

USDA CSREES ANNUAL REPORT  
FY October 1, 1999 - September 30, 2000

**Overview**

The LSU Agricultural Center is dedicated to improving the lives of Louisiana citizens. Our goals are to have a productive and profitable agriculture, to insure environmental quality and sustainability, help develop a strong economy and rural community strength, and improving the lives of families and youth throughout the state. The LSU AgCenter accomplishes this goal by conducting research and extension programs that impact Louisiana constituents.

Goal 1 of the LSU Agricultural Center is to achieve an agricultural production system that is highly competitive in the global economy. In accomplishing this goal, LSU Agricultural Center conducted 233 research projects. 107 Extension professionals published 51 publications, made 824,211 educational contacts and achieved an adoption rate of recommended practices of 71.13 percent.

**Research Reports**

The majority of the LAES program is in Goal 1. The major areas of research emphasis continue to be farm production economics, budgets, marketing, and trade; plant variety development and variety performance; plant protection from insects, weeds, and diseases; and animal (including aquaculture) production systems including nutrition, cross-breeding options, and nutrition with an emphasis on forage management.

Accomplishments include the development or updating of production budgets for major Louisiana crops and specific studies that evaluate the impacts of international trade on the marketing of Louisiana crops (sugar, rice, and soybeans are examples).

Variety development and variety performance research continued on all major crops including single and multi-gene transgenic crops. LAES variety development programs have had a major impact on Louisiana agriculture. Rice, cotton, sugarcane, and sweet potato varieties developed by our scientists occupy substantial portions of Louisiana and mid-south production acreage. Herbicide resistant rice lines which will come on the market this year are major milestones in our program. LAES scientists continue to evaluate new chemistries and new formulations of existing products to determine their efficacy against weeds and insects. Research scientists work closely with extension specialists to develop and recommend treatment thresholds and recommended treatment options. Two examples are worth noting. Special emphasis has been placed on cotton insect management as conservation tillage/cover crop systems caused shifts in pest populations, transgenic cotton varieties become available, and the boll weevil eradication program dictated changing the insects targeted for control measures. The emergence of these three technologies/programs has challenged entomologists to adapt new crop production strategies. A second area of emphasis has arisen due to the concurrent introduction of a new compound for rice water weevil control (a potentially devastating insect) and a 2 -

year drought. This combination of events led to an unusually low crawfish harvest which has been linked to the use of the new insecticide. Rice and aquaculture research and extension teams have worked closely to attempt to define the relationships and treatment options.

Animal scientists are identifying better genetics to improve meat tenderness in Brahman and Brahman crossbred cattle, which is the most common maternal breed type used by cattlemen along the Gulf Coast. Techniques have been perfected to obtain oocytes from high-value cows during pregnancy using intravaginal ultrasound guided technology. *In vitro* fertilization is then used to produce bovine embryos. Poultry scientists have developed a method to improve egg-lay in broiler-breeder chickens, which will positively impact the broiler industry. Using minced tail meat from undersized crawfish, which usually go to waste, food scientists have developed a new crawfish nugget food product. Dairy foods technologists have identified certain milk properties that enhance the products sold in the rapidly expanding gourmet coffee shop industry. Because disease is of such importance to the aquaculture industry, veterinary scientists have developed disease-resistant transgenic catfish and more effective vaccines against catfish diseases. Using biotechnology, forage scientists have developed an armyworm-resistant bermudagrass, which is currently undergoing final testing.

### **Extension Reports**

Noted accomplishments for Extension programs include:

- Development of a forage bull testing program which provided producers an opportunity to evaluate their bulls more efficiently.
- Improvement of approximately 4,000 pounds more milk annually per cow for herds on dairy herd improvement program.
- Approximately 80% of Louisiana cotton producers followed LSU AgCenter recommendations.
- A 90% of adoption of nematode control recommendations resulted in an increase of 10 to 15 percent in yield and profit.
- Reductions in losses of seedling trees by nurserymen as a result of 90% control of the red imported fire ant.
- Improvement was seen in production of soybeans by 93 percent for those following recommended practices.
- A digital distance diagnostic network developed with the University of Georgia assistance was used to diagnose disease, weed, and insect problems (650 images). Savings to clients are calculated to exceed a half a million dollars.

