 Number of participants who calculated the dollar costs of a long-term goal.
- 6 Number of participants who calculated their income needs for retirement using the “Ballpark Estimate” or other type of tool to determine retirement income needs.
- 130 Number of participants who increased dollars saved for long-term goals.
- 12 Number of participants who increased dollars saved for long-term goals.
- 6 Number of participants who reduced or eliminated consumer credit debt.
- 7 Number of participants who calculated cost estimates to establish savings/retirement goals.
- \$1,500 Total consumer credit debt reduction reported by participants.
- \$550 Total dollars reported saved by participants.

Source of Funds

Smith-Lever

Scope of Impact

Dissemination – Goals, objectives, situation statements, background statistics, marketing tools, and curricula and other annotated resources are available on an Intranet FCS department web site and a national web site. Existing resources materials were supplemented with additional resources on the state web site. A monthly e-mail 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 – 1) State Specific. Participating Counties: Delta – Clay, Craighead, Crittenden, Lawrence, Lincoln, Mississippi, Poinsett, St. Frances; Ouachita – Calhoun, Lafayette, Montgomery, Perry, Pulaski; Ozark – Crawford, IZard, Johnson, Sebastian

Program Response: Planning for the Long Term

Contact: Judith R. Urich, Family Resource Management Specialist, 501-671-2066,
Family and Consumer Sciences, jurich@uaex.edu

Situation

Significant issues Arkansas families face to prepare 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 experience physical changes.
- Learning to cope with loneliness, anxiety, and depression.
- Practice 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 Arkansans on planning for a quality of life in later years. The Planning for the Long-Term Focus Program committee composed of FCS Agents from all districts and the resource management and health and aging specialist met three times to identify program goals and resources that would meet 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 National 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. Subjects addressed include 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 thrust. Agents were trained in small groups in the use of the curriculum materials during December and January. 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

- | | |
|-------|--|
| 54 | Number of educational meetings held related to Planning for the Long-Term. |
| 5,097 | Number of participants attending education meetings related to Planning for the Long-Term. |
| 6,905 | Number of persons receiving education information via mail/e-mail/mass mail, newsletters, on-site, by telephone. |
| 51 | Number of educational publications and other materials developed to educate people about Planning for the Long-Term. |
| 1,365 | Number of hours spent planning, conducting, marketing and evaluating educational programs related to Planning for the Long-Term. |

- 20 Number of volunteers who spent 35 hours teaching 153 others.
- 22 Number of collaborations related to Planning for the Long-Term.

Outcome Indicators

- 16 Number of participants who adopted one or more measures to enhance their capacity to care for another person during the later stages of life.
- 173 Number of participants who changed one or more daily behaviors to accommodate decline in sight, hearing, taste, smell or physical changes that affect activities of daily living.
- 12 Number of participants who changed the way to relate to those experiencing declining sight, hearing, taste, smell or physical changes that affect activities of daily living.
- 217 Number of participants who used financial planning techniques to smooth transitions as they face unexpected events. These include writing or reviewing financial documents including durable power of attorney for finances or health care, living wills, estate plans, wills, beneficiary designations, passing untitled property, trusts, and funeral plans.

Source of Funds

Smith-Lever

Scope of Impact

Dissemination – Goals, objectives, situation statements, background statistics, marketing tools, and curricula and other annotated resources are available on an Intranet FCS department 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 the elders and their caregivers.

Scope of the Program – State Specific. Participating Counties: Delta – Craighead, Lawrence, Lincoln, Poinsett, Prairie, White; Ouachita – Calhoun, Montgomery, Sevier; Ozark – Crawford, Sharp.

KEY THEME: FARM SAFETY

Program Response: Farm Safety Programs and Farm Accident Rescue Workshops

Contact: Gary Huitink, Biological and Agricultural Engineering, 501-671-2242,
ghuitink@uaex.edu

Situation

Agriculture is one of the most dangerous work environments in Arkansas today. According to National Safety Council records, they consider agriculture the second most dangerous occupation after construction. They estimated that the average national cost in 2000 was \$940,000 for a work-related death and was \$28,000 for a work-related injury. Arkansas costs may vary from this, but the cost of most items, especially medical care, has risen since 2000. Injuries and accidents often become more traumatic when individuals work alone, sometimes in areas distant from any medical facility.

Stakeholder Input

Farm safety concerns reach us from program planning activities. Accidents are traumatic for the victim and his family. Costs to the victim have become high, and employers are interested in mitigating lost time, employee impairment, insurance premiums and potential litigation.

Overview

A variety of activities targeted farm injury and fatality reduction in Arkansas this year. Educational programs and publications have been provided. Some counties emphasized farm youth safety, including several Progressive Farmer Kids' Day Camps. Four states pooled their manpower and educational materials and jointly staffed a booth at the Mid-South Farm and Gin Show to increase awareness of safer management techniques and provide consultation to producers and ginners. Ginners and gin workers attended one of three regional programs addressing electrocution hazards and management perspectives to heighten understanding of hazards and plan safer approaches. Several counties have focused on various youth hazards including ATVs, farm animals, tractor overturns, PTO entanglements, etc. after 25 CES faculty participated in training that included *Farm Safety for Youth*.

Another emphasis was to train EMTs and volunteer fire department personnel regarding efficient accident rescue techniques at two-day Farm Accident Rescue workshops. Improved team skills, communication and decision making and securing better equipment for rescuers were outcomes. Programs provided "hands-on" experience to emphasize techniques to help reduce trauma and death when a farm accident occurs. This is a joint program with Arkansas Farm Bureau and the Cooperative Extension Service.

Extension Program Results and Accomplishments

Output indicators

700+ Farm owners, managers, workers, consultants and safety personnel that participated in meetings specifically on farm and gin safety topics.

- 1,800+ Safety fact sheets distributed at Cooperative Extension Service training sessions and meetings.
- 250+ Gin owners, managers and workers participated in joint training conducted by Cooperative Extension Service and the Southern Cotton Ginners' Association.
- 55+ Rescue personnel were introduced to proper air evacuation techniques and practiced rescues using air bags (standard rescue tool for entrapment), all who had little prior experience.
- "Identify Hazards and Prevent Accident," Chapter 12, was included in the *Grain Sorghum Production Handbook* and in the CES web site for emphasizing managing safely during grain sorghum production.

Outcome Indicators-Program Impact

- The number of reported Arkansas farm fatalities declined from 19 in 1999 to 10 in 2003 in 2001, indicating a good trend. Workshop participant comments, greater use of safety resources and requests for assistance, etc., indicate a growing awareness of how vital it is to use safe agricultural work practices.
- Several rescue units in Arkansas have added air bags to their rescue tools, in addition to having training to get the victim to medical care more rapidly.
- Other states have patterned their rescue training effort after the model developed in Arkansas.

Source of Funds

Smith-Lever, \$24,000 Federal Farm Safety Cooperative Extension Service grant

Scope of Impact

Dissemination – Program available through county Extension offices with joint support of Arkansas Farm Bureau and the University of Arkansas Cooperative Extension Service. Workshops are listed on our Cooperative Extension Service web site when the event is scheduled. A management guide, “Identify Hazards and Prevent Accidents,” chapter 12, emphasizes safe workplaces in a new publication, *Grain Sorghum Production Handbook* (also added to our web site this year). Both Alabama and Nebraska Extension Services reference our *Tornado Safety* fact sheet, and many other states have adopted portions of this fact sheet since it was placed on our web site.

Scope of Program – Farm Accident Rescue training programs were conducted in Jefferson and Perry Counties.

KEY THEME:

IMPACT OF CHANGE ON RURAL COMMUNITIES

Program Response:

Planning for Economic Development

Contact: Wayne Miller, Agricultural Economics and Community Development, 501-671-2085, wmillers@uaex.edu

Situation

Economic opportunity and quality of life vary greatly depending on your access to a good education, high-quality health care, employment opportunities and where you live. Even with a good education, many residents must move to an urban area or move out-of-state to obtain high-paying jobs.

- The Arkansas economy received a “D” for performance on its 2002 report card published by the Center for Economic Development, while it received an “F” in Business Vitality and an “F” in Development Capacity. This suggests that there is a considerable need for improving the economic conditions in Arkansas.

- Arkansas ranked 50th among states in a “New Technology” report card recently released, which suggests that Arkansas needs more information technology infrastructure, a larger skilled labor force and more “high tech” businesses.
- Over half of Arkansas’ 75 counties (38) lost population during the past year. Most counties in the Delta, Coastal Plains and Ouachita Highlands lost population, while the metropolitan areas and much of the Ozark Highlands gained population.
- The earnings per job – in real terms – continued to decline in many Arkansas counties.
- The Arkansas Supreme Court ruled that Arkansas’ primary and secondary educational system is inadequately and inequitably funded.

Arkansas needs to invest in the building blocks of economic development – education, health care and information technology infrastructure – at a time when state and local government revenues are declining in an anti-tax and anti-government environment.

Stakeholder Input

Requests for these programs come from community and state leaders. Each program is tailored to meet the needs of the constituents requesting assistance.

Overview

Communities that survive and grow in today’s competitive environment are continually searching for ways to improve their communities and the lives of their citizens. The Economic and Community Development section helps communities identify, evaluate and implement economic development strategies through workshops, community surveys, community profiles and impact studies.

Extension Program Results and Accomplishments

Output Indicators

- Completed a study of the purchasing patterns of Bradley County residents in collaboration with the Bradley County Industrial Development Commission. Information from the survey was used to prepare a report in which we identified the potential for increasing Bradley County retail trade and service business.
- Completed studies of the economic contribution of 15 Critical Access Hospitals to their local communities for the Department of Health and hospital administrators.
- Completed a study of the economic and fiscal impact of providing an additional \$100 in state funding for the Medicaid program.

Outcome Indicators

- The Bradley County Industrial Development Commission wants to use our recommendations to develop a program to increase retail and service business in the county.
- ACES visibility and credibility with rural health administrators has increased and we are now seen as a collaborator in helping educate local officials regarding the economic importance of rural hospitals for local communities.
- There is an increased demand for ACES to provide additional studies of the economic contribution of rural hospitals to their local communities.

Source of Funds

Funding was obtained from the beneficiaries of the studies as well as from CES 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 website.

Scope of Program – Many communities have used our questionnaires in conducting their community surveys. Community and state leaders have used the County and Rural Profiles in planning their community programs. However, we provide some of these services to rural communities primarily because they do not have the resources to undertake these activities without outside assistance.

<p>KEY THEME: LEADERSHIP TRAINING AND DEVELOPMENT</p>

Program Response: The LeadAR Program

Contact: Dr. Joseph D. Waldrum – Director of Organizational, Staff and Leadership Development, P.O. Box 391, Little Rock AR 72203, 501-671-2076-Phone, 501-671-2056-FAX, jwaldrum@uaex.edu

Situation

Developing leaders in rural Arkansas communities with a global vision is critical to maintaining growth and quality of life in these areas and statewide. There has been a decline in the number of rural and urban residents (both youth and adult) willing to take a

leadership role in many Arkansas communities. The need to train and educate those who want to “make a difference” has increased. The interface between urban and rural or agricultural citizens has created conflicts that can be resolved through education and training to identify and locate the resources and sharpen the skills of those willing to be change agents.

Stakeholder Input

County Extension agents, County Extension Councils, the LeadAR Advisory Council, county Farm Bureau boards, local utility managers, elected officials, and alumni of leadership programs submit names of good candidates for LeadAR and other leadership programs. They also promote ideas of issues that need to be discussed at seminars or study tours. Every two years we advertise the program to the above groups and encourage input for positive program changes. Input is considered by the program director and the LeadAR Advisory Council and appropriate changes in curriculum are made. The Advisory Council meets twice a year to review the program and make recommendations to modify the selection process, fund raising and the issues addressed in the program. Active efforts are made to contact minority alumni of the program to recruit other minority candidates for the program. This past year efforts were made to recruit Hispanic candidates through the Hispanic representative in the Governor’s office. Even though this was not successful, further contacts were identified that will encourage Hispanic applicants for the next class.

Overview

LeadAR is a two-year adult leadership development program that recruits participants from primarily rural and agricultural communities. It consists of 12 three-day seminars that discuss various issues important to the State of Arkansas, i.e., education, agriculture, forestry, environment, economic development, criminal justice and others. A few seminars focus on training in leadership and interpersonal skills. Additional components of the program include a 10 day national study tour to Washington D.C. and a two week international study tour outside the United States. The purpose of these tours is to learn how to access the resources of the federal government and to learn about another culture in another country. Participants are given homework before each seminar to learn about their local resources and also set a community leadership project goal to be completed by the end of the program. Applicants must be 25 years old and have had some experience in a leadership role. They are selected through a competitive process that includes an extensive application and interview process. Selection committees include external stakeholders, LeadAR alumni, and county and district Extension personnel. Committees are charged to purposely select a diverse class from various geographic areas, occupations, ages, gender, and races. The primary impact of the program is in improved leadership skills, self-confidence, knowledge of major issues affecting Arkansas, and people networks formed within the class and at the local, state, national and international levels. Completions of community projects or goals are readily measurable impacts of LeadAR.

Extension Program Results & Accomplishments:

Output Indicators

- 6 Three-day training seminars conducted for LeadAR participants
- 1 International study tour to Scotland and Belgium for Class 10.
- 69 Individuals participated in LeadAR Classes 10 and 11

Outcome Indicators

- 69 Individuals trained in LeadAR reporting adoption of new skills or using knowledge gained
- 6 Individuals from Class 10 that began new leadership positions. Examples:
 - Sandi Ramsey elected as City Clerk of Helena
 - Kirk Parnell appointed to Garland County Parks Committee
 - Todd Weyl appointed to Washington County Extension Council

- 17 New community projects completed by Class 10. Examples:
- Sandy Broskovak began a community foundation to fund community projects in the Twin Lakes community.
 - Beverly Chapple established a single parent scholarship program in Woodruff County.
 - Elizabeth Eggleston established a group to raise \$25000 to conduct a community needs assessment for the City of El Dorado.
 - Kirk Parnell led the process in Garland County to build a new park on an old landfill site.
 - Mark Robertson established an urban forestry nursery for the City of Little Rock.
 - Bryan King submitted a bill to the Arkansas legislature and successfully lobbied for its passage to form a state Young Farmer and Rancher Advisory Council to make recommendations to the Governor and state agencies on needs of young farmers.

Source of Funds

LeadAR is funded from Smith-Lever funds, corporate and alumni contributions, and each participant pays tuition of \$1500 for the two-year program. An endowment to partially support the program was begun in 1995 by the LeadAR alumni and now has approximately \$165,000 in the corpus.

Scope of Impact

Statewide

Dissemination – LeadAR is available to any Arkansas citizen over 25 years old with some leadership experience. Information about the program is available in all 75 county Extension offices via brochures, at the state headquarters, on the University of Arkansas Cooperative Extension Service web site, through alumni and print, radio and television media.

Scope of Program – The program is exclusively for Arkansas citizens. Sixty-nine of the seventy-five counties in the state have had from one participant to as many as 26 in the program since its inception in 1984. Part of the national study tour is to meet participants from another state program like LeadAR. Home stays are arranged to learn about another program and issues in another state. Class 10 went to Ohio and spent two days in homes in locations all over that state.

