

# **FY 2001 Annual Report of Accomplishments and Results**

**Submitted to**

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Cooperative States Research, Education, and Extension Service**

**Joint Report**

**Mississippi State University Extension Service  
Mississippi Agricultural and Forestry Experiment Station**

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## A. Planned Programs

Mississippi State University, including the Mississippi State University Extension Service, the Mississippi Agricultural and Forestry Experiment Station, and the Forest and Wildlife Research Center, responded to the AREERA Plan of Work requirements by restructuring its program planning process. Based on clientele and reporting needs at the state and local levels, 26 priority program areas (PPA) were established. Based on this new system, outputs and outcomes were determined. The outcomes were primarily intermediate and long-term outcomes, with this first year devoted to establishing the research and extension programs and establishing baselines for future measurement of outcomes. Short-term outcomes, outputs, and impacts from programs established before AREERA are summarized under each goal below.

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

#### Overview

The following programs are included under goal 1. Each PPA is given with the specific programs in parentheses after the PPA.

- § PPA: Beef & Forage (Alternative Marketing; Forage Improvement; Genetic Improvement; Herd Health; and Nutrition)
- § PPA: Catfish (Processing Technology; Fish Behavior; Fish Health; Harvest Technology; Nutrition; and Water Quality)
- § PPA: Corn (New Technologies; Planting and Establishment Systems; and Profitability of Cropping Systems)
- § PPA: Cotton (Best Management Practices; Conservation Tillage; Disease and Nematode Management; Harvesting, Handling and Ginning; Variety Evaluation and Selection; Weed Control; Crop Price Ratios and Risk Management; Irrigation; and Utilizing GIS/GPS in Production)
- § PPA: Dairy (Cost of Production; Facility Management; Mastitis Control; Nutrition; and Reproductive Management)
- § PPA: Forestry (Forest Resources Management and Use)
- § PPA: Horticulture (Horticultural Crops)
- § PPA: Poultry and Products (Reducing Malodor and Pathogens; Lipoproteins and Egg Mycoplasma; Fertility in Broiler Breeders; Access to Technical Information; Cocci Vaccine Development; and Poultry Waste Management)
- § PPA: Rice (Insect Control; Management and Control of Diseases; Genetics, Breeding and Variety Development; Soil Fertility; and Weed Control)
- § PPA: Soybeans (Best Management Practices; Irrigation and Drainage Practices; Planting Dates and Variety Selection; Site Specific Soybean Management; Weed Control)
- § PPA: Swine (Technologies and Management)
- § PPA: Wildlife & Fisheries (National Catfish Information Database)

Outputs--research and extension activities--under this goal are provided in the table below.

<b>Priority Program Area (PPA)</b>	<b>Refereed Articles</b>	<b>MAFES Pubs.</b>	<b>Extension Pubs.</b>	<b>Extension Contacts</b>	<b>Other</b>
Beef and Forage	10	1	4	132,831	Computer Software: <i>MSU Cattle</i>
Catfish	4		0	7,890	Computer Software: <i>Visual Fishy</i>
Corn	10	2	4	75,648	
Cotton	33		6	103,621	
Dairy	0		0	28,157	
Forestry	0		1	151,300	Computer Software: <i>RIP-Xcut</i>
Horticulture	19	10	5	208,481	
Poultry and Products	3		6	7,152	
Rice	0		3	14,258	
Soybeans	7	1	4	55,335	
Swine	6		1	3,831	
Wildlife and Fisheries	4	1	2	84,522	

Progress toward intermediate- and long-term outcomes and impacts/outcomes for ongoing programs are documented under the key themes in the next section.

## **Key Themes**

### **Key Theme – Animal Production Efficiency**

a. Good herd health means higher profits at the sale barn, but many producers don't have the high standards needed to achieve this goal.

Mississippi State University's Extension Service began offering educational programs on the importance of herd health programs in Kemper County to cattlemen's association officers and other beef producers. Topics included genetics, vaccinations, castration, nutrient management and dehorning. Producers were taught that if properly managed for health, they would receive more per pound for their weaned animals than they otherwise would.

b. More Kemper County cattlemen have started to implement guidelines for herd management and health. Weaning weights are higher and sale prices are 10 to 20 cents a pound more than before. A 500-pound calf

selling for 80 cent per pound yields \$400, but a 500-pound calf at 90 cent per pound would yield \$450. For 10 calves, that could mean an addition \$500 to producers.

c. Smith-Lever funds (amounts and FTE not available)

d. State-specific

### **Key Theme - Biofuels**

a. A search for alternative fuels may uncover an additional source of income for Mississippi farmers and provide a solution to the waste disposal problems encountered by the state's agricultural industry.

The Mississippi Agricultural and Forestry Experiment Station has joined Oklahoma State University in an initiative to make production of biofuels more efficient and economically feasible. Biobased fuels account for less than 1 percent of energy generated worldwide today due to the cost of production and the need for improved manufacturing processes. The goal of the research is to develop technologies that will make plant-biomass-derived fuel competitive with conventional fuel and to produce crops that may be more energy-efficient.

b. Current U.S. ethanol production exceeds 1.5 billion gallons every year. MAFES researchers will use biotechnology and engineering advances to improve the conversion of synthesis gas into ethanol. Sources of feedstock have the potential to lower the cost of ethanol production because they are relatively inexpensive. Using waste biomass would also help solve the disposal problems facing agricultural and forestry industries.

c. Hatch funds (amounts and FTE not available)

d. Multi-state

### **Key Theme - Animal Health**

a. Vaccine and pharmaceutical combinations are being used in aquaculture production as the first line of defense against disease-causing organisms. Sometimes catfish producers lose some of their stock to disease because an effective treatment does not exist or resistance has developed to available drugs.

Scientists at Mississippi State University's College of Veterinary Medicine, in association with the Mississippi Agricultural and Forestry Experiment Station, are using biotechnology to develop and test vaccines against some important catfish diseases. One control agent being developed is a live-attenuated vaccine for the bacterium that causes enteric septicemia of catfish. This vaccine is modified in the laboratory so it is unable to cause disease but still develop the fish's immunity to that disease. Another scientist is using channel catfish viruses to deliver pieces of the bacterium causing ESC into the catfish to induce immunity in the fish.

b. The new vaccines may provide animal health benefits and increase the efficiency of catfish production.

c. Hatch funds (amounts and FTE not available)

d. State-specific

### **Key Theme - Animal Production Efficiency**

a. Fish farming is a difficult job that requires extensive record-keeping for good management. Even then, various factors combine to affect the growth of fish, making fish production difficult.

The Mississippi Agricultural and Forestry Experiment Station developed and updated a computer program to record, analyze and make reports for fish farmers. Fishy 2001 helps farmers track fish growth, and record amount fed, fish harvested, fish lost and fish moved. Fishy maintains historical and simulated information and supports these with pre-programmed background data. Producers enter historical data such as feed provided, fingerlings stocked, fish moved and observed mortality. Simulated data deals with future aspects, such as harvest schedules, feed needs and potential fish production. Background data includes feed conversion ratios, feeding calendars and estimated monthly mortality and comes with the program.

b. Catfish farmers use Fishy 2001 to track fish weights until harvest, and some continue to track through processing. The software allows more in-depth reports to aid farmers in observing discrepancies between pond bank fish weight and the weight of the fish actually sold to processors. The program organizes critical information needed to efficiently manage ponds, and can be used for catfish, trout, tilapia, hybrid striped bass and other fish.

c. Extension funds (amounts and FTE not available)

d. State-specific

### **Key Theme - Agricultural Profitability**

a. Rough mills turn lumber into the rectangular pieces that eventually become finished furniture components. Since lumber represents 50 to 60 percent of furniture parts production's total cost, the yield of parts from lumber must be maximized to generate competitively finished products.