KEY THEME: PARENTING

Program Response: Guiding Children Successfully

Contact: H. Wallace Goddard, Family Life Specialist, Family and Consumer Science Section, 501-671-2104, wgoddard@uaex.edu

Situation

American children face unprecedented challenges. The frustrations and demands of a fragile economy, heavy work schedules, stress overload, family dissolution, and personal uncertainties put a heavy load on young Americans. The problems are further aggravated by the lack of training available for adults in dealing with child rearing and child care issues. The need for solid, practical, research-based information for parents and other caregivers is increasing at the same time that American adults are less likely to be reached by traditional informal educational processes such as meetings and neighborhood gatherings. Unfortunately much of the popular wisdom about family process is mistaken – even counterproductive. American families face a stress and disinformation crisis. Cooperative Extension, with its extensive network and research-oriented personnel, is uniquely qualified to respond to the challenge.

Stakeholder Input

Brazelton and Sparrow (2001) have observed that parents and caregivers are desperate for information yet are unsure where to get information that is reliable. While good childrearing may be the most important work that any society can do to assure its future, it is estimated that 90 percent of parents undertake the task without any specific training. A meeting of FCS agents and a meeting of the Marriage, Parenting, and Family Life Initiative Team determined that the highest priority in Arkansas communities was for quality, research-based information on family life that could be used in multiple ways. Some of that need was addressed by providing a richness of information units on the Arkansas Families (www.arfamilies.org) 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 over 5,000 non-Extension hits to the web resources during 2003. There were an unspecified number of client contacts with this information through newsletters, media, and county programs. Yet all of these contacts reach only a small percentage of Arkansans. There is a continuing need both for good information and for an increased awareness that such solid, research-based information is readily available.

Overview

Working closely with the production staff at Arkansas Educational Telecommunications Network (AETN), the Communication and FCS faculty of the University of Arkansas Cooperative Extension Service developed the concept and program outlines for a new public television series entitled *Guiding Children Successfully*. Each show is an hour-long program that includes practical tips for parents and caregivers. The developer and host for each show is H. Wallace Goddard, Extension Family Life Specialist. Dr. Goddard's training in Family Life together with training in Instructional Psychology make him uniquely qualified to develop this television series.

Dr. Goddard draws on Extension personnel to provide technical support (taping, publicity, design), and content specialists for the shows. In fact the extraordinary capacity of the communication department with excellent videographers, graphics specialists, and communications specialists has been an essential element of the show's success. With the support of the remarkable Extension network, the program organizers have also been able to identify and involve excellent panelists for the shows.

The twelve shows in *Guiding Children Successfully* focus on providing parents and other caregivers with practical, sensible information to help children develop into healthy, contributing adults.

UACES wrote a proposal to the Arkansas Division of Child Care and Early Childhood Education to make the twelve shows available through county Extension offices to child care 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 to use with caregivers who are identified as needing special training.

Extension Program Results and Accomplishments

Output Indicators

Twelve one-hour shows designed, taped, and edited. Each show has aired on AETN approximately four times which translates into 48 television hours of training for a wide audience in Arkansas. The National Educational Telecommunications Association (NETA) has adopted *Guiding Children Successfully*, thereby making the series available to audiences nationwide. At least 20 stations in 10 states have aired shows from the series. Since most public television stations do not subscribe to A. C. Nielsen, it is not possible to give exact numbers of viewers. It is estimated that there have been over 1,000,000 person-viewings of shows across the country.

Outcome Indicators

Program Impact – 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, AETN has an average weekly viewership of about 237,000 households, or about 540,000 viewers. AETN has aired the show during prime time (6:00 p.m.) and has re-broadcast the shows several times. It is reasonable to estimate that hundreds of thousands of viewers have been reached in Arkansas.

Source of Funds

Smith Lever 3b and 3c for all Extension planning, filming, and producing. AETN has absorbed production and broadcast costs. Providing GCS tapes to county Extension offices for providers and parents was funded by the Arkansas Division of Child Care and Early Childhood Education (Professional Services Contract Number 4600003835).

Scope of Impact

Dissemination – Not only are shows from Guiding Children Successfully available through public television broadcast in Arkansas and many states nationwide, but also videotapes (and, soon, DVD's) of all shows are available to all parents and professionals through all 75 county Extension offices in the state of Arkansas. Arkansas child care providers were alerted to the availability of the resource through a mailing that went to 3500 providers.

Scope of Program – 1) Arkansas: AETN has an average weekly viewership of about 237,000 households, or about 540,000 viewers. Since GCS did not air during a ratings month and AETN does not subscribe to A. C. Nielsen, it is not possible to give exact numbers of viewers. However, AETN has aired the show during their primetime (6:00 p.m.) and has re-broadcast the shows several times. It is reasonable to estimate that hundreds of thousands of viewers have been reached in Arkansas.

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).

In the first weeks of the availability of the program 138 persons registered for GCS including 113 early childhood professionals. Fifteen participants have already viewed and successfully completed a learning check at criterion level (80 percent) on all shows in the series. Many hours of training (341) have been awarded to early childhood professionals (310 hours) and others. While a small percentage of those who view the shows do not successfully complete the learning checks on the first attempt, they are allowed to re-attempt until they reach mastery.

It is expected that over 1,000 hours of child care provider training will be delivered in Arkansas through GCS before the end of 2004.

2) Multi-state: The National Educational Telecommunications Association (NETA) has adopted Guiding Children Successfully thereby making the series available to audiences nationwide. At least 20 stations in 10 states have aired shows from the series. Since most public television stations do not subscribe to A. C. Nielsen, it is not possible to give exact numbers of viewers. It is estimated that there have been over 1,000,000 person-viewings of these Extension shows across the country.

KEY THEME:

WORKFORCE PREPARATION – YOUTH AND ADULT

Program Response:

Kansas City 4-H Global Conference

Kevin Jones, 4-H Youth Development, 501-821-6884, kjones@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

- 43 Arkansas 4-H members who attended the four-day Kansas City Global Conference in Kansas City, Missouri.

- 123 Arkansas 4-H members who have experienced Cultural Education, including heritage, diversity and exchanges, as reported on ES-237.

Outcome Indicators

- 12 Arkansas 4-H members who were past delegates reported information gained to the extent that they made application to attend for a second year. Two of these members were selected to serve as facilitators 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 – Participants in this program represented 17 counties from across the state: Benton, Clark, Columbia, Crawford, Faulkner, Garland, Hot Spring, Independence, Jefferson, Lonoke, Polk, Pope, Pulaski, Sebastian, Sevier, Searcy, Washington.

Program Response: Mini-Society Camp

Contact: Kevin Jones, 4-H Youth Development, 501-821-6884, kjones@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 Mini-Society program 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 mini-society 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 Mini-Society 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 Mini-Society program was implemented in two ways, the first being a four-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 – four days and three nights

- 60 Youth, ages 9-12, who participated in the state camp.
- 1,800 Hours of educational instruction during the Mini-Society Camp.
- 8 Adults trained to implement the Mini-Society 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

Support primarily by camper fees.

Scope of Impact

Dissemination – The Mini-Society program is available to agents/teachers or other persons who have participated in a certified training program. Once trained, the instructors are free to use the educational program as often as they would like. Training has been provided for the past three years at the state level.

Scope of Program – Eight counties statewide have delivered this program including the counties of Drew, Washington, Faulkner, Marion, Little River, Pope, Crittenden and Jefferson.

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

- 24 Number of programs held at the agricultural awareness center.
- 13 Number of outreach programs held through the state.
- 600 Number of participants in agricultural awareness workshops at Forestry and Wildlife and County Camps.
- 1,500 Number of participants in Pizza Ranch and Insect Festival.

Outcome Indicators

More than doubled the amount of programs presented at the UAPB agricultural awareness center.

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 – Counties that have participated in the field trips include Pulaski, Lonoke, White, Saline, Monroe, Van Buren, and Jefferson.

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

- 16 Number of Robotics programs
- 11 Number of GPS Programs
- 2 Number of Teacher Trainings
- 6 Number of State Tech Team Workshops
- 5 Number of County Tech Teams
- 9 Number of Camp or Special Event Workshops
- 6 Number of Morgan Nick Photo ID Days

Outcome Indicators

The Arkansas 4-H Tech Team has more than tripled its active membership.

Source of Funds

Private donations and registration fees

Scope of Impact

Dissemination – The Arkansas 4-H Tech Team is only open to youth 13-19 years of age, but the programs are available to all youth and adults in the state of Arkansas. Materials about the program are available on the web and through the program coordinator.

Scope of Program – The technology program has reached youth and adults throughout Arkansas and the United States.

Program Response: Arkansas 4-H Volunteer Core Competencies

Contact: Mike Klumpp, 4-H Youth Development, (501) 671-2105, mklumpp@uaex.edu

Situation

Recruiting, retaining, and successfully supporting Arkansas parents and volunteers in our 4-H program can be both exciting and difficult. It has been recognized that an effective 4-H program requires committed parents, dedicated volunteers, and Extension faculty that work together for the common good of young people. In order for each of these groups to contribute their part, they need to have some basic core knowledge about the 4-H Youth Development Program of the University of Arkansas Cooperative Extension Service.

Stakeholder Input

The hallmark of the 4-H program has been its strong volunteer leadership base. Today many volunteers are not willing to make long-term commitments or volunteer at all unless they have a well-defined set of expectations. For these reasons a consistent training program with core competencies was identified as a need for volunteer development and management in Arkansas. The competencies would provide for a fundamental understanding of 4-H Youth Development and assist in creating a strong foundation for educational programming in Arkansas. An Arkansas 4-H Volunteer Core Competency Design Team of Extension Agents and Specialists was put together to look at adapting the Oklahoma 4-H Core Competency Training Curriculum. The team traveled to a training in Oklahoma and then came together to review materials and make recommendations as to adaptation. The process of making changes and adapting Unit 1- This Is 4-H and Unit 2-Getting the Most Out of the 4-H Experience for Arkansas was completed and went to print.

Overview

In-Service Trainings were held across the state introducing Extension Professionals and 4-H Paraprofessionals to the variety of tools that parents/volunteers need to effectively carry out assigned roles and responsibilities in planning, conducting, and evaluating local and/or county 4-H programs. Each participant received a Unit 1 and Unit 2 guidebook and CD-ROM containing PowerPoint Presentations, Teaching Outlines, Parent-Volunteer Self Study Series, Newsletter Support Materials, Handouts, and 4-H Resource Materials. Counties were also encouraged to identify one or more Key Volunteers to participate along with the county faculty in the training (this Key Volunteer could greatly assist county staff in training other parents and volunteers).

Extension Program Results and Accomplishments

Output Indicators

Two-day In-Service Trainings were held across the state, covering each of the three districts, with over 250 Extension agents, Program Assistants, and Key Volunteers being trained:

- Crawford County Extension Office (Ozark), Van Buren, AR
- Craighead County Courthouse Annex (Delta), Jonesboro, AR
- First Electric Cooperative (Ozark), Heber Springs, AR
- Little Rock State Office (Ouachita), Little Rock, AR
- Howard County EHC Educational Center (Ouachita), Nashville, AR
- Farm Bureau Building, Morrilton, AR
- Ozarka College, Melbourne, AR

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 available 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, Parent-Volunteer Self Study Series, Newsletter Support Materials, Handouts, and 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 – 1) *State Specific*: All 75 counties in Arkansas have participated in the training and are providing opportunities for their clientele to receive additional training in identified competency areas.

2) *Multi-state*: Arkansas adapted this curriculum from Oklahoma. As a result of the training in Arkansas, Mississippi has adapted the Arkansas curriculum.

Program Response: Building 4-H Clubs

Contact: Darlene Z. Baker, State Leader - 4-H Youth Development, (501) 671-2064, dbaker@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 through 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, 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

- | | |
|----|--|
| 43 | 4-H L.I.F.E. After-School Training for agents/volunteers (focusing on how to organize 4-H clubs/groups in after-school settings) |
| 8 | New 4-H After-School programs organized |
| 6 | District Training sessions on 4-H Volunteer Core Competencies - two day training for agents and volunteers; 157 participated |

- 1 In-service training was held on Marketing 4-H to the public
- 5 4-H promotional videos in Spanish were made available to counties
- 111 4-H events were held to enroll 4-H members
- 5,572 Individuals participated in 4-H enrollment fairs/events/activities
- 4 Volunteer trainings held on marketing 4-H
- 28 Volunteers attending training on marketing 4-H
- 769 Organized 4-H clubs and groups
- 17 School-age childcare units reported
- 744 Youth participated in after-school programs
- 5,294 Youth volunteers trained
- 3,125 Adult volunteers trained
- 747 Other adults trained

Outcome Indicators

- 52 Collaborative efforts with faith-based and civic group/organizations to organize clubs were held, with 3,845 people participating
- 85 Organizational meetings were held
- 50 Volunteer recruitment events were held
- County Extension Agents serviced an average of 3.8 organized clubs and groups per agent in the state.

- 70 Volunteers who became Certified Volunteers after participating in three training courses.
- 4-H volunteers contributed an average of 192 hours per year for a total of 1,444,728 hours of service by adult volunteers
 - 4-H youth volunteers contributed an average of 48 per year for a total of 58,080 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) was made available to all participants in the district trainings. Each county had two faculty members participate in the training. This curriculum was adapted for Arkansas (originally prepared in Oklahoma) by Mike Klumpp, Associate Professor 4-H Youth Development. The 4-H L.I.F.E After-School notebook and activity kit was developed by Mike Klumpp and Connie Phelps. These materials were distributed to participants in the training. In addition the participants received the national 4-H After-School curriculum kit. Counties participating were Pulaski, Cross, Benton, Boone, Bradley, Carroll, Conway, Craighead, Dallas, Hempstead, Independence, Jefferson, Lee, Madison, Ouachita, Poinsett, Randolph, Searcy, Sebastian, Sevier, Washington, White, Woodruff, and Yell.

Scope of Program – State Specific – available to all 75 counties in Arkansas.

Programs of Excellence

4-H Summer Program

Success Story – Newport Housing Authority has a summer program and an after-school program for minority youth, but lacked enough activities. The Cooperative Extension Service extended their 4-H programs to the Housing Authority in hopes that minority youth would benefit.

General Program Information – Programs in Nutrition, Food Safety, and Character Enrichment were offered to help resolve problems found to be prevalent in the areas. The programs were offered during the school year as well as during the summer. Fifty minority youth were involved in the program

Number and Names of Counties or Locations Involved – Jackson County

Impact Numbers – 95% of the youth indicated they gained a basic knowledge of how to help them have healthier lifestyles. They are now an organized group that meets on a regular basis in a regular location.

CES Section Contact Person – Stephanie Bradford, County Extension Agent - Family and Consumer Sciences, (870) 523-7450, sbradford@uaex.edu

4-H After-School

Success Story – Entire county Extension staff worked together as a team to implement a 4-H after-school program in a local school. The staff worked with an existing after-school program and secured additional grant funding for the program.

General Program Information – The administration and staff at Marked Tree Elementary, concerned about the growing gang problem at the junior and high school level, were excited about an after-school program that could include all students. Attempts at organizing a scout program had failed after numerous attempts. With a 21st Century After-School program already in place, adding 4-H created a winning combo. The agents felt fortunate to participate in the state 4-H After-school training and to receive seed money from the Rural Youth Development Grant as well as a private grant from the Arkansas Community Foundation. Together they organized a kick-off for the new program that offered a “fair style” exhibition of 4-H projects. Thirty-five youth, mostly minority, attended the kick-off. The support staff rallied to help prepare exhibits and yearbooks, which really reinforced the programs. The goal of the 4-H After-school program in Marked Tree was to add an experiential learning opportunity with a teamwork format to the after school hours. The program is delivered in the school cafeteria every Thursday, with a formal 4-H meeting on the last Thursday of the month. There are plans to expand to at least two other schools in the near future. Forty-four youth are currently being served and three teachers are now official 4-H volunteer leaders.