New software recently developed in Mississippi State University's Department of Forest Products promises to be a boon for the furniture industry by taking the guesswork out of managing lumber cut up by rough mills. The software, named RIP-Xcut, was designed to assist in decision-making by simulating the cutup of parts from digital images of lumber for 1,500 to 2,000 board feet in each of six lumber grades. RIP-X can analyze part yields and costs for a rough mill's current lumber grade mix and will determine the best lumber grade mix to minimize total lumber cost.

b. The software simulates both the crosscut-first -- cutting lumber across the grain -- and rip-first -- cutting lumber along the grain -- systems currently used in rough mills. The crosscut-first versus rip-first yield and cost comparison has been identified as one of the furniture industry's most important production decisions. The software has the potential ability to impact the furniture industry in costs and time savings.

c. Smith-Lever funds (amounts and FTE not available)

d. State-specific

### **Key Theme - Plant Production Efficiency**

a. Since the introduction of high yielding rice varieties, producers have planted more than 65 percent of the Mississippi rice crop to the variety Lemont. The state's average nitrogen fertilizer usage for Lemont has been at least 217 pounds per acre, and fertilizer costs increased substantially this year.

The Mississippi State University Extension Service promoted the use of new rice varieties that use less nitrogen. The goal was to reduce production costs and increase profits to the rice producers of Mississippi.

b. Extension agents recommended producers apply 150 to 180 pounds of nitrogen fertilizer to the new varieties. Additional amounts will not produce higher yields and will probably cause problems. In Sunflower County, producers planted new rice varieties on 150,000 acres, which will reduce nitrogen usage by 16 to 18 percent. This translates into a savings of approximately \$3 per acre or \$450,000 for the 150,000 acres planted to the new varieties with lower nitrogen requirements. The environmental impact of less nitrogen applied is another positive effect of educational efforts.

c. Smith-Lever funds (amounts and FTE not available)

d. State-specific

### **Key Theme - New Uses for Agricultural Products**

a. When pine plantations are thinned, the young pines are sold as pulpwood for small amounts of money since these trees are too small to use for lumber. Pine plantations in Mississippi are increasing and pulpwood prices are decreasing, so a new use for this plantation pine is needed.

Researchers at Mississippi State University's Forest Products Laboratory and an Australian Company, TimTek, hope to use this small diameter timber to create valuable structural lumber. This new product will be an engineered wood similar to particleboard that can be shaped to meet all current needs for lumber. Once this technology has been refined, the product will be marketed to the industry.

b. This technology will alleviate the oversupply of plantation pines and open additional markets for landowners. The economic benefit to landowners is not known at this time but the technology shows great potential.

c. Hatch funds (amounts and FTE not available)

d. State-specific

### **Key Theme - Plant Production Efficiency**

a. New varieties with increased yield potential and improved disease resistance are essential to increase the production efficiency of Mississippi rice growers.

The Mississippi Agricultural and Forestry Experiment Station made 658 new crosses of rice. Parents were selected for desirable traits including high yield potential, good milling quality and enhanced disease resistance. New lines developed during this period offer significant potential for increased yields, improved milling quality, and enhanced levels of disease resistance. The sheath blight tolerant cultivar Litton was released in 1996. In 1997, the high yielding long-grain cultivar Priscilla was released.

b. Priscilla has consistently averaged about 1000 kg/ha higher yield than the popular cultivar Lemont in on-farm performance tests during the past five years. It has good lodging resistance and tolerance to sheath blight, a serious disease in rice production. As Priscilla exhibits some tolerance to sheath infection, a fungicide application is not considered cost effective unless field infection is severe. Planting Priscilla rather than a susceptible cultivar that requires fungicide treatment saves growers an estimated \$1.3 million.

c. Hatch funds (amounts and FTE not available)

d. State-specific

### **Key Theme - Plant Health**

a. With poor market prices, rice producers must lower operating budgets and reduce late season costs. When late season rice diseases appeared in Sunflower County, producers were unsure of what to do.

Producers needed to know threshold levels that indicate when treatments should be applied. The Mississippi State University Extension Service helped identify maturity levels of those varieties infected with sheath blight and sheath rot disease.

b. Based on the overall maturity of the rice crop, a no-spray was recommended for more than one fourth of the approximately 100,000 acres in the area. Not spraying the fungicide unnecessarily saved producers about \$750,000.

c. Smith-Lever funds (amounts and FTE not available)

d. State-specific

### **Key Theme - Agricultural Profitability**

a. Pesticide applications are a tremendous cost to rice and cotton farmers, and timing them correctly is a continual challenge. Much of it depends on the weather, but the National Weather Service stopped providing this data in 1997.

Mississippi State University, through the Extension Service and the Mississippi Agricultural and Forestry Experiment Station, now offers this weather data to farmers. It also researched and promoted a formula that requires heat unit accumulation data to determine when pesticide applications can end, allowing farmers to stop spraying earlier than if they followed a calendar.

b. Cotton insecticides cost an average of \$85 to \$90 per acre each year. About 55 percent of the Delta's one million acres of cotton use the weather-based system, saving Delta farmers \$30 an acre by eliminating an average of 2.5 insecticide applications a year. Savings were \$16 million in 2000.

c. Smith-Lever funds (amounts and FTE not available)

d. State-specific

### **Key Theme – Agricultural Profitability**

a. Consumer preferences and perceptions impact retail sales of horticultural commodities and services in the nursery/landscape industry (i.e., 'Green Industry'). Market analysis of consumer preferences is sketchy at best. MAFES and MSU-ES faculty are conducting consumer preference surveys at commercial nursery outlets, workshops, and garden/patio shows. This information is being disseminated to the nursery industry through workshops, meetings, and publications.

b. Consumer preference data gathered by MAFES/MSU-ES faculty are helping the 'Green Industry' to effectively target their markets and make the industry economically viable. The "Green Industry" is currently the fastest growing part of the agricultural economy in Mississippi.

c. Hatch/Smith-Lever funds (amounts and FTE not available)

d. State-specific

### **Key Theme - Biotechnology**

#### **Consumer Tastes and Preferences Regarding Mississippi Agricultural Products**

a. Understanding consumer tastes and preferences regarding Mississippi agricultural products would be an aid to Mississippi producers in marketing their products. To this end, MAFES and MSU-ES faculty are gathering market and consumer preference data on Mississippi products.

b. MAFES researchers are evaluating alternative auction mechanisms and elicitation environments to value non-market goods. Data generated by MAFES and MSU-ES faculty on consumer perceptions of genetically modified foods has been widely used by the news media, public policy makers, and the biotechnology industry to support public policy and marketing issues and on this subject.

c. Hatch/Smith-Lever funds (amounts and FTE not available)

d. State-specific

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

**Overview**

The following programs are included under goal 2. Each PPA is given with the specific programs in parentheses after the PPA.

§ PPA: Catfish (Food Quality and Safety)

§ PPA: Food Safety (Food Safety)

Outputs--research and extension activities--under this goal are provided in the table below.

<b>Priority Program Area (PPA)</b>	<b>Refereed Articles</b>	<b>MAFES Pubs.</b>	<b>Extension Pubs.</b>	<b>Extension Contacts</b>	<b>Other</b>
Catfish	4	0	0	7,890	Computer Software: <i>Visual Fishy</i>
Food Safety	0	0	0	38,945	

Progress toward intermediate- and long-term outcomes and impacts/outcomes for ongoing programs are documented under the key themes in the next section.

**Key Themes**

Key Theme - Food Quality

a. Catfish farmers have economic evidence that battling the most common cause of off-flavor with copper sulfate brings higher profits.

Research shows that dissolving copper sulfate in catfish ponds kills blue-green algae and greatly reduces problems with off-flavor, and a Mississippi Agricultural and Forestry Experiment Station economic analysis shows it saves producers money. Harvest-ready but off-flavor catfish must be held in ponds until flavor improves, which can take from a few days to several months. During this time, producers must continue to feed the catfish to maintain market weight, and many die during this wait.

b. By treating to keep the fish on-flavor, producers can expect higher profits. Ponds where copper sulfate is used can have an annual net return of \$848 per acre per year of profit above cash costs. Ponds without treatment show an annual net return of \$569 above cash costs.

c. Hatch funds (amounts and FTE not available)

d. State-specific

## **Key Theme - Food Safety**

a. Consumers expect seafood meals to be safe and fresh, but the industry uses subjective sensory methods to measure characteristics such as aroma, texture and color. Chemical and microbiological testing methods have long analysis times and only seem to verify the sensory tests. Additionally, the lengthy analysis time of chemical or microbiological tests wastes product shelf life and requires highly trained analysts to interpret results.

A Mississippi Agricultural and Forestry Experiment Station researcher developed new tests that give fast results using impedance technology, which measures the flow of electrons through food and eliminates the subjectivity of the processor's perspective. While standard tests can take 24 to 48 hours, impedance technology allows testing to be finished in as little as 30 minutes. Impedance technology can detect spoilage indicators in crustaceans and safety indicators in mollusks.

b. The tests are designed to quickly detect and count pathogens present so seafood that is safe may be supplied to consumers more quickly, without wasting freshness time. Up to 128 samples can be tested at one time. The tests also reliably indicate foods that violate FDA safety standards and should not be passed to consumers.

c. Hatch funds (amounts and FTE not available)

d. State-specific

## **Key Theme - Food Safety**

a. Millions of illnesses and thousands of deaths can be traced annually to contaminated food, costing approximately \$420 million in direct medical bills. Food safety issues are complex, and knowledge of the science of food safety varies greatly among food service professionals and consumers.

MSU-ES delivers food safety and quality educational programs through its federal, state and county partnership of professionals. Through its partnership with the MSDH, Extension agents throughout the state have offered *ServSafe Essentials* food safety certification training sessions. State law for all permitted food service establishments in the state of Mississippi requires food safety certification. Facilities represented in the training have included hospitals, nursing homes, schools, restaurants, child care facilities, Head Start, Department of Corrections, caterers, and others. The 16-hour certification program addresses critical issues such as the importance of proper personal hygiene, cross contamination, time and temperature abuse, safe preparing and serving of food, hazard analysis critical control points, and cleaning and sanitizing. Successful completion of a national standardized test following the training is required for food service participants to become certified.

b. To date, over 60 certified Extension agents have offered in excess of 360 classes, reaching over 7500 persons. Facilities lacking a certified individual are considered to be in critical violation of the law. Preliminary studies show that facilities are 50% more likely to have fail critical inspections if they do not have a certified manager.

c. Smith-Lever funds (amounts and FTE not available)

d. State-specific

### Goal 3: A healthy, well-nourished population.

#### Overview

The following programs are included under goal 3. Each PPA is given with the specific programs in parentheses after the PPA.

§ PPA: Human Health (Family Health Needs; Improved Access to Health Care Services; Life Skills and Healthy Habits in Young People; Utilization of Available Medical Care)

§ PPA: Human Nutrition (Health and Nutrition)

Outputs--research and extension activities--under this goal are provided in the table below.

Priority Program Area (PPA)	Refereed Articles	MAFES Pubs.	Extension Pubs.	Extension Contacts	Other
Human Health	6	0	4	65,403	
Human Nutrition	7	0	4	412,340	

Progress toward intermediate- and long-term outcomes and impacts/outcomes for ongoing programs are documented under the key themes in the next section.

#### Key Themes

##### Key Theme - Health Care

a. Many rural communities in Mississippi have problems recruiting and retaining doctors to serve in their communities. The objective of the Rural Medical Scholars Program is to “grow local docs” for the state of Mississippi. By identifying talented, interested high school students we hope to encourage and support career choices by exposing them to academics and experiences relevant to the life of a family medicine physician. The students were recruited and nominated by their local community or junior college ensuring a broad geographic representation from throughout the state. The first week of the program was a preparation for the following five when their academic classes took place. During the first week the Scholars participated in a study skills workshop for gifted students. Previous experience indicated the need to help bridge the gap between high school and college level study habits. The first week was also utilized to expose them to issues and experiences relevant to the interests of aspiring physicians. The students took two pre-med courses (Principles of Zoology and College Algebra) and spent one afternoon a week “shadowing” physicians. An intense, rigorous program, it gave the students significant insight into the academic requirements necessary to becoming a physician coupled with a real world look at the day-to-day practice of medicine and some of the issues relevant to the work and personal life of rural physicians.

b. Over 100 students have participated in the last four years and the first two groups are in college. About half of them are majoring in pre-medicine or other majors preparing them for medical school. Many have plans to return to their local communities and practice medicine.

c. Smith-Lever funds (amounts and FTE not available)

d. State-specific

### **Key Theme – Human Health**

a. Significant risks to children’s health in water and indoor air quality can be found in the home childcare environment. Simple strategies can improve health and reduce illness if implemented. Healthy Homes for Children has provided a home visit and educational materials packet and checklist to each of the 60 home-based childcare givers targeted through the Nurturing Homes Initiative (NHI) program in Coahoma, Tallahatchie, Oktibbeha, Noxubee, Scott, Marion, Jasper, Jackson, Harrison, Webster, Lauderdale, and Clay Counties. During home visits by 2 NHI Coordinators, the simple strategies outlined in the teaching packet were conducted during the months of June-September 2001.

b. Instruction for the homeowners resulted in reports of increased awareness of health issues in the near environment. HARMS rating scale for quality childcare data indicates some increases in over half of the health and safety items of Nurturing Homes clientele targeted in this project.

c. Smith-Lever funds (amounts and FTE not available)

d. State-specific

### **Key Theme - Human Health**

a. All of the medical advances in breast cancer treatment depend to a large degree on early detection. According to the Cancer Research Foundation, a 96% five-year survival rate is possible for all women with breast cancer. In a 5-year effort, Extension Service Home Economists in 22 counties have trained over 3000 lay health volunteers in early breast cancer detection. These volunteers have evidenced tremendous potential to reach women in their circles of influence, reaching thousands of women each year. Home Economists, in collaboration with many other community organizations, were key to the implementation of a May, 2001 Think Pink Mothers’ Day Card campaign which encouraged over 8000 Delta women with a personal message to have mammograms regularly.

b. A follow-up survey of the program participants by mail was unsuccessful in determining the long-term impact of the program on behaviors. Less than 10% of those contacted responded. Those who did respond reported having had a mammogram within the past 12 months as was appropriate for age, and all reported practicing BSE at least 10 times during the year. Another strategy to collect follow-up information was successfully implemented in 2001, with positive results from the standardized BSE lesson resulting in

statistically significant increases in mammography utilization and increased rates of monthly BSE in program participants.

c. Smith-Lever funds (amounts and FTE not available)

d. State-specific

### **Key Theme - Human Nutrition**

a. Dietary factors are associated with 4 of the 10 leading causes of death in the US. The combined medical and lost productivity cost of these health conditions is estimated at over \$200 billion per year. In Mississippi, cardiovascular disease was the leading cause of death, accounting for more than 11,000 deaths in Mississippi; while diabetes, the seventh leading killer, accounted for over 500 deaths in 1996. Overweight and obesity are major contributors to the leading causes of death. Obesity alone cost the US an estimated \$99 billion in 1995. In 1998, Mississippi had the third highest percentage of adults who were overweight (59.3%) and the tenth highest percentage of adults reporting no leisure-time physical activity (33.8%). For the two out of three adult Americans who do not smoke and do not drink excessively, personal food choices have more influence on long-term health than any other factor. Even small dietary changes can provide big benefits.