Number and Names of Counties or Locations Involved – Twenty-four counties participated in the state 4-H After-School training: Benton, Boone, Bradley, Carroll, Conway, Craighead, Cross, Dallas, Hempstead, Independence, Jefferson, Lee, Madison, Ouachita, Poinsett, Pulaski, Randolph, Searcy, Sebastian, Sevier, Washington, White, Woodruff, and Yell.

Impact Numbers – \$25,000 Rural Youth Development Grant was obtained to provide training for agents and volunteers in implementing 4-H After-School programs. Agents indicate a very favorable response to the program:

“While our program is only in its fourth week, the faculty members at the school have already noted a change in attitude towards school and towards attendance. Marked Tree

Lions Cub members have also committed to partner with Extension as mentors and financial supporters of the new club.”

CES Section Contact Persons – Debra DeRossite County Extension Agent-Family and Consumer Science, (870) 578-4490, dderossite@uaex.edu; Rick Thompson, CES-Staff Chair, (870) 578-4490, rthompson@uaex.edu; Mike Hamilton, CEA-Agriculture, (870) 578-4490, mkhamilton@uaex.edu; Connie Phelps, Assistant Professor 4-H Youth Development, (501) 671-2053, cphelps@uaex.edu

Program Response: Citizenship Washington Focus

Contact: Cynthia Klumpp, 4-H Youth Development, (501) 671-2059, cklumpp@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 (CYWF) 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 C...WF 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

47 Arkansas 4-H members, two volunteer leaders and two county Extension agents attended the nine-day CYWF trip to Washington, DC.

6,034 Arkansas youth received citizenship education according to the ES-237 report.

Outcome Indicators

- 27 Delegates improved their citizenship competency scores as measured by pre- and post-testing.
- 43 Youth delegates turned in a plan of action of what they planned to do in their local community as a result of the CYWF 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.

Program Adoption – Participants in this program represented 20 Arkansas counties: Benton, Boone, Conway, Cross, Faulkner, Garland, Hempstead, Hot Springs, Independence, Jefferson, Johnson, Lawrence, Lonoke, Marion, Phillips, Searcy, Sebastian, Union, Washington, and Woodruff.

Program Response: Developing Youth

Contact: Darlene Z. Baker, State Leader - 4-H Youth Development, (501) 671-2064, dbaker@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

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

8,742	Number of clubs/units in which youth participated.
769	Number of organized clubs/units in which youth participated.
133,808	Number of youth who participated in clubs/units.
10,447	Number of youth who participated in organized clubs/units.
1,849	Number of educational programs held for youth that target basic life skills.
63,361	Number of youth who participated in educational programs designed to teach basic life skills.

138 Number of youth participating in adventure based programs.

Outcome Indicators

133,808 Number of youth who reported working in one or more educational project areas.

979 Number of youth spending one or more hours a week in providing service to their community or others.

40 Number of youth who reported increased ability to work as a team after participation in adventure based learning experience.

40 Number of youth who reported increased ability to set goals after participation in adventure based learning experience.

1,210 Number of youth volunteers conducting educational programs.

3,151 Number of youth serving in leadership roles at the club or county level.

89 Number of 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.

Program Adoption – All 75 counties in Arkansas conduct a 4-H Youth Development program.

Programs of Excellence

Sixth Grade Retreat

General Program Information – The need for youth to develop leisure skills that provide a positive use of time rather than turning to behaviors that proved to be destructive was the purpose behind the development of the 6th Grade Camping Retreat. The retreat was held at the Arkansas 4-H Center. The RES-Q (environmental education) program at the Center was utilized. Emphasis was to build leisure skills that promoted team building and cooperation. Approximately 800 youth from Westside, Nettleton, Valley View and Jonesboro attended the overnight retreat. This is the third year for the camp so a total of 2,400 students have been reached with the program. As a result of the program, students are now more aware of outdoor activities they can participate in as constructive use of leisure time.

CES Contact Person – Martha May, County Extension Agent - Family and Consumer Science, (870) 933-4565, mmay@uaex.edu.

Youth Livestock Projects Produce Blue Ribbon Kids

General Program Information – Youth of today have many choices and pressures. Our youth need projects that develop life skills, responsibility and discipline. Youth livestock projects provide all these and more. The White County Junior Market Animal Program has grown from 34 in 1995 to 70 animals in 2003. The interest in the program has increased which means more youth are receiving valuable life skills. Youth who participate in the program tend to be better managers of finances, more responsible and more disciplined. The success rate of responsible youth graduated is 75% or greater. The program has not only increased in youth participation, but also in community support. In 1995 there were 43 business and individual supporters and in 2003 there were 132 supporters. These supporters financially reward the youth for their work in the livestock projects. The financial rewards in 1995 totaled \$15,132 and have increased to \$35,295. Because of these financial rewards many youth have been able to attend college and are seeking degrees in Agriculture or related fields.

CES Contact Person – Brian W. Haller, County Extension Agent – Staff Chair, (501) 268-5394, bhaller@uaex.edu

Community Garden Design Team

General Program Information – In an effort to beautify the downtown area of Helena, the Community Garden Design Team as a part of their community leadership project has helped lay the foundation for the garden which has involved Helena citizens in a community-wide effort to beautify the city. Ninth and 10th grade students from Central High School met to form the Community Garden Design Team. The group designed a blueprint for the community. This tactic gave the students a sense of community pride and leadership. A total of 56 students worked together to develop the garden blueprint and entitled the effort “Gardens of E.D.E.N.” (Empowering Development through Education and Nutrition). There is now a garden with various vegetables and flowers for the community to enjoy. A grant has been achieved and the materials have been bought and construction is underway for the building of a greenhouse.

CES Contact Person – Shawn Payne, County Extension Agent - Agriculture, (870) 338-8027, spayne@uaex.edu

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; Eric
De Vries, 4-H Youth Development, (501) 821-6884, edevries@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 initiatives, 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

3,254 participants participated in the program in 2003

132 activities with 3254 participants in 4 or 8 hour Challenge course programs

Outcome Indicators

- 1997-98 1550
- 1998-99 2800
- 1999-00 2900
- 2000-01 3500
- 2001-02 3540

Source of Funds

Funding 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, Forrest service 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:

4-H Responsible Environmental Stewardship-Quest (4-H RES-Q)

Contacts: Leslie H. Gall, 4-H Youth Development, 501-821-6884, lgall@uaex.edu; Burnett L. 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 Responsible Environmental Stewardship - Quest (4-H RES-Q) allows 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 school and youth group environmental education field trips, Science Enrichment Education for Kids (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 the 4-H Responsible Environmental Stewardship-Quest Program 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.

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 education 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 AM to 2:30 PM 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 was repeated for four weeks during the summer.

Science Enrichment Education for Kids

The 4-H RES-Q Science Enrichment Education for Kids, 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 2003/2004. 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 is being conducted, which began 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

- 4,537 Number of participants in the 4-H RES-Q school and youth groups environmental education field trip program at the Arkansas 4-H Center, March through November.
- 61 Number of participants in the three weeks of the Summer Day Camp program, June, July, and August.
- 182 Number of participants in the 12-week 4-H RES-Q Science Enrichment Education for Kids program, winter of 2003/2004.
- 7 Number of participants in the NatureMapping program, winter of 2002/2003.
- 15 Number of participants in the NatureMapping program, winter of 2003/2004.

Source of Funds

4-H RES-Q is a youth development program of the Cooperative Extension Service, University of Arkansas, located at the C. A. Vines Arkansas 4-H Center in Ferndale, Arkansas. Cooperating sponsors for this program 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 and numerous organizations, industries and individuals from across the state.

Scope of Impact

Dissemination – 4-H RES-Q is 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 program is 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 2002. 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 2003-2006. 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 is 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

- 171 Number of Extension agents that attended the SE, SW, NE and NW Regional O-Ramas.
- 36 Number of Extension paraprofessionals that attended the SE, SW, NE and NW Regional O-Ramas.
- 204 Number of specialists conducting activities and others attending at the SE, SW, NE and NE Regional O-Ramas.
- 252 Number of 4-H leaders that attended the SE, SW, NE and NW Regional O-Ramas.
- 747 Number of junior 4-Hers competing in activities at the SE, SW, NE and NW Regional O-Ramas.
- 486 Number of senior 4-Hers competing in activities at 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-Hers from the Southeast, Southwest, Northwest and Northeast districts that attended State O-Rama.

Outcome Indicators

- Numerous newspaper articles from around the state promoting State O-Rama.

Source of Funds

The programs are funded by participant fees. These fees are managed by the Arkansas 4-H Foundation.

Scope of Impact

Dissemination – The program is available to all junior and senior 4-H members statewide who are eligible through competition in district-qualifying or state-only competitive activities.

Scope of Program – Junior and senior 4-H members, volunteer leaders and Extension faculty from all 75 counties have participated in the event.

Program Response: State 4-H Camp

Contact: Kevin Jones, 4-H Youth Development, 501-821-6884. kjones@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), and two for youth (ages 13-16) were conducted at the Arkansas 4-H Center during June and July. The camping program used 4-H Teen Counselors in Training 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 in Training volunteers were provided with a three-day intensive counselor training that helped to prepare them for their duties and responsibilities. Camps were designed around the theme "4-H Technology of the Future," which introduced campers to a wide variety of 4-H educational subject matter as it relates to technology.

Extension Program Results and Accomplishments

Output Indicators

26	4-H Teen Counselors in Training
9	State Equine Camp
230	State Camp One
90	State Camp Two
220	State Camp Three
70	Adventure Challenge Camp
645	Total number of campers
39	Counties whose youth participated in State Camp
10,770	Hours of camper educational instruction time
3,570	Hours of camper recreational time

Outcome Indicators

- Camp evaluations were rated on a 1-5 scale with 5 being the best rating.
- Facilities received an average 4.23 rating.
- Educational Workshops received an average 4.29 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 in Training positions.

Scope of Program – 39 Arkansas counties used the program.

Program Response: Youth Community Service

Contact: Cynthia Klumpp, 4-H Youth Development, cklumpp@uaex.edu, 501-671-2059

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

- | | |
|-------|---|
| 39 | Number of community projects implemented by youth. |
| 2,697 | Number of youth who participated in community service projects. |
| 1,276 | Number of volunteer hours expended on the 4-H CAN Make a Difference food bank program |

16,368 Pounds of food collected via the 4-H CAN Make a Difference program

Outcome Indicators

1,927 Number of youth who reported spending one or more hours a week in providing service to their community or others.

19,312 Number of volunteer hours contributed by youth to community service programs.

\$308,992 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. In addition the 4-H Can Make A Difference Food drive was conducted at the county and state levels. Over 16,368 pounds of food was collected at the Arkansas State Fair and an additional eleven state or district events. Food was distributed to the Arkansas Food Bank and local/county food pantries. Additional community service projects conducted were service projects (8) at the annual Teen Leader Conference. A total of 187 youth participated in the Teen Leader Conference service projects: Comfort bears, letters to armed forces, 4-H Center grounds clean-up and maintenance of trails and log cabin, 4-H camp workshop supply preparation, Morgan Alert, Care Clothes and personal care kits.

Various County level community service projects were conducted and are highlighted below.

Programs of Excellence

Gould Public School Beautification 4-H Project Club

General Program Information – Many of the children in Southeast Arkansas are not afforded the opportunities that children in other areas have. Many children in Lincoln County attend schools that are 90-100% minority. These school districts have very limited resources and are not able to give the children extra-curricular activities. The

typical child in these areas either lives with a single parent or is being raised by grandparents. 4-H is a perfect fit for these children. A school project club was formed with a sixth grade class in Gould. The group chose a focus of school beautification. This project has encouraged other teachers to take up similar programs and to plant flowers and clean up other areas around the school and in the community.

Names of Counties Involved – One county (Lincoln) was involved in the community of Gould.

Impact Numbers – 18 youth participated in the project. 95% of the youth involved felt “very proud” of what was accomplished. Material and plants for a greenhouse were donated to the project (value of over \$400.00).

CES Contact Person – Sunny Wilkerson, County Extension Agent - Agriculture, 870-628-4247, swilkerson@uaex.edu

4-H CAN Make a Difference

General Program Information – The Arkansas 4-H CAN Make a Difference was a statewide community service program designed to collect nonperishable foods for the Arkansas Food Bank and other similar groups throughout the state. In Arkansas there is a need to provide food for the hungry, especially during “non-holiday” times. Each county Extension office was furnished with posters for collection sites and informational materials on the hungry in the state. 4-H Clubs then accepted the responsibility to collect canned goods and other nonperishable foods. In addition, many 4-H members donated time to work in local food banks.

Number and Names of Counties – Most counties participated in the program at some level. Twenty-nine counties submitted results of the program. These counties were: Benton, Boone, Clark, Craighead, Desha, Grant, Greene, Howard, Independence, Izard, Jefferson, Johnson, Lawrence, Little River, Lincoln, Logan, Madison, Marion, Miller, Ouachita, Pike, Pope, Prairie, Saline, Searcy, Sebastian, Sevier, Sharp and Yell. In addition food was collected at the Arkansas State Fair, and eleven state or district events.

Impact Numbers – Over 16,000 pounds of food were donated by Arkansas 4-H members to the Arkansas Food Bank. The 4-H program was the third largest donor in the state to the Food Bank. 1275 volunteer hours were expended on this project.

Contact Person – Cynthia Klumpp, 4-H Youth Development, 501-671-2270, cklumpp@uaex.edu.

Join Hands Day Activity

General Program Information – In Clay County, most young people and older people do not interact, unless they are relatives. The Join Hands Day is a national day that is set aside for youth and older adults to work on a community service project in their community. Join Hands has been celebrated in Piggott the last two years joining the

hands of the Piggott Nite Lites Extension Home Makers and the 4-H members in the Piggott area. After the clean-up, the participants enjoyed a meal together which gave the group another opportunity to spend some quality time together.

The clean-up was on Saturday, June 21, at the Clay County 4-H Leaders Adopt-a-Highway section on Highway 139, southeast of Piggott. The goal of the program was to get the youth and older adults to interact, while working on a clean-up project together.

The Join Hands was a good way for the youth and adults to get to know each other and work on a project that they both could enjoy and be proud of their accomplishment. This activity allowed the members to recognize that stereotypes about the other group were not necessarily true. One 4-H member commented about an Extension Homemaker, "That lady has more energy that I have – I think she could have worked all morning." One Extension Homemaker also continues to ask about the 4-H member she was partnered with for the clean up.

Names of Counties Involved – One county, Clay – Piggott, AR

Impact Numbers – Twenty-two people were involved with the clean-up. Fourteen youth and eight Extension Homemakers met to clean up the 1.25 miles of highway.

CES Contact Person – Sunny Wilkerson, County Extension Agent - Agriculture, 870-628-4247, swilkerson@uaex.edu.

Program Response: Youth Leadership

Contact: Cynthia Klumpp, 4-H Youth Development, cklumpp@uaex.edu, 501-671-2059.

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 FY02, 73 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-seven ambassadors and six 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 2002, the conference focused on the power of youth/youth as partners. Participants included 191 youth and 16 adults.

Extension Program Results and Accomplishments

Output Indicators

- 24 Educational programs presented focusing on youth Leadership and Volunteer Development
- 57 Educational program designed to develop youth leadership
- 100 Training conducted for officer leadership roles in club, county, and community.

Outcome Indicators

- 259 Number of youth volunteers conducting educational programs.
- 5,856 Number of volunteer hours contributed by youth to educational programs.
- 1,028 Number of youth in new volunteer leadership positions.
- 74 Number of youth in new elected leadership positions.