The Human Nutrition Program of the MSU-ES provided nutrition information to over 351,000 individuals through 15,200 educational programs, which enable Mississippians to make informed food choices, and has the potential to improve the health of Mississippians and lower the cost of chronic diseases to the state. So far in 2001, over 60 Extension agents have been trained to provide, in partnership with qualified health care professionals, diabetes education consisting of food preparation and selection information to help persons with diabetes better manage this debilitating disease.

b. Over 119,000 hours were committed to planning, developing and implementing over 15,200 educational sessions which reached more than 351,000 individuals with life skill information enabling them to make informed food choices thus improving their overall health and potentially reducing the cost of chronic diseases.

c. Smith-Lever funds (amounts and FTE not available)

d. State-specific

**Goal 4: An agricultural system which protects natural resources and the environment.**

**Overview**

The following programs are included under goal 4. Each PPA is given with the specific programs in parentheses after the PPA.

- § PPA: Cotton (Insect Management - IPM)
- § PPA: Soybeans (Integrated Pest Management)
- § PPA: Swine (Waste/Odor Management)
- § PPA: Wildlife and Fisheries (Ecology and Management of Sustainable Resources; Ecosystem Management and Restoration)

Outputs--research and extension activities--under this goal are provided in the table below.

<b>Priority Program Area (PPA)</b>	<b>Refereed Articles</b>	<b>MAFES Pubs.</b>	<b>Extension Pubs.</b>	<b>Extension Contacts</b>	<b>Other</b>
Cotton	33	0	6	103,621	
Soybeans	7	1	4	55,335	
Swine	6	0	1	3,831	
Wildlife and Fisheries	4	1	2	84,522	

Progress toward intermediate- and long-term outcomes and impacts/outcomes for ongoing programs are documented under the key themes in the next section.

**Key Themes**

**Key Theme - Hazardous Materials/Recycling**

a. Sunflower County’s more than 300,00 acres of cropland require a significant amount of pesticides to control crop pests. Many pesticides are sold in disposable, non-returnable plastic containers that many producers rinse and send to the landfill at a tremendous cost to themselves.

The Mississippi State University Extension Service encourages farmers to recycle these rinsed pesticide containers. Farmers are told where designated collection sites have been established.

b. In 2001, Sunflower County producers delivered more than 90,600 pounds of rinsed plastic pesticide containers for recycling. This is a direct savings of the more than \$100,000 it would cost to take these

containers to the landfill. There is the further, immeasurable value of saving landfill space and preventing future contamination and health problems to the population of Sunflower County.

c. Smith-Lever funds (amounts and FTE not available)

d. State-specific

### **Key Theme - Nutrient Management**

a. Traditionally, poultry litter has been spread as a fertilizer on pastures located in the 34 poultry-producing counties in Mississippi. But with time, the nutrient storage capacity of the soil in these counties has been pushed close to its limits, raising concerns of potential environmental problems from nutrient runoff into water sources.

Much of Mississippi is heavily forested with pine trees growing in nutrient-deficient soils. Researchers from the Mississippi Agricultural and Forestry Experiment Station and the Southwest Mississippi Resource Conservation and Development Council, Inc., are studying the growth response of pine trees to poultry litter and the environmental quality issues associated with litter use in forests. In a study, the top layer of raw poultry litter that has been cleaned out of a chicken house and stored was applied in a thinned stand of 10-year-old pines at three different application rates. Soil water samples were collected monthly from just below the main tree root mat.

b. Results from a noncommercial-scale study suggest raw poultry litter provides a good growth response in pine trees, but it has a minimal impact on water quality. The trees in the test showed increased growth within six months, and water samples showed little nutrient run off.

c. Hatch funds (amounts and FTE not available)

d. State-specific

### **Key Theme - Nutrient Management**

a. When catfish ponds are drained, the initial flush of water consists of pond water and a slurry of sediment that has accumulated around the drain structure inside the pond. The initial discharge is very high in solids, oxygen demand and nutrients.

Researchers with the Mississippi Agricultural and Forestry Experiment Station found that one approach to reducing the environmental impact of catfish pond effluent is to deepen some ponds and use them for both fish production and water storage. When the pond is drained, a significant portion of the sediment is discharged within the first 10 minutes. Water that drains out after that time is identical to the rest of the pond water.

b. The environmental impacts of catfish farming can be minimized by optimizing pond storage capacity and discharging water into vegetated ditches. Using ponds for both fish production and water storage reduced the

volume of effluent by 65 to 75 percent, and reduced the amount of ground water used by 25 to 38 percent. Researchers also concluded that flowing the pond water through 200 meters of vegetative drainage ditches removes the heavy solids found in the water.

c. Hatch funds (amounts and FTE not available)

d. State-specific

### **Key Theme - Agricultural Waste Management**

a. Mass quantities of poultry litter is a high-nutrient byproduct of large poultry operations. What to economically do with this potentially useful product is a question that challenges poultry producers and researchers.

Mississippi Agricultural and Forestry Experiment Station researchers are working with the Southwest Mississippi Resource Conservation and Development Council, Inc., to use litter as a horticulture fertilizer. Poultry litter is high in nutrients, especially nitrogen, and is being tested as a fertilizer for potted plants grown in commercial nurseries and home gardens. Researchers are assessing the benefits of adding heat-processed, pelleted poultry litter as part of a potting mix and determined the best application rates for litter.

b. The study has shown promise, but some of the plant species experienced toxic effects from the addition of processed poultry litter. The salt levels in soil were higher than expected when litter was added to the potting media, indicating potential toxicity. Researchers will optimize growing conditions to account for salt accumulation with poultry litter treatment, and look at using raw versus processed poultry litter to see if that affects the health of potted plants.

c. Hatch

d. State-specific

### **Key Theme - Agricultural Waste Management**

a. Poultry producers are always trying to find uses for the nutrient-rich poultry litter that Mississippi's numerous broiler houses produce. State law regulates how this litter can be used, but bases these nutrient management guidelines on data from another state.

Nutrient levels in poultry litter correspond to nutrient levels in the food broilers eat. A mathematical formula developed using data from other states said that after five years of production, the litter in a broiler house would contain five times the amount of nutrients and a producer would have five times the amount of litter as after one year of production. Mississippi Agricultural and Forestry Experiment Station researchers tested this in Mississippi and found it not to be the case.

b. Researchers collected and analyzed litter from 197 broiler houses for nearly six years before finding that while tonnage of litter increased over time, it did not increase as quickly as previously predicted. Also,

nitrogen, phosphate and potash levels increased greatly from the first flock to the fifth flock, but remained constant after that out to 28 flocks of production. Because of the research, Mississippi will be able to revise nutrient management plans for broiler producers, allowing them to use more litter while preserving the environment.

c. Hatch funds (amounts and FTE not available)

d. State-specific

### **Key Theme - Pesticide Application**

a. Synthetic pesticides have been used widely since the mid-1940s to protect against pest-inflicted crop damage and losses. But exposure to pesticide residues from off-target spray drift can lead to significant health and environmental consequences, as well as cause damage to sensitive plants.

A number of variables affect how far these pesticides drift. Regulatory agencies have recommended ways to reduce spray drift, but no one knew how effective these are in real-life scenarios. A Mississippi Agricultural and Forestry Experiment Station research cooperated with University of Illinois researchers on a field study in Missouri looking at factors affecting pesticide drift from ground boom sprayers.

b. They found that downwind distance, followed by wind speed, is the most important variable that affects ground boom spray drift. Air temperature also had an effect. These findings contrast a previous theory that held droplet size to be the most influential variable in drift from ground, boom sprayers. Results from the studies will provide better-defined guidance for ground boom drift control to producers, applicators and agricultural chemical companies.

c. Hatch funds (amounts and FTE not available)

d. State-specific

### **Key Theme – Nutrient Management**

a. Producers and landowners are faced with the prospect of compliance with TMDL regulations governing land use and there is a demand for information on Best Management Practices. This places a tremendous demand on county agents as a primary source of information on Best Management Practices to meet these demands. Teams of MAFES scientists and MSU-ES specialists are needed to research and educate county agents and producers on the Best Management Practices to meet this need.

b. MAFES/MSU-ES teams are researching alternative uses of poultry production by-products. These include use in compost, potting mixture for the greenhouse container industry, and non-pasture crop production. Educational forums for poultry producers, presentations, demonstrations, and in-service training for county agents and stakeholders were successfully convened in 2001 with significant stakeholder buy-in.

c. Hatch/Smith-Lever (amounts and FTE not available)

d. State-specific

**Key Theme – Natural Resources Management**

a. Continuing development in coastal areas increases possible negative impacts on wetlands, water quality, and public health. This project will seek to define the extent of developmental pressures on coastal environments and resources and evaluate appropriate methods to correct or reduce impacts and improve conditions.

b. Results from MAFES studies of hydroponic and sawdust filter trials are providing information useful to the management of effluents from both aquaculture and horticulture operations. Results from monitoring of pastureland are proving useful to the management of manure runoff and pastureland management, as well as provide data to support water quality modeling efforts. MSU-ES is serving as the primary technology-transfer vehicle through producers' workshops, personal contacts, meetings, publications, and electronic media. This effort is helping to reduce or slow negative impacts of increased development on wetlands and water quality on the Mississippi Gulf Coast.

c. Hatch/Smith-Lever (amounts and FTE not available)

d. State-specific

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

**Overview**

The following programs are included under goal 5. Each PPA is given with the specific programs in parentheses after the PPA.

- § PPA: Agribusiness (Agribusiness Development)
- § PPA: Child/Youth/Families at Risk--CYFAR (Reducing At-Risk Behaviors; Nurturing Families)
- § PPA: Consumer Education (Clothing; Housing; Kenaf in Textiles/Textile Products)
- § PPA: Economic/Comm Development (Community Leadership Development; Diversifying Rural Economies; Entrepreneurial & Business Development; Strategic Planning by Local Communities; Local Government Officials Education)
- § PPA: Financial Management (Family Financial Management; Farm Business Financial Management)
- § PPA: Food and Food Products (Business Feasibility; Specialty Foods Business Development)
- § PPA: Forest Products (Forest Products)
- § PPA: Leadership Development (Volunteers)
- § PPA: Safety (AgrAbility; Farm Safety; Youth Safety)
- § Wildlife & Fisheries (Youth Development; Socio-Economic Investigations of Fish and Wildlife)
- § Youth Development (4-H)
- § Youth Livestock (4-H)

Outputs--research and extension activities--under this goal are provided in the table below.

<b>Priority Program Area (PPA)</b>	<b>Refereed Articles</b>	<b>MAFES Pubs.</b>	<b>Extension Pubs.</b>	<b>Extension Contacts</b>	<b>Other</b>
Agribusiness	13	2	1	112,705	
Children, Youth and Families at Risk	0	0	0	273,052	
Consumer Education	2	1	12	87,233	
Economic/Community Development	8	1	2	151,860	
Financial Management	5	0	1	62,276	
Food and Food Products	17	5	0	5,149	
Forest Products	0	0	0	4,079	

Safety	0	0	0	63,742	
Wildlife and Fisheries	4	1	2	84,522	
Youth Development	2	0	1	405,923	
Youth Livestock	0	0	1	189,059	

Progress toward intermediate- and long-term outcomes and impacts/outcomes for ongoing programs are documented under the key themes in the next section.

## Key Themes

### Key Theme - Workforce Preparation - Youth and Adult

a. An injury or disability of some type can take farmers away from their livelihood or prevent others from ever realizing their potential in agricultural endeavors.

Mississippi State University's Extension Service partnered with a statewide, non-profit disability service organization to create AgrAbility. This organization is mainly an educational program that assists people with a physical disadvantage, helping them start working or stay working.

b. AgrAbility helped one 18-year-old run his own wholesale turf grass business from his wheelchair. This young producer uses a specially-modified John Deere tractor to water, fertilize and mow the turf. He now has a business, Ability Turf, commercially producing Bermuda grass on 25 acres.

c. Smith-Lever funds (amounts and FTE not available)

d. State-specific

### Key Theme - Leadership Training and Development

a. Leadership development is a long process that gives a person direction and the ability to influence others toward worthy goals. Each generation must have people within its ranks willing to step forward and lead, but they must be prepared to do so.

This year, 439 Mississippi youth from across the state spent four days in 4-H contests, leadership development and activities at State 4-H Congress 2001. The 14- to 18-year-olds met for leadership development, judging, speaking and performance competitions.

b. The 2001 4-H Congress helped youth improve themselves and gave them the opportunity to give back to the communities of the state. Participants contributed to a canned food drive for the Stewpot Community Service in Jackson and raised \$1,000 in donations for the Ronald McDonald House. While at Mississippi State University for Congress, the 4-H'ers got a taste of college life from the experience.

c. Smith-Lever funds (amounts and FTE not available)

d. Multistate Extension

### **Key Theme - Children, Youth, and Families at Risk**

a. Youth battling life-threatening diseases don't have much time to fulfill dreams they may have for their lives.

Mississippi State University partnered with the Mississippi Wildlife Federation to provide the Bruce Brady Memorial Catch-A-Dream program, hosted by the Mississippi 4-H Foundation. This program grants outdoor adventures to youth with life-threatening diseases.

b. The Catch-A-Dream program has hosted four youth since it was established in 2001. Its goal is to ensure children and youth 18 years of age and younger with life-threatening illnesses can have an outdoor adventure, and to give them spiritual encouragement they need. Nine adventures have been scheduled for 2002, and applications are still being accepted for more.

c. Smith-Lever funds (amounts and FTE not available)

d. State-specific

### **Key Theme - Child Care/Dependent Care**

a. Many low-income Mississippi children stay in unlicensed, home-based childcare facilities. Since these are small enterprises, there is concern that those running these facilities may not have the opportunity to stay current with training they need to provide the best childcare.

Mississippi State University's Extension Service and Alcorn State University are working together to distribute lessons to enrolled participants through the Nurturing Homes Initiative. This program gives lessons on safety, health issues and developmentally appropriate activities to participating child-care providers for low-income children. Forty-one unlicensed child-care providers are enrolled in the program, and more are being recruited. One or two lessons are mailed out weekly, and consist of two to three pages of written material designed to take about 20 minutes each to complete. After successfully completing a lesson, participants receive a developmentally appropriate toy to be used in the family home.

b. The program encourages better care for home child-care providers. Participants say it puts them in contact with others who offer home child-care, allowing them to solve problems together and share techniques. Participation in the program also demonstrates a commitment to quality child care.

c. Smith-Lever funds (amounts and FTE not available)

d. State-specific

### **Key Theme - Youth Development/4-H**

a. A successful college experience requires both money and personal responsibility. A Mississippi program offers both.

Each year, the Mississippi State University Extension Service organizes the Dixie National Sale of Junior Champions. Here 4-H and FFA members sell their champion animals to the highest bidder. The youth spend the year caring for their animals, which are then sold at much greater than market prices.

b. The Dixie National Sale of Junior Champions has paid more than \$2.1 million to young livestock exhibitors over the 32 years since the sale was organized. In 2001, buyers paid \$120,470 for 34 market hogs, lambs and steers. The money can be used for college scholarships for the youth, and the experience teaches them a great degree of responsibility.

c. Smith-Lever funds (amounts and FTE not available)

d. State-specific

### **Key Theme - Promoting Business Programs**

a. The spending habits that get many Mississippians into financial trouble usually start early. In 1999, the Mississippi Legislature passed a law requiring money management be taught in high schools in an effort to curb this trend.