184 Number of youth volunteers trained through 4-H and participating in leadership programs.

6,807 Youth enrolled in Leadership Development

5 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.

Program Adoption – 24 counties had youth serve in a state 4-H ambassador or state 4-H officer leadership role including Benton, Boone, Clark, Columbia, Crawford, Faulkner, Fulton, Garland, Greene, Independence, Jefferson, Johnson, Lawrence, Lonoke, Pike, Polk, Pope, Prairie, Saline, Searcy, Union, Van Buren, Washington, and White.

Programs of Excellence

4-H Teen Leadership Conference

Success Story – The 187 youth participated in the 4-H Teen Leadership Conference, June 2003. The three-night/four-day program was designed, organized and implemented by 53 State Officers (9) and Ambassadors (42). The 53 youth were responsible for the behind the scenes working of the workshop, planning and carrying out the responsibilities of registration, assembly and workshops, dance and fun activities, Hall of Fame banquet (386 members and guests participating) evaluation, closing ceremonies, and selection of workshop topics and speakers. The youth meet in February at the Ambassador Workshop (56 youth) to plan and design workshop content, divide up responsibilities, and participate in the educational workshop training and program design. The Teen Leadership Conference provided youth the opportunity to receive training and curriculum in the areas of: manners and etiquette, family relations and strength, personality analysis, tobacco prevention and decision making, and community service.

General Program Information – Teen Leader Conference is totally planned, conducted, and evaluated by the State 4-H Officers and State 4-H Ambassadors

Locations Involved – Benton, Boone, Carroll, Clark, Clay, Crawford, Columbia, Craighead, Faulkner, Fulton, Garland, Grant, Greene, Howard, Independence, Jefferson, Johnson, Lawrence, Lonoke, Madison, Ouachita, Pike, Polk, Pope, Prairie, Saline, Searcy, Sebastian, Sevier, Union, Van Buren, Washington, and White Counties.

Impact – The 187 youth who participated in the Teen Leadership Conference have taken the educational workshop materials and presented this information at the local and state level. The curriculum developed for the Manners and Etiquette workshop has been presented to over 225 individuals both adults and youth at the 4-H Volunteer Leaders Retreat, Teen Counselor training, and various county programs (Searcy, Saline, Boone, and Crawford).

CES Section Contact Person – Cynthia Klumpp, 4-H Program Specialist, Little Rock State Office, (501) 671-2270, cklumpp@uaex.edu.

South Shore Marion County Youth Leadership

Success Story – The youth of today will serve as the leaders for the future. These leaders will have the tools to influence a positive and progressive community. Forty-two ninth-grade students participated in the South Shore Marion County Youth Leadership program during FY '03. Eighteen completed the program in May and 21 new students began in August. Of the 18 who graduated and responded to the evaluation, 10 are planning on applying for new leadership roles. Five stated they would not serve in a leadership capacity at this time.

Eighteen students reported that they had accomplished what they joined the program for and learned things that will assist them as they make application for leadership positions and serve in leadership capacities. These students are better prepared to lead their schools, community, and state.

General Program Information – The South Shore Marion County Youth Leadership program mission is to motivate and train potential young leaders enabling them to take an active role in their community. All three schools in Marion County: Bruno-Pyatt, Flippin, and Yellville-Summit, participated in the program.

Locations Involved – Bruno-Pyatt, Flippin, and Yellville-Summit, participated in the program.

Impact – Total of 42 ninth-grade youth.

CES Section Contact Person – Cynthia Klumpp, 4-H Program Specialist, Little Rock State Office, (501) 671-2270, cklumpp@uaex.edu.

Program Contact Person – Renee Myers, County Extension Agent - Family and Consumer Science, (870) 499-6349, rmyers@uaex.edu.

Ralph Joseph Youth Leadership Program

Success Story – Dr. Ralph Joseph (Sponsor) and the community volunteer leaders realized the need to prepare Lawrence County youth to become responsible citizens and develop leadership skills in order to better the community. Eight classes of this program have been conducted since May 1996 and 138 young men and women have graduated from the program.

General Program Information – Program participants learn management, decision making, communication, understanding self, relationships and working together as a group. Participation created a bond between the youth that allows them to step out of their comfort zones of home, school and community. Local volunteers are utilized to teach communications, personality assessment, etiquette, decision-making, career assessment and community projects. Each group of participants must complete a community project, which helps to develop stronger communities.

Locations Involved – Three high school juniors are selected from each of the six school districts of Lawrence County involving youth from all parts of the county.

Impact – Sixteen youth participants developed community projects that made a difference to the schools and residents of Lawrence County. Programs implemented include: Drug and Alcohol Abuse Awareness, Beautification of school and community buildings, Job Fair, Youth Mentoring Program, and Youth Reading Programs.

CES Section Contact Person – Cynthia Klumpp, 4-H Program Specialist, Little Rock State Office, (501) 671-2270, cklumpp@uaex.edu.

Program Contact Person – Stewart Runsick – Lawrence County, County Extension Agent - Staff Chair, (870) 886-3741, srunsick@uaex.edu.

Youth Leadership Academy

Success Story – Five years ago following a violent act at a local school a Safe School grant was received by the Westside, Jonesboro, Nettleton and Valley View Schools. That grant provided for a variety of programs to be developed with the overall focus of providing a safer environment for children. One aspect of that grant was to develop a Jr. Leadership Academy to assist students in developing their leadership skills. After three years of funding by the grant the program is now continuing with local support.

General Program Information – The Youth Leadership Academy consists of the following program focus:

- Improve their leadership skills
- Learn to work together as a team
- Understand the importance of effective communication in leadership
- Learn the importance of taking part in their community
- Learn to make better decisions

Locations Involved – Four school districts in Craighead County are involved in the program. The districts are Jonesboro, Nettleton, Valley View and Westside.

Impact – Participation in the program is by teacher recommendation. Twenty students are selected for each academy. This is an equal number per school. Each school year three (3) academies are held for a total of 60 students. This program has been in existence for 3 years and has reached a total of 180 students. As a result of this program, participants have reported that the academy has taught them how to make more effective decisions and how to communicate more effectively with people. Eighty-five percent of the participants reported that they learned how important it is to take part in their community.

CES Section Contact Person – Cynthia Klumpp, 4-H Program Specialist, Little Rock State Office, (501) 671-2270, cklumpp@uaex.edu.

Program Contact Person – Martha May, County Extension Agent - Family and Consumer Science, Craighead County, (870) 933-4565, mmay@uaex.edu.

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 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

- 22,000 Laying pullets placed with youth participants
- 12,000 Broilers placed with youth participants
- 5 Barbecue contests involving youth participants
- 12 Judging contests involving youth participants

Outcome Indicators

- 800 Youth participants learned the principles and responsibility necessary to care for laying birds
- 400 Youth participants learned broiler care principles
- 1,200 Youth BBQ participants learned the cooking and poultry product handling techniques

Source of Funds

Industry sponsorships, local community supporters, participant fees, Smith Lever

Scope of Impact

Dissemination – This program is available to 4-H'ers statewide.

Scope of Program – Statewide programs

Total FTEs

2.04

Total Budgetary Amount

\$44,460.73

KEY THEME:

AGRICULTURAL COMMUNICATIONS

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.

Stakeholder Input

The content broadcast is provided by specialists and reflects the programmatic focus of agriculture, urban horticulture, family and consumer sciences, 4-H and youth development, community development and public policy issues. Commercial television and radio stations provided input as to content format needed to reach audiences based

upon Arbitron and upon situations and issues that occur that affect the lives of Arkansans.

Overview

Using the power of mass media, the Cooperative Extension Service quickly disseminates research-based and timely information to Arkansans throughout the state. The communications 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 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. 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
- 4-H and Youth Development
- Financial Planning

Extension Program Results and Accomplishments

Output Indicators

- 150 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.
- 48 Appearances by content specialists on statewide commercial television.
- 98 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.

- 52 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.
- 12 "Guiding Children Successfully," a 12-program series, each at 60 minutes, on strategies for raising children, was hosted by a Cooperative Extension Service specialist and expert in child development. Co-produced by the Arkansas Educational Telecommunications Network and Cooperative Extension Service Communications and Marketing section. Aired three times during 2003 in Arkansas and picked up and broadcast by PBS affiliates in six other states during 2003.

Outcome Indicators

- 50,000 Households that watch the Arkansas Educational Telecommunications Network during the 6:30 p.m. time slot when Today's Garden, "Guiding Children Successfully" and "Fighting Fat" are broadcast.
- 700,000 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.
- 163 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.
- 16 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.
- 18 Commercial television stations sent public service announcements and video news releases for distribution via airwaves.

Source of Funds

Federal, state and grants

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

- 50 News packages written, edited and distributed statewide to all weekly and daily newspapers in Arkansas and to various magazines. Each feature package contains approximately 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.
- 35 Number of spot news stories that were distributed statewide for use by weekly and daily newspapers.
- 220 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.

126 Number of news stories successfully pitched to large daily newspapers with wide readership.

Outcome Indicators

614,000 Number of households in Arkansas subscribing to daily newspapers in Arkansas; the articles distributed to the daily newspapers are accessible to the households that subscribe.

294,319 Number of households in Arkansas subscribing to weekly newspapers in Arkansas; the articles distributed to weekly newspapers are accessible to the households that subscribe. Articles are accessible on the University of Arkansas Cooperative Extension Service web site as well.

10,700 Number of newspaper clips, which indicates the number of times articles appear in print in the weekly and daily

Source of Funds

Federal, state and grants

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.

- 54 Number of new fact sheets written, designed, made available for print-on-demand and placed on the Web for public access.
- 123 Number of fact sheets revised, updated, designed, made available for print-on-demand and placed on the Web for public access.

Titles of fact sheets include:

- The Economics of Raising Dairy Heifers
- Sources and References for the Landscape Industry (Landscape Series)
- Seed Sources: Vegetables and Herbs (Home Gardening Series)
- Carrots (Home Gardening Series)
- Radishes (Home Gardening Series)
- Raspberry Production in the Home Garden
- Muscadine Grape Production in the Home Garden
- Nutritional Disorders in Beef Cattle
- Preconditioning Programs for Beef Cattle
- Blackleg and Other Clostridial Diseases
- Nutrient and Fertilizer Value of Dairy Manure
- Common Questions About Japanese Beetles
- Subterranean Termite Identification and Biology
- Hunting Leases and Liability Issues on Private Land
- Living Resourcefully with Reduced Income
- Risk Management: Overview of CORE Analysis

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

Output Indicators

- 53 New and revised fact sheets designed and made available for print-on-demand and for web access.
- 13 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.
- 61 Issues of Extension newsletters directed at targeted clientele. Titles include Dairy Digest, Arkansas ReLeaf, Beef Cattle Research Update, Beef Champs, Best Care (for childcare providers), Farm Management, Tunnel Vision (Fire Ant Abatement), and Arkansas Beef Improvement Program.
- 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.
- 16 Program guides used by county faculty in conducting workshops and information for clientele in meeting locally driven educational programs and needs.

- 3 Weekly news reports that provide timely and dynamic information to producers who subscribe to this service. The titles: Livestock Market Report, Grain Report and Rice Market News.
- 48 Issues of the three weekly reports that provide timely and dynamic information to producers who subscribe.
- 279, 575 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, Director of Information Technology, 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.

405 Standalone decision tools delivered.

30 States requesting copies of tools.

- 30 Foreign entities requesting decision tools, including Africa, Australia, Brazil, Egypt, Korea, Mexico and Turkey.
- 1,581 Rice producers enrolled in the web-based 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: **<http://www.uaex.edu>**

Contact: Nina R. Boston, Director of Information Technology, Department of Information Technology
(501) 671-2135, nboston@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

Teams representing different consumer interests review and make 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. More than 10,000 web pages were shifted from a structure based upon internal departments to one based upon our target audience needs. Teams of Extension specialists, counties and support staff manage the content of the seven areas of focus:

- Arkansas Agriculture, <http://www.aragriculture.org>
- Arkansas Families, <http://www.arfamilies.org>
- Arkansas Communities, <http://www.arcommunities.org>
- Arkansas Businesses, <http://www.arbusinesses.org>
- Arkansas Home and Garden, [http://www.arhomeand garden.org](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 standards 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. Include files are incorporated in the pages to simplify changes in those elements common to all pages. Federal and state regulations are followed to meet accessibility guidelines.

Outcome Indicators

- More than 10,000,000 visits (hits) accessed information concerning publications, jobs, hot topics, newsletters, county office and other miscellaneous areas.
- Approximately 984,000 visits (hits) accessed information concerning agriculture. Commercial horticulture received the most attention.
- Approximately 726,000 visits (hits) accessed information on homes and gardens. The popular Plant of the Week (23%) and Ask Janet Carson sections (21%) constituted almost half of the visits.
- Approximately 336,000 visits (hits) accessed information on communities and businesses. Information provided Arkansans regarding pending tax and ballot issues constituted 35 percent of the visits and information on volunteerism garnered 40 percent.

- Approximately 266,000 visits (hits) accessed information on families.
- Approximately 311,000 visits (hits) accessed information on youth with the 4-H GoForIt section garnering over half the visits.
- Approximately 95,000 visits (hits) accessed information on the environment.

Source of Funds

State operating funds, 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:

AIMS

Contact: Nina R. Boston, Director of Information Technology, 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.

30 Extension programs from which faculty may choose for plans of work. The offerings include:

4-H Youth Development

Adolescent Sexuality, Pregnancy and Parenting

Agricultural Marketing, Management and Farm Policy

Agronomic Crops Production and Management

Alternative Agricultural Enterprises

Animal Waste Management

Economic and Community Development and Public Policy Education

EFNEP

FF-NEWS

Food Stamp Nutrition Education Program

Forest Management

Horticulture Production and Management

Imported Fire Ant Education Program

Improving Health

Integrated Pest Management

Leadership and Volunteer Development

Life Skills for Work and Family

Livestock and Forage Production and Management

Maintaining Agricultural Sustainability Through Conservation

Managing Resources - Adult Audiences

Managing Resources - Youth Audiences

Managing Resources in Limited Resource Families

Pesticide Applicator Training

Poultry Production and Management

Raising Arkansas Youth (RAY)
Safe Food - From Farm to Table
Solid Waste Management
Strengthening Families
The Best Care

13 Extension Focus programs of heightened interest from which faculty may choose. The offerings include:

Building 4-H Clubs
Building Arkansas Character
Developing Leaders for Strong Communities
Diversification through Alternative Enterprises-Animal
Diversification through Alternative Enterprises-Forestry
Diversification through Alternative Enterprises-Hort
Diversification through Alternative Enterprises-Wildlife
Financial Security in Later Life
Healthy Weight for Arkansans
Information Technology
Managing Arkansas' Water Resources
Planning for the Long Term
Reduce Winter Feed Cost

80 Individual programs created on the fly by faculty to capture program data that does not fit under the Extension and Focus program definitions.

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.

Total FTEs
2.04

Total Budgetary Amount

\$44,460.73

KEY THEME:

AGRICULTURAL COMMUNICATIONS

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.

Stakeholder Input

The content broadcast is provided by specialists and reflects the programmatic focus of agriculture, urban horticulture, family and consumer sciences, 4-H and youth development, community development and public policy issues. Commercial television and radio stations provided input as to content format needed to reach audiences based upon Arbitron and upon situations and issues that occur that affect the lives of Arkansans.

Overview

Using the power of mass media, the Cooperative Extension Service quickly disseminates research-based and timely information to Arkansans throughout the state. The communications 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 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. 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
- 4-H and Youth Development
- Financial Planning

Extension Program Results and Accomplishments

Output Indicators

- 150 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.
- 48 Appearances by content specialists on statewide commercial television.
- 98 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.
- 52 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.

- 12 “Guiding Children Successfully,” a 12-program series, each at 60 minutes, on strategies for raising children, was hosted by a Cooperative Extension Service specialist and expert in child development. Co-produced by the Arkansas Educational Telecommunications Network and Cooperative Extension Service Communications and Marketing section. Aired three times during 2003 in Arkansas and picked up and broadcast by PBS affiliates in six other states during 2003.

Outcome Indicators

- 50,000 Households that watch the Arkansas Educational Telecommunications Network during the 6:30 p.m. time slot when Today's Garden, "Guiding Children Successfully" and "Fighting Fat" are broadcast.
- 700,000 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.
- 163 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.
- 16 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.
- 18 Commercial television stations sent public service announcements and video news releases for distribution via airwaves.

Source of Funds

Federal, state and grants

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

- 50 News packages written, edited and distributed statewide to all weekly and daily newspapers in Arkansas and to various magazines. Each feature package contains approximately 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.
- 35 Number of spot news stories that were distributed statewide for use by weekly and daily newspapers.
- 220 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.

126 Number of news stories successfully pitched to large daily newspapers with wide readership.

Outcome Indicators

614,000 Number of households in Arkansas subscribing to daily newspapers in Arkansas; the articles distributed to the daily newspapers are accessible to the households that subscribe.

294,319 Number of households in Arkansas subscribing to weekly newspapers in Arkansas; the articles distributed to weekly newspapers are accessible to the households that subscribe. Articles are accessible on the University of Arkansas Cooperative Extension Service web site as well.

10,700 Number of newspaper clips, which indicates the number of times articles appear in print in the weekly and daily

Source of Funds

Federal, state and grants

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.

- 54 Number of new fact sheets written, designed, made available for print-on-demand and placed on the Web for public access.
- 123 Number of fact sheets revised, updated, designed, made available for print-on-demand and placed on the Web for public access.

Titles of fact sheets include:

- The Economics of Raising Dairy Heifers
- Sources and References for the Landscape Industry (Landscape Series)
- Seed Sources: Vegetables and Herbs (Home Gardening Series)
- Carrots (Home Gardening Series)
- Radishes (Home Gardening Series)
- Raspberry Production in the Home Garden
- Muscadine Grape Production in the Home Garden
- Nutritional Disorders in Beef Cattle
- Preconditioning Programs for Beef Cattle
- Blackleg and Other Clostridial Diseases
- Nutrient and Fertilizer Value of Dairy Manure
- Common Questions About Japanese Beetles
- Subterranean Termite Identification and Biology
- Hunting Leases and Liability Issues on Private Land
- Living Resourcefully with Reduced Income
- Risk Management: Overview of CORE Analysis

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

Output Indicators

- 53 New and revised fact sheets designed and made available for print-on-demand and for web access.
- 13 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.
- 61 Issues of Extension newsletters directed at targeted clientele. Titles include Dairy Digest, Arkansas ReLeaf, Beef Cattle Research Update, Beef Champs, Best Care (for childcare providers), Farm Management, Tunnel Vision (Fire Ant Abatement), and Arkansas Beef Improvement Program.
- 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.
- 16 Program guides used by county faculty in conducting workshops and information for clientele in meeting locally driven educational programs and needs.

- 3 Weekly news reports that provide timely and dynamic information to producers who subscribe to this service. The titles: Livestock Market Report, Grain Report and Rice Market News.
- 48 Issues of the three weekly reports that provide timely and dynamic information to producers who subscribe.
- 279, 575 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, Director of Information Technology, 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.

405 Standalone decision tools delivered.

30 States requesting copies of tools.

- 30 Foreign entities requesting decision tools, including Africa, Australia, Brazil, Egypt, Korea, Mexico and Turkey.
- 1,581 Rice producers enrolled in the web-based 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: **<http://www.uaex.edu>**

Contact: Nina R. Boston, Director of Information Technology, Department of Information Technology
(501) 671-2135, nboston@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

Teams representing different consumer interests review and make 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. More than 10,000 web pages were shifted from a structure based upon internal departments to one based upon our target audience needs. Teams of Extension specialists, counties and support staff manage the content of the seven areas of focus:

- Arkansas Agriculture, <http://www.aragriculture.org>
- Arkansas Families, <http://www.arfamilies.org>
- Arkansas Communities, <http://www.arcommunities.org>
- Arkansas Businesses, <http://www.arbusinesses.org>
- Arkansas Home and Garden, [http://www.arhomeand garden.org](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 standards 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. Include files are incorporated in the pages to simplify changes in those elements common to all pages. Federal and state regulations are followed to meet accessibility guidelines.

Outcome Indicators

- More than 10,000,000 visits (hits) accessed information concerning publications, jobs, hot topics, newsletters, county office and other miscellaneous areas.
- Approximately 984,000 visits (hits) accessed information concerning agriculture. Commercial horticulture received the most attention.
- Approximately 726,000 visits (hits) accessed information on homes and gardens. The popular Plant of the Week (23%) and Ask Janet Carson sections (21%) constituted almost half of the visits.
- Approximately 336,000 visits (hits) accessed information on communities and businesses. Information provided Arkansans regarding pending tax and ballot issues constituted 35 percent of the visits and information on volunteerism garnered 40 percent.

- Approximately 266,000 visits (hits) accessed information on families.
- Approximately 311,000 visits (hits) accessed information on youth with the 4-H GoForIt section garnering over half the visits.
- Approximately 95,000 visits (hits) accessed information on the environment.

Source of Funds

State operating funds, 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:

AIMS

Contact: Nina R. Boston, Director of Information Technology, 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.

30 Extension programs from which faculty may choose for plans of work. The offerings include:

4-H Youth Development

Adolescent Sexuality, Pregnancy and Parenting

Agricultural Marketing, Management and Farm Policy

Agronomic Crops Production and Management

Alternative Agricultural Enterprises

Animal Waste Management

Economic and Community Development and Public Policy Education

EFNEP

FF-NEWS

Food Stamp Nutrition Education Program

Forest Management

Horticulture Production and Management

Imported Fire Ant Education Program

Improving Health

Integrated Pest Management

Leadership and Volunteer Development

Life Skills for Work and Family

Livestock and Forage Production and Management

Maintaining Agricultural Sustainability Through Conservation

Managing Resources - Adult Audiences

Managing Resources - Youth Audiences

Managing Resources in Limited Resource Families

Pesticide Applicator Training

Poultry Production and Management

Raising Arkansas Youth (RAY)
Safe Food - From Farm to Table
Solid Waste Management
Strengthening Families
The Best Care

13 Extension Focus programs of heightened interest from which faculty may choose. The offerings include:

Building 4-H Clubs
Building Arkansas Character
Developing Leaders for Strong Communities
Diversification through Alternative Enterprises-Animal
Diversification through Alternative Enterprises-Forestry
Diversification through Alternative Enterprises-Hort
Diversification through Alternative Enterprises-Wildlife
Financial Security in Later Life
Healthy Weight for Arkansans
Information Technology
Managing Arkansas' Water Resources
Planning for the Long Term
Reduce Winter Feed Cost

80 Individual programs created on the fly by faculty to capture program data that does not fit under the Extension and Focus program definitions.

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.

FY 2003 Report of Accomplishments and Results

**Arkansas Agricultural Experiment Station
Division of Agriculture
University of Arkansas**

March 2004

FY 2003 Annual Report of Accomplishments and Results

Introduction

The Arkansas Agricultural Experiment Station is the research arm of the Division of Agriculture, University of Arkansas system. The FY 2003 Annual Report of Accomplishments provides the necessary elements identified in the guidelines. For purposes of this reporting the 10 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.

Contact person:

Dr. G. J. Weidemann
Dean, Dale Bumpers College of Agricultural, Food and Life Sciences
Associate Vice President for Agriculture - Research, Arkansas Agricultural Experiment Station
AFLS E 108
Agricultural, Food and Life Sciences
University of Arkansas

Fayetteville, AR 72701

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 growing part of the agricultural economy. While row crop farmers fared significantly better this year than in previous years, high input costs 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.

New faculty in agricultural economics have been recently employed at two of our research and extension centers and will focus on farm level economic issues as farmers continue to adjust to the higher input costs for all major row crops.

Animal Systems

Beef and poultry production remain closely linked in Arkansas. Most beef operations are 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 will address 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.

In poultry, 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.

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, 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 have 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 agrimedecine, nutraceuticals and human nutrition.

FY 2003 Expenditures on Goal 1: \$39,807,255; Scientist FTE: 92.1

KEY THEME: PLANT PRODUCTION EFFICIENCY

Situation

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

Impact

Sixty percent of the rice grown in Arkansas in 2003 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 only 4,110 lbs/acre compared to a record high of 6,600 lbs/acre for 2003. Assigning a conservative value of 60 percent of this 2114 lbs/acre yield increase to new varieties, the average monetary gain in 2003, at a rough rice price of \$7.85/cwt and with the loan deficiency payment, would be \$310/acre or \$450 million for the 1.45 million acres grown in Arkansas, of which some \$270 million is due to new University of Arkansas varieties.

Source of Funding

Hatch, state matching

Scope of Impact

Multistate Research

KEY THEME: PLANT PRODUCTION EFFICIENCY

Situation

Arkansas is one of the leading states in soft red winter wheat production. Wheat is a very important crop for Arkansas farmers since it is essential to the double-cropping system with soybean. Wheat provides the needed cash flow to purchase inputs required for the soybean crop. Farmers have increased profits with wheat from higher yields with fewer inputs. However, many high-yielding wheat varieties do not necessarily have good disease resistance.

Impact

Seed of the new wheat variety 'AR 839' – developed by the University of Arkansas – was produced commercially by Armor Seed Company in fall 2003. It has excellent winter hardiness and good straw strength. It is resistant to soil-borne wheat mosaic and wheat spindle streak mosaic and stripe rust, and it is moderately resistant to leaf rust. Quality results for AR 839 indicate excellent milling and baking characteristics. It has shown good adaptation at test sites around the state during the last three years of testing, averaging 74 bushels per acre. Higher yields from this variety should translate into higher profits for Arkansas wheat and soybean producers.

Source of Funds

Hatch, state matching

Scope of Impact

Multistate research

KEY THEME: NICHE MARKET

Situation

Cynthiana (*Vitis aestivalis*) is a vigorous, disease-resistant grape variety that is native to Arkansas and produces a deep-colored full-bodied red wine. Cynthiana grapes present a

problem to the winemaker in that they can have both high pH and high titratable acidity. Stress conditions in fermenting juice must provide a challenge to the performance of the yeast in the wine. Yeast supplements may help alleviate stress problems by aiding fermentation. There is no existing research on the effects of enzymes to improve quality of Cynthiana wines.

Impact

Studies showed this to be a successful method to lower Cynthiana wine pH to the desired 3.5. Phenolics and red pigment color need not be affected. Both are conclusions useful to the vintner trying to make a consistently good Cynthiana wine. Although lowering the pH and fermentation temperature provided stress conditions to challenge the performance of the yeast supplements, the supplements succeeded in enhancing fermentation rates of the juice and resulted in a finished wine. This showed that yeast supplements will be valuable for improving fermentation rates of must and juice where stress conditions challenge the yeast.

Source of Funds

Hatch, state matching, USDA Special Grant

Scope of Impact

Multistate research

**KEY THEME:
AGRICULTURAL COMPETITIVENESS**

Situation

Burning crop residues in the field is a common post-harvest practice to dispose of these materials and for immediate land-clearing and land-use change in heavily agricultural regions. Chars resulting from such burns may contain high surface-area carbonaceous materials due to combustive carbonization and hence might strongly adsorb pesticides. Very little, if any, research is focused on the potential immobilization of pesticides in soils by chars of agricultural origin.

Impact

Calculations showed that burning crop residues resulted in more pesticides sorbed than did decaying crop residues in the field. Char-amended soils showed an enhanced sorption of diuron as compared to the original soil. Adsorption of pesticides to soil chars may be an important determinant of their environmental fate. Adsorption may lead to increased or decreased mobility because of the potential for facilitated or reduced transport of

pesticides. Bioavailability of pesticides for microbial degradation and effectiveness for pest control may also be affected by adsorption. This is the first systematic study to evaluate the impact of burning crop residues on the environmental fate of pesticides.

Source of Funds

Hatch, state matching, NRI

Source of Impact

Multistate research

<p>KEY THEME: ADDING VALUES TO NEW AND OLD AGRICULTURAL PRODUCTS</p>
--

Situation

The Agricultural Experiment Station has initiated a new breeding program in an attempt to develop high-yielding specialty soybean varieties with improved seed-quality traits. Arkansas research will focus on the selections for proper seed size and high-protein, low-oil, high-sugar, low-calcium, soft-texture, high-isoflavone, and lipoxygenase-free characteristics. Varieties released from this program will be commercialized in Arkansas for production and seeds will be exported to Japan. In addition, we are developing high-protein and low-phytate soybeans for specialty feed that would increase feeding efficiency and mitigate environmental pollution.

Impact

Growing a specialty variety does not require extra production inputs but may result in slight yield reduction. However, growers are offered premiums ranging from \$1.5 to \$3.0 per bushel as incentives to produce the specialty seeds. These high-quality soybeans are often sold at a much higher price than are regular commodity soybeans. Therefore, every bushel of extra yield would not only generate extra net income from soybean sales, but also would gain additional production premiums. Specialty soybeans will play an important role in expanding the niche markets for soyfoods, feed, and nutraceuticals, and could therefore enhance overall soybean production.

Source of Funds

Hatch, state matching

Scope of Impact

Multistate research

KEY THEME: PLANT GERMPLASM

Situation

Soybean is an important cash crop in Arkansas and ranks number one in acreage among all agricultural crops. A long-term goal of the Arkansas soybean breeding program is to develop varieties with high productivity and profitability. Specific objectives for varietal development include increased yield potential, various maturities, multiple and durable disease resistance, stress tolerance, conventional and herbicide resistance, lodging and shattering resistance, and improved seed quality.

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-yield variety does not cost more than growing an average variety. Every bushel of extra yield of soybean produced by growing the high-yield variety is a net income to growers. A new conventional variety named 'Ozark' has been recently released to the public. 'Ozark' is an early maturity group-five cultivar with high yield potential, excellent standability, and good resistance to disease and shattering. It was highly ranked in 2003 yield trials conducted in Arkansas and Mississippi.

Source of Funds

Hatch, state matching

Scope of Impact

Multistate research

KEY THEME: BIOTECHNOLOGY

Situation

Pest resistance to the insecticidal proteins in transgenic Bt cotton and corn is a major concern for U.S. agriculture. Regulatory agencies currently require farmers to plant a portion of their cotton and corn crops to non-Bt varieties as a refuge for susceptible genotypes of pests being selected for resistance on the transgenic Bt crops. The underlying principle is that susceptible insects produced in the non-Bt crop refuge will mate with the resistant individuals from the Bt crops and dilute the frequency of resistance genes in subsequent populations.

Impact

Results from Arkansas do not suggest that resistance frequencies are increasing in corn earworm populations. They do indicate a potential for field selection since insects from Bt crops were less susceptible than those from non-Bt crops and laboratory cross experiments confirmed inheritance of the survival traits in the insect.

Source of Funds

Hatch, state matching

Scope of Impact

Multistate Research

KEY THEME: PLANT HEALTH

Situation

Managing plant diseases is a critical factor in achieving this high level of productivity. Rice blast is one of the most serious diseases of rice in Arkansas and world wide.