Mississippi State University's Extension Service joined with schools and businesses to bring the new curriculum to the classroom. The purpose is to help young people have a better understanding of financial planning, and to learn the difference between wants and needs. Lessons teach students about the basics of financial planning, personal budgets, check writing, deductions on paycheck stubs, taxes and credit.

b. More than 3,000 students have received financial planning education over the past year from more than 250 teachers who have learned how to teach the high school financial planning curriculum. From textbooks, speakers and activities, these youth are learning wise financial planning.

c. Smith-Lever funds (amounts and FTE not available)

d. State-specific

### **Key Theme - Youth Development/4-H**

a. With high school students attending two private schools and six different schools in two public school districts in Holmes County, there was not much interaction between students of the different communities. This separation fostered rivalries and non-cooperation that carried over to the communities.

Mississippi State University's Extension Service worked with the schools in the county to develop a cooperative, countywide high school leadership program. Each school was asked to send seven students each month for this training. Extension staff worked with the Mississippi Development Authority and the Holmes County Board of Supervisors to offer the program in a centrally located, neutral site.

b. Five high schools, four public and one private, are sending students to the Leadership for Life program. The 35 students meet monthly to learn communication skills, teamwork and etiquette, as well as hear speakers on subjects they identified as relevant to them. The students are coming together in an atmosphere of cooperation, and the groundwork is being laid for more countywide cooperation through the example and work of these high school students.

c. Smith-Lever funds (amounts and FTE not available)

d. State-specific

## **B. Stakeholder Input Process**

Grassroots efforts to determine economic, social, and environmental issues begin with County Extension Advisory Councils. Further needs assessment is carried out through Research and Extension Center Advisory Councils, state-level advisory committees, and through formal and informal interaction with other stakeholders. Issues identified include concerns to be addressed with Extension and/or research programs. MSU-ES takes the leadership role, while MAFES and FWRC are involved and benefit from the process.

### **County Extension Advisory Councils**

As a formal process, key clientele meet under the leadership of county Extension professionals to review results of programs and identify key issues to be addressed in the county or area. Input comes from three different groups: the Overall Extension Advisory Council, Program Advisory Councils, and other stakeholders.

#### **Overall Extension Advisory Councils**

MSU-ES has an Overall Extension Advisory Council in each county. These advisory councils meet a minimum of two times per year to discuss programming efforts, evaluate programs, legitimize program efforts, assess needs for future programming, and identify human and financial resources needed for county programming. This group includes leaders who provide input from business, social, and economic entities as well as those who represent the needs of underserved and underrepresented clientele, while constantly striving to ensure diversity.

#### **Program Advisory Councils**

Program and/or commodity advisory groups in each county act as subcommittees of the overall advisory council, including people who represent the interests of agriculture, family & consumer education, 4-H youth, and community and rural development issues. These groups meet at least two times per year to identify specific areas of program needs, and assist in planning, conducting, and evaluating programs.

#### **Other Stakeholders**

MSU-ES county agents are also required to obtain information regarding clientele needs from people outside the overall advisory council. They must give special attention to key community leaders and representatives of underserved populations, making sure all groups who are possible beneficiaries of MSU-ES programming efforts are included. These groups meet several times during the year to offer input and react to Extension's efforts to address key issues in the community. One important concern is to ensure programming efforts include a diverse clientele.

### **Research and Extension Center Advisory Councils**

MSU has four area Research and Extension Centers (Delta, Northeast, Central, and Coastal) jointly administered by MSU-ES and the Mississippi Agricultural and Forestry Experiment Station (MAFES). These centers each have an overall advisory council where stakeholders lead discussions about programming and research efforts and assess needs at a yearly meeting. Subgroups of the advisory councils (e.g., forestry, family, row crops, etc.) meet several times during the year to discuss specific needs in research and extension programming.

### Forestry and Wildlife Advisory Committees

Forestry, Forest Products, and Wildlife and Fisheries have advisory committees that meet yearly to identify issues and recommend research and extension programs to address those issues. Actions on these recommendations are reported at the next yearly meeting and further recommendations are made as warranted.

### Other Sources of Needs Identification

MSU-ES, MAFES, and FWRC are continually looking for ways to interface with stakeholders to ensure that their needs are being addressed. The Agriculture and Forestry Summit and meetings with key partners are two examples of ways needs are identified.

### **Agriculture and Forestry Summit**

MSU's Division of Agriculture, Forestry, and Veterinary Medicine conducts the Agriculture and Forestry Summit annually. The summit is a statewide planning process involving a diverse group of stakeholders. Results of the summit are used to develop research and extension priorities.

### **Key Partners**

MSU-ES, MAFES, and FWRC meet with key partners throughout the year to discuss efforts and results, coordinate activities, and set priorities. These key partners include such organizations as the Mississippi Farm Bureau, Natural Resources Conservation Service, Delta Council, Rural Development Offices, Mississippi Forestry Commission, Mississippi Department of Wildlife, Fisheries, and Parks, Mississippi Department of Agriculture and Commerce, and numerous state and regional commodity groups.

## **C. Program Review Process**

There have been no significant changes in Mississippi State University's program review processes since submission of our joint 5-Year Plan of Work.

## D. Evaluation of the Success of Multi and Joint Activities

This evaluation of the success of the multi and joint activities is guided by the four criteria identified in the Guidelines for the State Plans of Work. Answers to each of the four questions are provided below.

### 1. Did the planned program address the critical issues of strategic importance, including those identified by the stakeholders?

Yes. Once the draft guidelines for AREERA were published, MSU initiated its new planning process. The priority planning groups (PPGs) for each of the 26 PPAs developed their plans for both research and extension.

To provide guidance for the program planning process, the PPGs not only used their professional expertise, but also had information at their disposal from the following sources:

- § The stakeholder input process described above, including county and program advisory councils, state-level program advisory councils, research and extension center advisory meetings, key partners, and other sources;
- § Outreach council meetings for research and extension;
- § The county-level program delivery agreements developed by each local extension agent; and
- § Professional peer review of the draft plans of work.

### 2. Did the planned program address the needs of under-served and under-represented populations of the State?

Yes. Through the stakeholder input process described above, needs of all clientele groups, including under-served and under-represented groups, were determined. (Most of the advisory groups mentioned in the stakeholder input process are required to be representative of all potential clientele.)

In addition to the stakeholder groups mentioned above, the outreach council recommended a series of meetings around the state. These meetings were designed specifically to obtain input from under-served and under-represented populations.

Another indicator of the extent to which programs are meeting the needs of under-served and under-represented groups is the percentage of contacts made by extension faculty. Of the 2,897,693 total contacts made by Extension, 987,646 (34.1%) were made to African-American, Native-American, or other under-served populations. This percentage is only slightly lower than the percentage of these under-served groups in the state population.

### 3. Did the planned program describe the expected outcomes and impacts?

Yes. Each priority program area developed one or more program plans. In each program plan, expected outputs and outcome/impacts were developed. Most of the outcomes identified were intermediate- or long-term outcomes. In future years, it is expected that more information about the results and/or feasibility of these outcomes will be reported.

### 4. Did the planned program result in improved program effectiveness and/or efficiency?

For the effectiveness part of the question, it is too early to tell whether most of the planned program in the Mississippi State University POW has been effective. More information will be available in future years to match against the intermediate- and long-term outcomes specified in the individual program plans.

The program efficiency has improved from the standpoint of providing a mechanism for researchers and extensionists to interact in the planning and implementation process. A required part of the joint plan of work is the sharing of information between the two "camps."

This annual report does contain items reflecting progress in this area, however, with five key theme reports provided regarding joint programs from research/extension. Below is an example of an activity report from an integrated environmental team of regarding their efforts, a clear example of how integrated research and extension is improving efforts in both areas.

#### **Extension and Experiment Station Cooperative Efforts in Environmental Quality**

Integrated Experiment Station/Extension Service efforts related to water quality issues are in various stages of maturity. The poultry litter related work is relatively mature, and has had great acceptance from the stakeholder community, and has positively impacted the Mississippi agricultural-environmental situation. Prior to this integrated research and extension program, tensions were very high in the south central Mississippi poultry production area regarding environmentally safe use of poultry litter in the landscape.

Other integrated research/extension projects are not as far along, and are briefly described following the discussion of the Newton-based poultry litter effort. In fact, the very successful poultry litter effort is being used as a model.

#### **Poultry Litter Related:**

A team of faculty from the Experiment Station, Extension Service, and the USDA Agricultural Research Service have developed a large, diverse, interconnected program regarding the connection of poultry litter management with molecular to landscape scale water quality issues.

Project management includes an environmental economist, soil chemist, forage agronomist, forest scientist, poultry scientist, Extension soil specialist, and an Experiment Station administrator. The Extension Soil Specialist serves as unofficial leader of the effort, coordinating planning, funding, and implementation in

order to maximize results for educational purposes. The Experiment Station administrator handles detailed management and funding details.

Many field projects are located on the Coastal Plain Experiment Station in Newton County. Some related work is conducted at the North Mississippi Branch Experiment Station in Holly Springs and on producer farms in south-central Mississippi.

The team determined early that accountability and responsiveness were crucial to developing a successful integrated research and Extension program. An advisory council was formed that includes farmers, state agency representatives, businesspeople, and farmer organization staff. The group meets periodically to review progress and suggest refinement. There is a continuing dialogue with the Mississippi Department of Environment Quality and other environmental regulatory agencies.

### **Individual Field, Laboratory, and Modeling Projects**

Nitrogen Substitution, Soil Nutrient Buildup and Drawdown, Poultry Litter Application History Effects on Nutrient and Heavy Metal Accumulation in Soils, Use of Poultry Litter in Agronomic Crop Production, Poultry Litter Use in Alternative Crops, Poultry Litter Use in Pine Forests, Nutrient Runoff in Small Watersheds, Soil and Water Conservation in Forage Systems, Poultry Litter Quantity and Handling Practices, Economic Impacts of Poultry Litter Management Programs.

### **Completed Extension and Other Outreach Originating From the Effort**

There have been over 150 Extension presentations and over 50 publications in both Extension and technically oriented media outlets based on the field research developed by the multi-unit team. The broad categories of outreach are:

Experiment Station technical bulletins,  
Extension Service Information Sheets,  
In-Service Training for USDA-NRCS and Extension Service field personnel  
Producer workshops  
Publications in popular press  
Publications in peer-reviewed professional journals,  
Presentations at local, regional, and national meetings of environmental organizations, professional organizations, and other non-governmental groups,  
Extension Service electronic curricula including websites, TV, and radio

### **Other Water Quality Experiment Station and Extension Cooperative Efforts**

1) A team of Experiment Station scientists and Extension specialists are planning an integrated research/extension effort focusing on cattle and pasture based agroecosystems located at the South Mississippi Branch Experiment Station in Poplarville.

The south Mississippi effort will incorporate several features from the poultry litter based work described above. It will study pathogen and nutrient movement both above and below the soil surface in cattle based land management systems. The Extension Soil Specialist will develop an Advisory Council, and participate in research planning in order to maximize the value of this work to Mississippi stakeholders.

- 2) A research and extension team is developing computational simulations of nutrient and contaminants in plant-soil-water systems using techniques adapted from fluid dynamics. The program will transition submicroscopic scale phenomena for use in macro-scale landscape management decision making. In particular, the output of the work will be utilized in Extension educational efforts related to the EPA Total Maximum Daily Load pollutant budgeting program.
- 3) A site-specific soil fertility and management joint research and extension program is in the planning phase. This will build upon the experience of the past 5 years of the ASTA project in soils. The objective of the new program will be to minimize deleterious environment impacts of nutrient use and movement in agriculture.
- 4) The current on-farm rice nutrient management research and extension program will segue into a new phase in 2002 with the work now coordinated by a post-doctoral associate funded by the Mississippi Rice Promotion Board. This program is developing nutrient management strategies to protect water quality through field scale research, and immediately transferring the results to rice producers and crop consultants. The very existence of this project is the result of concerns brought to the Extension Service, and development of an action strategy with Experiment Station colleagues.

## **E. Multistate Extension Activities**

MSU-ES identified 17 programs that meet the requirements for multistate and were supported by Smith-Lever funds. Many other programs meet the requirements for multistate, but were not supported by Smith-Lever funds.

Form CSREES-REPT (2/00) is provided below to summarize the fiscal activity for those multistate programs supported by Smith-Lever funds.





**U.S. Department of Agriculture  
 Cooperative State Research, Education, and Extension Service  
 Supplement to the Annual Report of Accomplishments and Results  
 Multistate Extension Activities and Integrated Activities  
 (Attach Brief Summaries)**

**Institution** Mississippi State University  
**State** Mississippi

**Check one:**  **Multistate Extension Activities**  
 **Integrated Activities (Hatch Act Funds)**  
 **Integrated Activities (Smith-Lever Act Funds)**

Title of Planned Program/Activity	Actual Expenditures		FY 2002	FY 2003	FY 2004
	FY 2000	FY 2001			
<u>Southern Extension &amp; Research Activities</u>	<u>67,195.54</u>	<u>59,363.43</u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>Money and You</u>	<u>5,873.56</u>	<u>5,732.24</u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>Mid-South Fair</u>	<u>13,221.89</u>	<u>26,909.09</u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>Southern Reg. Middle Managers Conference</u>	<u>5,973.00</u>	<u>3,915.97</u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>Southern Reg. Volunteer Leaders Forum</u>	<u>115,672.75</u>	<u>26,378.86</u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>Program Leadership Conference</u>	<u>40,495.01</u>	<u>41,026.67</u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>National 4-H Congress</u>	<u>26,725.25</u>	<u>19,398.29</u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>Tri-State Ministers Meeting</u>	<u>6,509.05</u>	<u>4,408.83</u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>MS-LA Family Matters Conference</u>	<u>51,604.09</u>	<u>10,849.15</u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>Franklinton Beef and Dairy Project</u>	<u>51,545.48</u>	<u>44,946.36</u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>Cotman Project</u>	<u>12,959.98</u>	<u>12,553.79</u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>Tri-State Soybean Forum</u>	<u>31,871.53</u>	<u>30,357.34</u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>Delta States Farm Management Group</u>	<u>1,181.62</u>	<u>10,951.45</u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>Beltwide Cotton Conference</u>	<u>9,426.63</u>	<u>2,737.86</u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>Southern Reg. Extension Animal Scientists</u>	<u>6,676.73</u>	<u>7,059.07</u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>Southern Forage &amp; Pasture Improve. Conf.</u>	<u>4,925.84</u>	<u>0.00</u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>National Ext. Livestock Specialists Conf.</u>	<u>10,555.36</u>	<u>0.00</u>	<u>          </u>	<u>          </u>	<u>          </u>
<b>Total</b>	<b><u>462,413.40</u></b>	<b><u>306,588.40</u></b>	<u>          </u>	<u>          </u>	<u>          </u>

**Form CSREES-REPT (2/00)**





## Summary of Multistate Extension Activities

Southern Extension and Research Activities - A total of 30 information exchange groups (IEGs) and task forces (TFs) composed of regional representation meet to identify possible solutions to problems through research and extension.

Money and You - This project consists of an eight-lesson electronic curriculum designed to help limited resource families (particularly TANF benefit recipients) learn how to more efficiently manage their resources. The curriculum is being implemented in Mississippi primarily as a master volunteer program. A tri-state in-service education session for pilot areas was held in September 1999, and a three-state-wide in-service education session via distance learning is planned for 2000 (with AR and LA).