Although many of the cultivars we grow are somewhat resistant to this disease, they are not resistant enough to control the disease. Consequently, epidemics of rice blast can reduce yields by as much as 50 percent in heavily infected fields, reducing the yield and net value of the crop to the producers. That loss can translate into losses of millions of dollars statewide. Additionally, other costs – such as treating fields with fungicides and perhaps even selecting more resistant cultivars that have lower yield potentials – also must be paid by the producers. One of the important issues concerning rice blast is determining how the disease starts or where the pathogen survives to cause disease each year.

Impact

Arkansas research shows that infected rice seeds can provide the means for starting the rice blast epidemics that occur in fields and it helps to explain how the rice blast fungus survives in Arkansas. Further, it suggests planting clean seed – seed free of blast infection – creates a benefit by reducing the severity of the disease in cultivars that are not completely resistant to this disease. This has the potential impact of reducing producer costs and increasing yields with little additional costs to the producers. In one year, rice yield losses were reduced by half simply as a result of planting clean seed.

Source of Funding

Hatch, state matching

Scope of Impact

Multistate Research

KEY THEME: GRAZING

Situation

The majority of the tall fescue in the United States contains the endophytic fungus *Neotyphodium coenophialum*. This fungus produces toxins that reduce reproductive performance by cows and bodyweight gain by grazing calves. The estimated economic impact of these toxins on U.S. cattle producers is in excess of \$800 million annually.

Impact

Arkansas scientists evaluated the performance of fall-calving cows on tall-fescue pastures located on a typical Ozark upland site overseeded with a mixture of legumes and

crabgrass in an attempt to dilute the tall fescue toxins. This research indicates that persistence of legumes in steep Ozark upland pastures is not likely even with a twice-weekly rotation regimen. Therefore, planting legumes in such pastures will likely not result in economic benefits. Because of high reproductive rates across treatments, it appears that fall calving (September and October) may be a viable option to increase reproductive rates on tall-fescue pastures. Weaning fall-born calves grazing endophyte-infected tall-fescue pastures at approximately 189 d of age (mid-April) to take advantage of seasonal high markets may have long-term negative impacts on replacement-heifer growth and development. Therefore, replacement heifers should be weaned separately and later in the spring (June) to avoid these long-term impacts.

Source of Funding

Hatch, state matching, NRI

Scope of Impact

Multistate Research

KEY THEME: RANGELAND/PASTURE MANAGEMENT

Situation

The majority of calves raised in Arkansas are weaned and marketed in the fall but seasonally high calf prices generally occur in the spring. The major problem associated with grazing sod-seeded winter annuals has been the inability to graze the pastures before mid- to late December. This either lengthens the time required to grow calves to a target weight or increases input costs to maintain acceptable gains between weaning and initiation of grazing winter-annual pastures.

Impact

This research shows that cattle producers have considerable flexibility in their decisions as to when to seed annual forages and to what level they till their sod, depending on how soon they need to begin grazing. Sod-seeded winter annuals can be grazed by fall-weaned calves and result in high rates of gain and reduced production costs. This offers an economical option for retaining ownership or for developing replacement heifers. Early-seeded pastures were grazed earlier, but there were no overall differences in animal performance due to tillage or seeding date.

Source of Funding

Hatch, state matching

Scope of Impact

Multistate 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. These autoimmune attacks have devastating effects for the individual, frequently resulting in the destruction of the targeted tissues. Mechanisms leading to autoimmune disease are not well understood and appear to involve many factors.

Smyth line chickens spontaneously develop a post-hatch loss of eye and feather pigment. This loss of pigment is due to the destruction of pigment cells by the immune system. The similarities between the autoimmune loss of pigment cells in Smyth line chickens and the pigment loss observed in human vitiligo have led to the acceptance of the SL chicken as the best animal model to study autoimmune vitiligo.

Impact

Arkansas scientists established that turkey herpesvirus (HVT) plays an important role in the onset of vitiligo in genetically susceptible Smyth line chickens. Recent studies have shown that HVT vaccination was associated with early establishment of lymphocyte populations in the skin in both Smyth line and control chickens. However, appearance of lymphocytes in the skin occurred earlier and in larger numbers in the Smyth line chicken than in controls. These findings further support earlier reports of heightened immune activity to HVT in Smyth line compared to control chickens.

The use of an animal model that is genetically susceptible to autoimmune vitiligo but requires an environmental factor for expression of the autoimmune 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. Additionally, study of this animal model has led to significant new knowledge on cell-mediated immunity, skin immunology, herpesvirus-host interactions, antioxidant systems, and inflammatory processes in chickens that will find direct application in poultry management and health.

Source of Funds

Hatch, state matching, NIH

Scope of Impact

Multistate Research

KEY THEME: MANAGING CHANGE IN AGRICULTURE

Situation

Unlike many other livestock species, the horse is widely accepted and embraced by urban and suburban Americans. According to the American Horse Council's surveys, the densest populations of horses are found surrounding cities and towns. Land and lots demand higher prices in areas where horses are an integral part of the plan. Proper care and management of horses requires preservation of open pasture, commonly referred to as "green space" by city planners. Most urban and suburban dwellers, whether they are directly involved in the equine industry or not, value horses for their aesthetic appeal and contribution to preservation of pastoral vistas. Close cohabitation with horses improves quality-of-life. Or, as more memorably stated by Will Rogers "the outside of a horse is good for the inside of man."

This close physical proximity and positive relationship with people from non-agricultural backgrounds affords a unique opportunity for the equine industry to act as a leader and ambassador for agricultural interests as a whole. Horses are being utilized to engage and involve a segment of the general population, which would otherwise be oblivious, disinterested, or apathetic to issues affecting agriculture.

Impact

To engage the general population in agricultural activities through use of the horse, the D.E. King Equine Program at the University of Arkansas produces three major public events a year. The Razorback Roundup Horse and Livestock Auction has drawn 450 attendees two years in a row. The Royal Lipizzaner Stallion Show has sold out the 750 seat P. Whitaker Arena eight times in three years. The annual UofA Horse Festival has drawn an average of 2,000 people each year it has been held.

An estimated 13,000 people (most with non-agricultural backgrounds) attended the various horse events produced by the students in the program. Surveys show the audiences are favorably impressed with the events. The D.E. King Equine Program plays a major role in building a positive relationship for agriculture with the public and agriculture in general.

Source of Funding

State matching

Scope of Impact

State specific

KEY THEME: ANIMAL PRODUCTION EFFICIENCY

Situation

Modern broilers are capable of growing so rapidly that some birds essentially “outgrow” their lungs. This mismatch occurs when the lungs do not mature fast enough to accommodate the daily increments in blood flow that must be pumped by the heart to support gains in body mass. The design of the bird’s circulatory system forces the heart to pump blood through the lungs at a rate equal to the total rate of blood flow to all of the other organs and tissues combined.

Impact

Arkansas scientists developed a procedure for injecting micro-particles into a wing vein. The particles are too large to pass through the smallest blood vessels within the lungs. The blood carries the particles to the lungs where they become trapped in the vascular channels. Thus scientists selectively block blood flow through the lungs in proportion to the numbers of particles injected. Broilers with superior lung capacity can easily tolerate blockage of blood flow through a limited portion of their lungs and continue to thrive and grow rapidly.

Geneticists now have the opportunity to use micro-particle injections to select elite broilers possessing a robust lung capacity. This in turn enables the birds to grow faster with lower mortality and improved feed:gain ratios during exposure to summer temperatures. Commercial broiler growers can achieve very substantial improvements in summertime production, thereby improving the profitability of their operations.

Source of Funding

Hatch, state matching, NRI

Scope of Impact

Multistate Research

Multistate

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 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 in a coordinated research effort. 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, not-for-credit teaching modules on food safety and quality for use by the food industry regionally and nationally. When complete, 10 six-week modules will be available to the food industry.

FY 2003 Expenditures for Goal 2: \$4,299,625; Scientist FTE: 10.1

**KEY THEME:
FOOD SAFETY**

Situation

Contact with raw meats, particularly poultry, is listed as the major cause of food-borne *Campylobacter* enteritis. In 1995 FDA approved some fluoroquinolone antibiotics for use in poultry and this approval was withdrawn by FDA in 2000. A major concern is that these antibiotics are closely related to fluoroquinolones used to treat human bacterial infections that these antibiotics may become ineffective for this purpose if resistance occurs. Prior to 1995, *C. jejuni* isolates from humans showed an approximate 1.3 percent resistance to fluoroquinolones. In 1998, three years after approved for use in poultry, the resistance level jumped to 10.2 percent and by 2002 the Center for Disease Control reported resistance had jumped to about 19 percent.

Impact

Arkansas scientists have developed a quantitative enumeration method for easily monitoring the extent of ciprofloxacin-resistant sub-population of *Campylobacter* surviving on raw and raw-further processed poultry products. Researchers have selectively isolated and enumerated numbers of ciprofloxacin-resistant *Campylobacter*

CFU per raw chicken at retail. Percentage of carcasses yielding detectable ciprofloxacin-resistant *Campylobacter* CFU was just 17.5 percent in 2003 versus 59 percent in 2002 and 60 percent in 2001. The highest numbers of ciprofloxacin-resistant *Campylobacter* CFU recovered per positive carcass were down to 2.86 log₁₀ CFU/carcass in 2003 versus 3.88 and 4.06 log₁₀ CFU/carcass in 2002 and 2001, respectively.

Source of Funding

Hatch, state matching, USDA Special Grant

Scope of Impact

Multistate Research

KEY THEME: FOODBORNE ILLNESS

Situation

Two massive USDA-FSIS mandated recalls of cooked meat and poultry products associated by the Center for Disease Control with human foodborne illnesses and *Listeria monocytogenes* contamination occurred in 1998-99 and 2002. The food industry is very concerned about the occurrence of highly virulent strains of *L. monocytogenes* in ready-to-eat poultry and meat and in other food products. *L. monocytogenes* undergo numerous stresses during food processing, and there is a need for determination of the virulence potential of such stress-hardened cells.

Impact

Arkansas Agricultural Experiment Station has developed a simple, quantitative, in vitro test for detecting the virulence potential of *L. monocytogenes* strains using a mouse hybridoma cell line. The study determined virulence of long-term starved cells of *L. monocytogenes* with an aim to develop in vitro dose-response curves for this pathogen.

Source of Funds

Hatch, state matching, USDA Special Grant

Scope of Impact

Multistate Research

KEY THEME: FOODBORNE PROTECTION

Situation

Conventional microbial detection methods are time consuming and expensive and they cannot match rapid food processing and distribution systems. To minimize product recalls, clear international trade barriers due to microbial contamination, and to ensure food safety, the food industry needs rapid, sensitive, and specific methods to detect pathogens in food products on line or even in real-time.

Impact

An immuno-electrochemical biosensor system coupled with immuno-magnetic separation has been developed for detection of *S. Typhimurium* in chicken carcass wash water. The method can enumerate *Salmonella* in two hours with a detection limit of 1×10^2 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 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 Funding

Hatch, state matching

Scope of Impact

Multistate Research

KEY THEME: HACCP

Situation

The national Center for Disease Control and Prevention (CDC) estimated 76 million cases of foodborne illness and 5,000 deaths each year. *Salmonella Typhimurium* and *Campylobacter jejuni* are two of the major pathogens associated with poultry products,

mainly due to microbial contamination, recontamination, or cross-contamination during production and processing. The poultry industry needs more effective methods to determine microbial hazards and assess the risk in their HACCP programs and risk management.

Impact

University of Arkansas scientist's have developed predictive microbial models which will provide poultry processors with a powerful tool to analyze the survival/growth/death and cross-contamination of pathogenic bacteria on poultry carcasses and in processing water under various processing conditions. The microbial risk assessment model will assist the poultry processor in their HACCP programs and risk management in a quantitative way.

Source of Funding

Hatch, state matching, USDA Special Grant

Scope of Impact

Multistate 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 2003 Expenditures for Goal 3: \$1,031,714; Scientist FTE: 2.4

<p>KEY THEME: HUMAN NUTRITION</p>

Situation

Epidemiological evidence shows a strong protective effect of fruits and vegetables against many chronic diseases including coronary heart disease, stroke, and various types of cancer. Scientists are just beginning to identify specific components and determine how they act to promote health. Since oxidative stress is associated with many chronic and degenerative diseases much attention has focused on determining the antioxidant capacity of fruits and vegetables as well as individual compounds present in the produce.

Impact

Blueberry, blackberry, and red wine grape varieties were evaluated by Arkansas Agricultural Experiment Station scientists for anthocyanin content and antioxidant capacity. Additionally, individual anthocyanin pigments were purified and analyzed for antioxidant capacity. Different varieties varied markedly in their contents of individual and total anthocyanins and antioxidant capacities. Fruit antioxidant capacities and anthocyanin levels were highly correlated, indicating that the pigments contributed significantly to antioxidant capacity. The results also indicate that plant breeders should select for higher levels of large molecular weight pigments in order to increase the antioxidant capacity of fruit varieties.

Source of Funding

Hatch, state matching

Scope of Impact

Multistate Research

KEY THEME: HUMAN HEALTH

Situation

Long-term smoking is known to be associated with an increased risk of developing cancer and many other chronic diseases. Smokers were found to have poorer dietary habits, less healthy life styles, and tend to have lower antioxidant nutrient intakes than non-smokers and long time ex-smokers. This imbalance puts the smoking population at greater risk of chronic diseases. To better identify diagnostic and therapeutic methods for the treatment and/or prevention of tobacco-related illnesses, it is important to understand how smoking affects the antioxidant enzyme systems and their relationships with smoking status, food intake, blood nutrients, and aging.

Impact

The direct beneficiary from this study will be smokers. Cigarette smoke contains a large number of oxidants that may cause oxidative damage and large amounts of free radicals that could directly initiate and propagate the process of lipid peroxidation. The results will have implications for aging populations as well. The comparison of the effects of aging and smoking on the antioxidative systems will afford better understandings of oxidative damage to the human body. Thus, it is possible to further investigate mechanisms to delay or decrease the risk of developing complex chronic diseases and improve the quality of life of smokers and the general aging population. The economic impact will include lower healthcare costs that may result from smoking related illnesses and possibly diseases usually found in the aging population.

Source of Funding

Hatch, state matching

Scope of Impact

Multistate Research

KEY THEME: HEALTH CARE

Situation

Approximately 63 percent of all AIDS cases and 48 percent of all HIV cases in the United States are currently gay or bisexual males (CDC, 2001). Learning of an adult child's HIV diagnosis is a devastating and traumatic experience for parents. Research on families dealing with chronic illness have found that family members are often at risk for experiencing strain, burden, stress and depression. A gay son's diagnosis of HIV may also involve revealing a lifestyle that may have been hidden or denied by family members. Given that parents are often approached by social service and medical professionals as potential sources of social support and caregivers for an adult child living with AIDS, it is important for professionals to understand parents' attitudes towards homosexuality and their feelings of affection and obligation to care for an adult child with HIV/AIDS.

Impact

Research from the Arkansas Agricultural Experiment Station have implications for professionals who assist families of persons living with HIV/AIDS (e.g., physicians, nurses, therapists, social workers, and clergy). Parents whose sons are HIV-symptomatic are more vulnerable to depression. This stage of a son's illness may be a critical time for a family in coping with a son's illness and making caregiving decisions. In the family caregiving literature, scholars have identified affection and obligation as possible motivations for caregiving. This research is useful in understanding family relations and the development of depression among parents of sons with HIV so that holistic, family-centered approaches to family caregiving and service delivery may be developed.