Mid-South Fair - Seventeen competitions and attendance contests are part of the five state collaborative effort with the Mid-South Fair held in Memphis, TN. States participating include: TN, MS, MO, AR, and KY. MS involvement includes preparation and participation of county delegations and specialists preparing and running the competitions, awards ceremonies and evaluation of contests.

Southern Region Middle Management Conference - This conference is comprised of area, district, and regional administrators from the southern states. The conference is held every other year hosted by different states. The primary purpose of the conference is professional development, idea sharing, and joint programming. The conference includes exhibits, breakout seminar sessions usually conducted by middle managers addressing personnel and program issues, and keynote speakers. Middle managers interact and develop professional relationships, and address concerns and issues that apply to the region.

Southern Region Volunteer Leader Forum - Thirteen states, Puerto Rico and the Virgin Islands cooperate in planning this volunteer training opportunity held in Rock Eagle, Georgia. Over 600 volunteers participate in workshops, super seminars and social events. Agents prepare volunteers for participation in the conference and assist them in presenting workshops upon their return. MS agents and specialists present workshops and assist with planning and coordination of the event held at Rock Eagle, GA.

Program Leadership Conference - Program leaders in Agriculture/Natural Resources, 4-H/Youth, Family and Consumer Sciences, Community Development, Program and Staff Development, and Computer Applications from around the Southern Region meet annually to identify issues and plan regional programs. One current project will result in strengthening the needs assessment practices of county advisory groups. Another project focuses on sharing inservice education curriculum between states to make this process more cost-effective.

National 4-H Congress - 48 states participate in this national event. Mississippi specialists have served on the design team and provide leadership to specific committees. Over 30 youth from MS are involved in this four-day event that includes educational workshops, service learning opportunities, and keynote speakers. Agents are involved in the preparation of youth for this event.

Tri-State Minister Meeting - This meeting is a collaborative effort between the states of Arkansas, Mississippi, and Tennessee Extension Services. These systems have been providing educational programs to bi-vocational and community leaders in the region for more than 15 years. As issues have changed, Extension has changed to meet the needs of citizens in the tri-state area. A key ingredient for correcting these issues and

problems is the educational training offered through a Tri-State Conference, which has become a model for other states considering such an activity.

MS/LA Family Matters Conference - This conference focuses on critical issues facing families in today's society. Designed for three tracks—professional, adult, and youth—the conference provides workshops, exhibits, and keynote speakers. Stay on Track for a Healthy Future was the theme of the March 2000 conference. The conference attracts more than 300 participants annually

Franklinton Beef and Dairy Project - Joint program to conduct research and provide educational programs in beef and dairy between LA and MS.

Cotman Project - This project provides educational information on cotton management including crop mapping, weather data use and early termination procedures used in the mid-south region.

Tri-State Soybean Forum - Purpose: To provide educational information for agents and specialists on soybean production and management from a multi-state perspective (MS, LA, AR).

Delta States Farm Management Group - This group collaborates on Extension farm management education and research programming opportunities in the MS, LA, AR multi-state area.

Beltwide Cotton Conference - This conference provides programming update information for agents and specialists on all cotton production and marketing areas on a multi-state basis, throughout the “cotton belt”.

Southern Region Extension Animal Scientists - This meeting facilitates programming update and new program ideas to Extension specialists with a multi-state focus in the 13 state Southern Region.

Southern Forage and Pasture Crop Improvement Conference - This conference allows Extension and research professionals to identify educational programs on the latest issues regarding livestock utilization of forage and pasture.

National Extension Livestock Specialists Conference - This conference provides program updates and information on innovative programs to Extension professionals from all equine and meat animal-producing states.

## **F. Integrated Research and Extension Activities**

As mentioned earlier, Mississippi State University chose to restructure its planning process after AREERA, both to meet federal requirements and to better serve its stakeholders within the state. This process led to the establishment of 26 priority program areas, 16 of which developed integrated research and extension plans.

Fiscal activity for these two plans is described in the two forms provided below: Form CSREES-REPT (2/00) (Hatch funds) and Form CSREES-REPT (2/00) (Smith-Lever funds). Although it may appear there are discrepancies between the two forms, some integrated activities may be supported with Smith-Lever funds but not Hatch funds, and vice versa.

Progress updates are provided for these activities in the planned program summaries above in Section A.





**U.S. Department of Agriculture  
 Cooperative State Research, Education, and Extension Service  
 Supplement to the Annual Report of Accomplishments and Results  
 Multistate Extension Activities and Integrated Activities  
 (Attach Brief Summaries)**

**Institution** Mississippi State University  
**State** Mississippi

**Check one:**  **Multistate Extension Activities**  
 **Integrated Activities (Hatch Act Funds)**  
 **Integrated Activities (Smith-Lever Act Funds)**

Title of Planned Program/Activity	Actual Expenditures		FY 2002	FY 2003	FY 2004
	FY 2000	FY 2001			
<u>Agribusiness</u>	*	*			
<u>Beef and Forage</u>	259,761	367,044			
<u>Catfish</u>	*	*			
<u>Corn</u>	15,740	32,986			
<u>Cotton</u>	32,322	60,072			
<u>Dairy</u>	*	*			
<u>Food and Food Products</u>	327,581	146,530			
<u>Forest Products</u>	*	*			
<u>Forestry</u>	*	*			
<u>Horticulture</u>	117,063	108,758			
<u>Poultry and Products</u>	*	12,211			
<u>Rice</u>	1,723	16,801			
<u>Safety</u>	*	*			
<u>Soybeans</u>	1,073	9,877			
<u>Swine</u>	*	*			
<u>Wildlife and Fisheries</u>	*	*			
<b>Total</b>	<b>755,263</b>	<b>754,279</b>			

**Form CSREES-REPT (2/00)**

\* Although integrated programs exist in these areas, Hatch funds are not reported.



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**Institution** Mississippi State University  
**State** Mississippi

**Check one:**  **Multistate Extension Activities**  
 **Integrated Activities (Hatch Act Funds)**  
 **Integrated Activities (Smith-Lever Act Funds)**

Title of Planned Program/Activity	Actual Expenditures		FY 2002	FY 2003	FY 2004
	FY 2000	FY 2001			
<u>Agribusiness</u>	<u>387,174.60</u>	<u>437,985.80</u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>Beef and Forage</u>	<u>288,624.99</u>	<u>232,441.97</u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>Catfish</u>	<u>71,862.72</u>	<u>100,967.05</u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>Corn</u>	<u>73,613.51</u>	<u>62,430.72</u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>Cotton</u>	<u>225,968.90</u>	<u>235,905.15</u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>Dairy</u>	<u>52,168.17</u>	<u>28,900.17</u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>Food and Food Products</u>	<u>37,140.07</u>	<u>24,296.79</u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>Forest Products</u>	<u>36,467.68</u>	<u>41,322.87</u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>Forestry</u>	<u>433,066.92</u>	<u>396,201.79</u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>Horticulture</u>	<u>591,804.37</u>	<u>531,946.22</u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>Poultry and Products</u>	<u>53,976.15</u>	<u>48,522.70</u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>Rice</u>	<u>20,894.55</u>	<u>42,943.41</u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>Safety</u>	<u>45,512.75</u>	<u>63,989.25</u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>Soybeans</u>	<u>173,587.21</u>	<u>144,518.95</u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>Swine</u>	<u>49,417.67</u>	<u>26,482.71</u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>Wildlife and Fisheries</u>	<u>109,008.42</u>	<u>86,469.30</u>	<u>          </u>	<u>          </u>	<u>          </u>
<b>Total</b>	<b><u>2,650,288.10</u></b>	<b><u>2,505,324.87</u></b>	<u>          </u>	<u>          </u>	<u>          </u>

**Form CSREES-REPT (2/00)**