Source of Funding

Hatch, state matching

Scope of Impact

Multistate Research

KEY THEME: NUTRACEUTICALS

Situation

Consumer demand for leaner, healthier meat products has spawned attempts to produce healthier beef. Conjugated linoleic acid (CLA), a fatty acid present in beef, has been shown to exhibit positive health benefits associated with its anticarcinogenic properties. The ability to produce lean beef with increased CLA could provide a way to meet consumer demands.

Impact

Supplementing cattle that are forage-fed allowed for increased salable product in terms of carcass weight and increased quality grades, both allowing for the possibility of increased monetary value to the producer. Furthermore, supplementing the forage-fed cattle still allowed for less total percent lipid than industry control Choice steaks, and the CLA proportion in the forage-fed beef exceeded the Choice and Select thereby allowing for forage-fed beef to exhibit increased health benefits to the consumer.

Source of Funding

Hatch, state matching, SARE

Scope of Impact

Multistate 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 groundwater resources, reduction of chemical inputs through pest management programs remains a high priority.

FY 2003 Expenditures for Goal 4: \$7,225,192; Scientist FTE: 21.9

<p>KEY THEME: WILDLIFE MANAGEMENT</p>

Situation

The ability to accurately estimate population numbers is necessary to the management of white-tailed deer. These numbers allow for the study of population dynamics, which in turn guides biologists to set harvest quotas, assess the success and failure of management techniques, and study the interactions between deer, vegetation, and humans.

Impact

University of Arkansas scientists found that, using thermal infrared imaging, better information on deer populations can be provided for deriving management strategies. Natural resource managers can obtain more precise white-tailed deer density estimates, and obtain them in less time (fewer replications of counts), using thermal infrared imaging as compared to tradition spotlighting.

Source of Funding

Hatch, McIntire-Stennis, state matching

Scope of Impact

Multistate Research

KEY THEME: WILDFIRE SCIENCE AND MANAGEMENT

Situation

The Ouachita National Forest is using harvesting and prescribed fires to restore these dense forests to a pine-bluestem ecosystem, which is more typical of the pine-hardwood stands found in the Ouachita Mountains prior to European settlement. Although these restoration efforts have been found to be beneficial to a number of small mammals and birds, it was not known whether these activities reduce soil nutrient availability and thus sustainable plant community production.

Impact

Twenty years of restoration activity had no negative impact on nutrient availability in the soil or on the nutrient status of the trees in these stands. Amounts and availability of nitrogen and calcium in the soil were greater in the restored stands than the control stands. Foliar concentrations of essential nutrients such as nitrogen and potassium were consistently higher in the stands that received the harvesting and prescribed fire treatments. These results indicate that pine-bluestem ecosystems in the Ouachita Mountains can be restored while maintaining the inherent nutrient availability of the soil and preserving forest productivity.

Source of Funding

Hatch, McIntire-Stennis, state matching

Scope of Impact

Multistate Research

KEY THEME: BIODIVERSITY

Situation

Swamp rabbit (*Sylvilagus aquaticus*) distribution is historically tied to bottomland hardwood forests. Bottomland hardwood forests were reduced by approximately 80 percent following settlement of the Lower Mississippi River Valley. Swamp rabbit distribution and populations have been reduced in extent and size, respectively,

concurrent with bottomland hardwood forest loss. Occurrence also has been tied to patch size, with 100 ha used as a limiting size. Smaller patches, however, have been shown to be inhabited.

Impact

Arkansas Agricultural Experiment Station is providing baseline information for managers and landowners to address conservation of the species in light of continued bottomland hardwood and rabbit hunter decline. Thus far, the data have shown a widespread distribution of swamp rabbits in the Mississippi Alluvial Plain of Arkansas. However, a relationship between habitat patch size and relative abundance has not yet been found.

Source of Funding

Hatch, McIntire-Stennis, state matching

Scope of Impact

Multistate 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 2002 Expenditures for Goal 5: \$1,710,996; Scientist FTE: 8.9

<p>KEY THEME: AGRICULTURAL FINANCIAL MANAGEMENT</p>

Situation

One of the key aspects in considering whether Chapter 12 should be made permanent in the Bankruptcy Code is how successful farmers are who use it. When a farmer files for Chapter 12 protection, the law provides a set of procedures that allow the filer to modify existing secured debts and have remaining unsecured debts discharged if the petitioner is successful in completing the three- to five-year plan. But if the petitioner is not successful in completing the plan, the case is dismissed or converted to another bankruptcy chapter. Part of the evaluation of Chapter 12's effectiveness is to know how cases are disposed of once they are filed.

Impact

The overall conclusion is that Chapter 12 serves the purpose of setting a negotiating framework for farm debtors and their creditors. Even though filing numbers may be going down, the existence of Chapter 12 affects more farm debtors than simply those who file. Making Chapter 12 permanent would, therefore, more firmly establish Chapter 12 as the guide for restructuring family farmers' debts.

Source of Funding

Hatch, state matching, USDA Special Grant

Scope of Impact

Multistate Research

<p>KEY THEME: AGRICULTURAL FINANCIAL MANAGEMENT</p>

Situation

The liberalization of geographic restrictions on U.S. banking institutions has produced a rapid consolidation of the banking industry, which has contributed to the reduction of commercial bank numbers. From 1986 to the second quarter of 2001, the number of total commercial banks declined 40 percent from 14,008 to 8,096. Contributing to the net decrease of 5,912 banks during this period were the 4,130 banks that ceased to exist because they were merged into other banks. Also, the number of agricultural banks (banks with an agricultural loan-to-asset ratio of 0.17 or more) decreased over this period.

Impact

Arkansas Agricultural Experiment Station scientists have found that mergers have a negative effect on agricultural loan ratios. The effect is less pronounced for smaller than larger bank mergers and more pronounced for mergers of banks affiliated with the same holding company than other merger types. Thus, there may be concern for the availability of commercial bank agricultural credit in areas experiencing merger activity. However, this does not necessarily mean that an agricultural credit gap has formed in these areas. Other credit providers, such as Farm Credit Services, Farm Service Agency, and non-traditional lenders, have likely increased their presence in areas experiencing merger activity. These results have policy and competitive implications. Policies may be considered to ensure adequate credit is available in areas experiencing widespread merger activity. Additional analysis is needed to determine if other credit providers have gained a competitive advantage following commercial bank merger activity in their market area.

Source of Funding

Hatch, state matching

Scope of Impact

Multistate Research and Extension

KEY THEME: HOME SAFETY

Situation

Arkansas harbors a substantial white-tailed deer population. A highly visible negative consequence is a large number of deer-vehicle collisions (DVCs). DVCs cost Arkansans over \$2.7 million in vehicle damages annually, with each accident costing approximately \$2,000. The identification and understanding of underlying factors contributing to DVCs is a necessary first step toward the development of planning and management approaches to address this problem.

Impact

Identification and recognition of the role of both broad-scale and site-specific contributors to deer-vehicle collisions provides insight useful in new road construction policy and white-tailed deer management. Additionally, information from this study has been used to develop predictive models for use in locating areas susceptible to high-risk

DVC occurrences, thus providing a basis for targeting specific locations for preventative actions and for efficiently allocating resources.

Source of Funding

Hatch, McIntire-Stennis, state matching

Scope of Impact

Multistate Research and Extension

KEY THEME: COMMUNITY DEVELOPMENT

Situation

There are currently 39 federally recognized tribal governments in Oklahoma. Arkansas is home to many members of those tribal Nations. Agricultural producers within these nations historically have had little access to specialized agricultural production and management information for two reasons. First, the traditional link to university research and extension personnel for tribal members is not nearly as strong as the link to his or her own tribe. Many tribal governments do not have an existing infrastructure of specialized knowledge or support for agriculturalists who are tribal members. Furthermore, because tribal members in these states are disbursed throughout the region (i.e., agricultural production does not take place on reservation lands as it does in other parts of the U.S.), tribal leaders often do not possess reliable data regarding the extent of agricultural production and the agricultural information needs within their communities.

Impact

Experiment Station and Extension Service personnel have worked closely with members of tribal nations that cover over one-third of the state of Oklahoma and have members in the western counties of Arkansas. Most of these tribal members are engaged in livestock production activities. Through these interactions, financial, legal, and environmental risk-management needs for tribal members have been identified. A 212-page risk-management guidebook – that contains information in the financial, marketing, legal, production and personnel risk-management areas – was developed and presented to agricultural producers.

Source of Funding

Hatch, USDA Special Grant, state matching

Scope of Impact

Multistate Research and Extension

KEY THEME: PROMOTING BUSINESS PROGRAMS

Situation

The food processing industry continues to be the number one manufacturing sector employer in Arkansas. However, an increased emphasis is needed on research and technology transfer to solve problems and expand opportunities for value-added processing of agricultural commodities in Arkansas and the region. Adding value through further processing increases the economic benefits of agricultural production. Creative organizational approaches are needed to increase involvement of the food processing industry in land-grant university research, extension, and education.

Impact

The University of Arkansas Division of Agriculture in 1995 established the Institute of Food Science and Engineering to assist food processors in framing issues, focusing efforts, and solving problems. The Institute provides research funding and other resources to match industry grants for research and development projects. Through this mechanism, partnerships are created involving private companies or industry groups and university scientists and extension specialists from a variety of disciplines and departments.

Source of Funding

Hatch, USDA Special Grants, state matching

Scope of Impact

Multistate Research

Date

Director

Form CSREES-REPT (2/00)

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 on most policy setting groups or program reviews to ensure that the public has a voice in the decision making process and in program evaluation. Special meetings 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 multistate, multi-institutional and multidisciplinary collaborations as well as joint research and extension efforts.

Numerous multistate collaborations take place through the regional project system. In addition, Arkansas is part of a number of multistate consortia and direct research collaborations. For example, Arkansas is a member of the multistate 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 rice genetics throughout the U.S.

Numerous other multistate and multi-institutional research collaborations exist that address regional or common problems. Many of these collaborations have been identified elsewhere in this report, such as the functional foods program with Oklahoma and Louisiana.

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 some 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
Multi-State Extension Activities and Integrated Activities
(Attach Brief Summaries)**

Institution University of Arkansas Cooperative Extension Service
State ARKANSAS

Check one: Multi-State Extension Activities
 Integrated Activities (Hatch Act Funds)
 Integrated Activities (Smith-Lever Act Funds)

Actual Expenditures

Title of Planned Program/Activity	FY2000	FY2001	FY2002	FY2003	FY2004
GOAL 1					
Program Area 1: Agronomic Crops		485,331	321,438	1,236,220.82	
Program Area 2: Livestock and Forages		264,509	204,421	585,407.72	
Program Area 3: Poultry Production and Management		170,759	173,159	5,851.76	
Program Area 4: Forest Management		51,498	20,285	32,997.77	
Program Area 5: Horticulture Production & Management		391,543	330,142	459,558.86	
Program Area 6: Alternative Agricultural Enterprises		46,177	33,916	17,122.53	
Program Area 7: Agricultural Marketing		93,794	46,650	328,246.05	
GOAL 2				48,343.24	
Program Area 8: Safe Food - From Farm to Table		179,878	129,746		
GOAL 3				1,989,420.20	
Program Area 9: Improving Health		39,438	8,274		
GOAL 4				25,922.91	
Program Area 10: Maintaining Ag Sustainability		41,647	79,299		

Program Area 11: Animal Waste Management		33,380	58,234	9,520.00	
Program Area 12: Cotton Pest Mgt. / Integrated Pest Mgt.		472,636	529,355	143,745.69	
Program Area 13: Pesticide Applicator Training		3,354	5,756	49,870.13	

Title of Planned Program/Activity	FY2000	FY2001	FY2002	FY2003	FY2004
GOAL 5					
Program Area 14: Imported Fire Ant Education		12,589	12,537	47,499.96	
Program Area 15: Solid Waste Management		2,778	1,848	475,979.53	
Program Area 16: Economic and Community Development and Public Policy Information		76,077	194,215	48,858.24	
Program Area 17: Leadership and Volunteer Development		69,208	52,681	526,952.82	
Program Area 18: Strengthening Families		30,230	133,682	109,898.51	
Program Area 19: Managing Resources		36,189	1,635	10,584.98	
Program Area 20: Developing Youth		170,408	139,567	1,114,035.96	
Program Area 21: Managing Res. in Limited Res. Families		2,625	828	6,599.18	
TOTAL		\$2,674,048	\$2,477,668	\$2,029,647.50	

Dr. Milo Shult

Director

May 28, 2004

Date

**U.S. Department of Agriculture
Cooperative State Research, Education, and Extension Service
Supplement to the Annual Report of Accomplishments and Results
Multi-State Extension Activities and Integrated Activities
(Attach Brief Summaries)**

Institution University of Arkansas Cooperative Extension Service
State ARKANSAS

Check one: Multi-State Extension Activities
 Integrated Activities (Hatch Act Funds)
 Integrated Activities (Smith-Lever Act Funds)

Actual Expenditures

Title of Planned Program/Activity	FY2000	FY2001	FY2002	FY2003	FY2004
Southern Region Extension Forestry	6,223	25,415	44,773	51,736.56	
Pesticide Applicator Training	3,688	130,201	112,328	37,220.40	
Southern Region ANR Committees	12,539	9,375	7,988	3,556.00	
Southern Region Sustainable Agriculture Program	5,532	243,737	292,052	93,672.80	
Southern Region 4-H Horse Show	3,688	5,833	6,989	2,540.00	
KOMA Beef Cattle Conference	2,213	9,583	13,979	-0-	
AR-MO Dairy Conference	4,057	0	0	1,778.00	
AR-MO-OK Dairy Tour		8,750	9,985	-0-	
Southern Dairy Conference	1,106	1,667	1,997	1,603.84	
Mid South Dairy Show	2,950	5,833	3,495	1,723.60	
DHIA		33,332	39,939	8,354.80	
National 4-H Dairy Conference	2,213	4,166	998	254.00	

SERA-IEG for Dairy		833	998	508.00	
Four-State Heartland Community Development Conf.	2,397	4,583	3,994	4,182.00	
Tri-State Soybean Forum	13,276	19,582	18,971	5,588.00	
Southern Region Conservation Tillage Conference	1,475	8,333	1,4981	-0-	

Title of Planned Program/Activity	FY2000	FY2001	FY2002	FY2003	FY2004
Southern Region Soil Fertility Conference	1,475	2,500	1,997	1,016.00	
Money & You - Limited Resource Financial Management Pro.	16,596	63,747	42,435	-0-	
National 4-H Congress	9,220	9,166	17,473	5,279.60	
National 4-H Conference	2,950	5,000	5,492	3,702.76	
Southern Region 4-H Volunteer Leader Forum	4,425	14,999	7,988	2,886.56	
Southern Region Accountability Workshop	13,277		25,461	-0-	
Mid South Fair 4-H Day	6,638	21,249	25,461	-0-	
Kansas City 4-H Global Conference	6,270	8,333	9,985	3,715.68	
National and Southern Region 4-H Program Leaders Comm.	2,582	3,541	4,243	1,270.00	
National/Southern Region FCS Program Leaders Committee	3,688	6,041	3,994	2,032.00	
Money 2000	36,879	62,497	110,8 0	-0-	
4-H Cooperative Curriculum System	7,007	17,082	19,470	9,116.80	
Experiential Learning Design Team	3,688	2,917	3,495	-0-	
Southern Region Program Leadership Committee		2,708	0	7,620.00	
Arkansas Risk Management Education Initiative		11,666	4,992	-0-	
Southern Region Watershed Resources Management		281,235	349,463	108,904.00	
Lower Mississippi Valley Initiative		23,332	7,489	-0-	

Southern Region Fire Ant Management		304,984	499,233	200,480.00	
MS/LA/AR 4-H Workforce Preparation			998	6,096.00	
SERA-IEG 6 Soil/Plant/Byproduct/Water Analysis			1,498	-0-	
Preventing Foodborne Illness in a Vulnerable Population in the Lower Mississippi Delta			1,997	2,540.00	
Southern Region Middle Managers Conference			7,489	9,144.00	

Title of Planned Program/Activity	FY2000	FY2001	FY2002	FY2003	FY2004
4-H Volunteer Core Competencies				\$6,604.00	
Southern Region Cooperative Extension Curriculum Committee				\$1,524.00	
Interactive Web-Based Risk Management Training for Mid-South Producers				\$1,524.00	
National Grassland Contest				\$9,144.00	
HorseQuest Info				\$6,096.00	
Delta HOPE (Healthy Options for People Through Extension)				\$3,810.00	
Master Farmer				\$46,446.00	
Natl. Network for Forest Practitioners				\$2,032.00	
Urban Forestry Council				\$7,230.00	
National Web-Based learning Center for Nonfederal Forest and Rangelands				\$7,552.88	
NatureMapping				\$16,012.96	
9th Annual Conf. Of the Wildlife Society				\$1,778.00	
10th National Fisheries & Wildlife Extension Specialists Conference				\$1,524.00	
10th Wildlife Damage Management Conference				\$6,723.76	
TOTAL	\$176,052	\$1,352,220	\$1,686,006	\$702,148.88	

Form CSREES-REPT (2/00)

Dr. Milo Shult
Director

May 28, 2004
Date

ATTACHMENT TO APPENDIX C

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. Additional activities include the Southern U.S. Master Tree Farmer program that was presented in four locations in Arkansas.

Funding: \$51,736.56

FTEs: 1.

Pesticide Applicator Training

Arkansas participates with Mississippi and Louisiana in the development of pesticide educational materials for the three states. These include study materials for the non-agricultural, as well as agricultural, pesticide applicator categories.

Funding: \$37,220.40

FTEs: .75

Southern Region ANR Committee

The ANR State Leader continues to be an active participant in planning southern region Extension ANR committee activities.

Funding: \$3,556.00

FTEs: .5

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: \$93,672.80

FTEs: 2.12

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 December 2002, to plan future shows dates, add activities, revise activities, and submit budgets through 2004. The 2003 Southern Regional Horse show was conducted August 2-6, 2003, in Perry, Georgia. The Georgia Cooperative Extension Service served as the host state.

Funding: \$2,540.00

FTEs: .04

KOMA Beef Cattle Conference

Kansas, Oklahoma, Missouri and Arkansas plan and conduct this successful program biennially. Approximately 155 cattle producers, county Extension agents, and industry personnel attended the conference held in Fayetteville, Arkansas, in January 2003.

Funding: -0-

FTEs: -0-

AR-MO-OK Dairy Tour

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: -0-

FTEs: -0-

Sustainable Dairy Conference

The Sustainable Dairy: Techniques, Technologies, and Profits – A conference for primarily grazing dairies held in November 2002 at Spring Hill, Tennessee, sponsored by ATTRA, University of Arkansas, University of Tennessee, and NRCS; attended by approximately 60 from eight states.

Funding: \$1,778.00

FTEs: .03

Southern Dairy Conference

Southern Region Dairy Conference continues to be an active educational activity, primarily for dairy marketing, which involves Extension dairy production specialists, economists, milk marketing cooperatives, and milk manufacturing personnel from the southern region.

Funding: \$1,603.84

FTEs: .03

Mid South Dairy Show

This continues to be an excellent opportunity for farmers and youth to view results of cattle breeding. States involved are: Arkansas, Missouri, Texas, Louisiana, Mississippi, Tennessee, Kentucky, Illinois, and Indiana.

Funding: \$1,723.60

FTEs: .04

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: \$8,354.80

FTEs: .13

National 4-H Dairy Conference

Arkansas continues to support specialists and a team of 4-H youth to participate.

Funding: \$254.00

FTEs: .004

SERA-IEG for Dairy

This continues to provide for the exchange of information between dairy Extension and related specialists usually working in conjunction with the planning of the Southern Dairy Conference.

Funding: \$508.00

FTEs: .008

Four-State Heartland Community Development Conference

Arkansas, Missouri, Oklahoma and Kansas Extension and Research specialists plan and conduct this annual conference for city and county officials, community leaders and Extension agents. The FY2003 conference was planned around the theme "Critical Skills for Community Leaders and Community Survival" which was scheduled for November 7-8, 2002, in Bartlesville, Oklahoma. However, the conference was canceled at the last minute due to an insufficient number of registrants. The planning committee has been evaluating the low turnout for last year's conference and planning for the next conference.

Funding: \$4,182.00

FTEs: .10

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 Delta. This meeting is usually held on the first Friday of January and rotates between Arkansas, Mississippi, and Louisiana. Extension soybean specialists, county Extension agents, soybean producers, and agricultural industry representatives are responsible for planning the program and it is developed through quarterly meetings.

Funding: \$5,588.00

FTEs: .08

Southern Region Conservation Tillage Conference – SERA-IEG 20

Agronomists, soil scientists in Extension and Research, county Extension agents, crop consultants, NRCS staff and others meet to exchange information related to conservation tillage through the Conservation Tillage Conference and Field Day organized every year by a different

state in the southern region. The overall goal of this group is to expand this practice in the South to reduce erosion and associated land degradation. The 2003 conference and field day were canceled.

Funding: -0-

FTEs: -0-

Southern Region Plant Nutrient Management Conference

Soil scientists, agronomists, environmental specialists, crop consultants, and private labs, and other interested parties' meet to exchange information on soil fertility and 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. Arkansas will chair the 2004 conference.

Funding: \$1,016.00

FTEs: .02

National 4-H Congress

National 4-H Congress provides youth with the opportunity to increase their knowledge, acquire leadership skills, interact with youth from across the nation, and participate in cultural events. The national event involved youth from 48 states and two territories. Forty-two youth and five adults attended the event held in Atlanta, Georgia. Arkansas has one faculty member serving on the National 4-H Congress Design Team.

Funding: \$5,279.60

FTEs: .1

National 4-H Conference

Five Arkansas youth delegates and one Extension faculty member participated in National Congress held at the National 4-H Center.

Funding: \$3,702.96

FTEs: .06

Southern Region 4-H Volunteer Leader Forum

Eleven volunteer leaders and Extension faculty participate in this three-day training for 4-H volunteer leaders in Rock Eagle, Georgia.

Funding: .06

FTEs: \$2,886.56

Mid South Fair 4-H Day

Arkansas, Tennessee, Missouri, and Mississippi continue to provide leadership to 4-H Day activities at the Mid-South Fair held in Memphis, Tennessee. Youth from all states participate in educational and competitive events in family and consumer sciences and agriculture and natural resources.

Funding: \$5,384.88

FTEs: .13

Kansas City 4-H Global Conference

Arkansas, Missouri, Kansas, Iowa, and Nebraska continue to provide leadership to the 4-H Global Conference held in Kansas City. Youth delegates participate in educational and competitive events, interact with youth from other states and participate in leadership activities.

Funding: \$3,715.68

FTEs: .07

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: \$6,604.00

FTEs: .1

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 worked with Oklahoma to develop and put on-line three courses.

Funding: \$1,524.00

FTEs: .02

National and Southern Region 4-H Program Leaders Committee

State 4-H Program Leaders meet for a three-day national and a three-day southern region program planning session on an annual basis.

Quarterly phone conferences are held to maintain communication and coordinate joint activities.

Funding: \$1,270.00

FTEs: .02

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: \$2,032.00

FTEs: .03

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 FY03 Arkansas had one faculty member serving on the National Curriculum Committee Board of Directors.

Funding: \$9,116.80

FTEs: .15

Southern Region Program Leadership Committee

The Southern Region Program Leadership Committee 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.

Funding: \$7,620.00

FTEs: .12

Interactive, Web-Based Risk Management Training for Mid-South Producers

The purpose of this multi-state effort is to improve the risk management skills of mid-south producers and lenders through seminars and/or workshops and the development of printed and web-based educational materials. This educational effort will take advantage of the latest technology to deliver timely, relevant, and useful information to producers and other agricultural professionals. Participating states include Mississippi, Louisiana, Tennessee, and Kentucky.

Funding: \$1,524.00

FTEs: .02

Southern Region Watershed Resources Management

This is a collaborative effort among the 13 states in EPA regions IV and VI. The primary emphasis of the project is the development, delivery and sustained implementation of new and existing technology to protect and enhance water resources throughout the southern region and the United States. The overall goal is to provide regional and national coordination and integration of research, education, and Extension programs, particularly those addressing multi-state water quality programs.

Funding: \$108,904.00

FTEs: 2.5

Lower Mississippi Valley Initiative

The Lower Mississippi Valley Initiative is a coordinated effort to create an agriculturally based water quality educational program in Arkansas, Louisiana, Mississippi, Texas, Oklahoma, Tennessee, and Kentucky. Master Farmer is an outgrowth of Lower Mississippi Valley Initiative.

Funding: \$2,004.80

FTEs: .04

Southern Region Fire Ant Management

The Southern Region has a Fire Ant Management program that includes an annual conference, multi-state publications and sharing of educational materials. Much of the educational material being used has been developed and shared by the Arkansas Cooperative Extension

Service and other southern regional state Extension programs. Arkansas is also involved in a collaborative effort with the USDA-ARS and USDA-PPQ in the release of two biological control organisms – *Pseudacteon tricuspis*, and *Thelohania solenopsae*.

Funding: \$200,480.00

FTEs: 3.8

4-H Workforce Preparation

Tri-state (Mississippi, Louisiana, and Arkansas) collaborative effort initiated to develop a workforce preparation pilot program targeting the Delta. Four 4-H faculty members and four youth participated in a design team planning conference in FY03.

Funding: \$6,096.00

FTEs: .09

Soil/Plant/Byproduct/Water Analyses – SERA-IEG 6

Soil scientists and agronomists meet with the objective of increasing the awareness, understanding, and interpretation of soil, plant, byproduct, and water analyses and their proper application to land and resource management in the Southern USA through unbiased, scientifically sound information.

Funding: -0-

FTEs: -0-

Preventing Foodborne Illness in a Vulnerable Population in the Lower Mississippi Delta

The overall goal of this program is to develop a strategy for preventing food borne illness and improving nutrition for families living in the lower Mississippi Delta who utilize services of food recovery programs. Food recovery operations in Mississippi, Louisiana, and Arkansas have been identified and will be evaluated to determine current food handling and storage practices. A curriculum to address safe practices was developed and taught through a train-the-trainer approach. During FY03, a statewide training was conducted with Family and Consumer Sciences agents and food service workers. To date, 74 participants have been trained to use the curriculum and two additional trainings are scheduled.

Funding: \$2,540.00

FTEs: .04

Southern Region Middle Managers Conference

The conference is held every other year in one of the 13 southern region states. Its focus is management training for mid-level managers on a variety of topics including programming, supervision and evaluation of employees.

Funding: \$9,144.00

FTEs: .14

National Grassland Contest

The goal of the grassland evaluation program is to teach decision-making skills to 4-H and other youth in grassland resource management. This contest integrates the subjects of pastures, livestock, soils, and wildlife and plant identification to teach students an overall awareness of proper grassland management. The program is based on a classroom curriculum that can be taught in four sections – Grassland Condition, Wildlife Habitat Appraisal, Soil Evaluation, and Plant Identification. The 2004 Grassland Evaluation Contest will be held on April 27, 2004, in Madison County (near Hindsville). A practice contest date is tentatively set for March 23, 2004, in Van Buren County (near Clinton). The top teams will travel to Springfield, Missouri, in early June for the regional contest.

Funding: \$9,380.00

FTEs: .22

HorseQuest.info

HorseQuest.info is an interactive web site. It provides reliable, up-to-date information about horses for self-directed learners. HorseQuest.info was developed through the cooperative efforts of Extension equine specialists and associates at 13 land-grant universities in the southern region. This program was funded by a \$45,000 USDA Technology Grant. The search engine and database are at the University of Kentucky.

Funding: \$6,096.00

FTEs: .09

Delta HOPE (Healthy Options for People through Extension)

Delta HOPE is a tri-state (Arkansas, Louisiana, and Mississippi) collaborative effort initiated to address childhood obesity in the Mississippi Delta. A pilot intervention in three Arkansas counties (Woodruff, Drew, and Ashley) was planned during FY03 and will be conducted during FY04. Counties participating in the program will utilize the "Take10" curriculum to encourage 2nd grade teachers to incorporate short bouts (10 minutes) of physical activity into existing curriculum throughout the school day. The program has received funding from the Kellogg Foundation and will be expanded and continue through FY06.

Funding: \$3,810.00

FTEs: .06

Master Farmer Program

A three-state effort initiated by LSU and supported by Arkansas and Mississippi Extension driven by concerns for agriculture non-point source pollution and developing regulatory programs. The three states have joined to educate farmers about their place in the current environmental circumstance. The program has recently been joined by the Southern Rural Development Center. Products are in common curriculum themes, educational frameworks and evaluation processes.

Funding: \$46,446.00

FTEs: .87

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. Currently Extension representation includes Arkansas and Colorado.

Funding: \$2,032.00

FTEs: .03

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, 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.

Funding: \$7,230.00

FTEs: .15

National Web-Based Learning Center for Non-Federal Forest and Rangelands

The Center awarded grants to six states for developing web-based modules about topics of interest to forest landowners in the United States. The module titled, "Developing a Wildlife Enterprise – Is It For You?" is being developed by a team of Arkansas and Mississippi Extension faculty. The module is scheduled for completion in FY03.

Funding: \$7,552.88

FTEs: .12

NatureMapping

NatureMapping was co-developed in 1993 by leaders from the Washington Gap Analysis Project conducted at the University of Washington and the Washington Department of Fish and Wildlife. Five states including Iowa Extension have now taken strong leadership roles in NatureMapping, with approximately twelve more in stages of program adoption, including Arkansas. NatureMapping is an experiential learning program that promotes natural resource awareness using spatial technologies to inventory and monitor wildlife and associated habitats in the local community

Funding: \$16,012.96

FTEs: .28

9th Annual Conference of The Wildlife Society

This annual meeting of wildlife professionals includes representatives from state wildlife agencies, academia, Extension, and the private sector. Thousands of wildlife professionals from the United States and throughout the world attend this conference. The annual meeting is a forum for discussing issues of relevance through committees and working group meetings. Current research is presented in symposia and poster sessions. Professional development credits are obtained through attending symposia and workshops. During FY02 Arkansas had one faculty member present a paper about rice, ducks, and water rights.

Funding: \$1,778.00

FTEs: .03

10th National Fisheries and Wildlife Extension Specialists Conference

This tri-annual meeting of specialists facilitates information exchange among fisheries and wildlife Extension specialists throughout the country. Arkansas hosted the conference in FY02 which was attended by 30 participants from Washington D.C. to California.

Funding: \$1,524.00

FTEs: .02

10th Wildlife Damage Management Conference

The purpose of this bi-annual conference is to exchange information about the latest research and Extension activities pertaining to wildlife damage management. Arkansas hosted the conference in FY02 that was attended by over 240 participants from throughout the United States and England.

Funding: \$6,723.76

FTEs: .11

March 24, 2004