- 308 new master gardeners and of 284 previous master gardeners were trained and used to answer questions regarding horticulture calls from clientele. Volunteer services were estimated 18,000 hours at a value of \$180,000.

The total Extension FTE's for the fiscal year of 1999-2000 was 107.3 with a total expenditure of \$5,847,850, \$1,520,411 was federal funds, of that amount \$988,330 is attributable to multi-state activities and \$1,380,961 were attributable to integrated activities.

**GOAL 1**  
**EXTENSION SUMMARIES**

## **BEEF**

1. Federal Goal 1

1. Key Theme Agricultural Productivity

2. In meetings with stakeholders, problems with efficient production practices (including health, nutrition, reproduction, marketing), feedlot performance of their cattle, selection of superior bulls and general industry direction as the cattle industry becomes more consumer driven were identified. The Calf to Carcass program was initiated to provide producers with backgrounding and feedlot performance information on their own cattle. The Forage Bull Test Program was initiated to provide seedstock producers and buyers with growth while on forage information on bulls. A Beef Forage Short Course has been initiated to provide producers with general industry direction and efficient production practices information. Numerous parish cattle producer meetings, field days, home and office visits, mass media and other meetings have been held in order to educate producers. A Beef Cattle Handbook providing management information has been developed.

3. Two hundred producers, agents, researchers, industry personnel attended the beef forage short course, 35 producers participated in the calf to carcass program, 25 seedstock producers participated in the forage bull test program and 36,800 adult contacts were made on all beef topics.

4. Source of Funds Smith-lever 3b&c

5. Scope of impact – The source of some of the ideas and materials for these programs are the result on the Southern Regional Triannual Meetings, agreements with Texas A&M University for agent training in Beef 706 and 808, Texas Beef Cattle Short Course, other calf performance programs in Texas, Oklahoma and Mississippi, Alabama Beef Cattle Handbook and other personal contacts as a result of professional meetings.

60% of the effort was a result of these meetings and materials.

5.17 FTE's of adult work valued at \$281,765 were a result of these activities.

\$169,059 were the result of multi-state work.

Researchers and extension specialists collaborated on the development and training of agents and producers for a 100% multi-functional effort.

5.17 FTE's of adult work valued at \$281,765 were a result of these activities.

\$281,765 were the result of multi-functional effort.

## DAIRY

1. Federal Goal 1
2. Key Theme Agricultural Productivity
3. In meetings with stakeholders, problems with dairy herd records, somatic cell count, forage quality, dairy cow nutrition, cow comfort, financial management, herd health and waste management were identified. The Targeting Opportunities for Profit (TOP) has continued to address financial management programs. Dairy herd record training for field men and producers has continued. Field days, meetings and materials on forage quality, dairy cow nutrition, cow comfort and herd health were held. A Dairy BMP (best management practice) publication was prepared for printing.
4. As a result of these programs, herds on DHA produce approximately 4,000 pounds more milk annually and are making improvements in their management and profitability while staying in business longer. Producers are making steady progress in lowering their SCC. Forage and feed purchased quality is improving. Producers are adopting heat stress abatement strategies in the summer. Participants in the TOP dairy program are making changes in the management of their operations. Producers are making progress in improving their waste management practices.
5. Source of funds Smith – Lever 3b&c
6. Scope of Impact – Ideas and materials for the program are the result of SERA-I.G. 15 (Dairy), a memorandum of understanding between Louisiana and Mississippi on joint dairy educational programs, collaboration between LA DHA and MS DHA for joint training, Southern Dairy Conference, Dairy Herd Record Management Systems and professional contacts with other state's dairy professionals.

90% of the program is a result of these meetings and materials.

1.8 FTE's were devoted to this effort for a value of \$98,100.

\$88,290 were the result of multi-state work.

Researchers and extension specialists collaborated on the development and training of agents and producers for a 100% multi-functional effort.

1.8 FTE's of adult work valued at \$98,100 were a result of these activities.

\$98,100 were the result of multi-functional effort.

## COTTON

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

## **Key Theme**

Agricultural Profitability

## **Stakeholder Input**

Three surveys were conducted in 1999 and 2000 to determine the needs of the Louisiana cotton industry. The surveys targeted producers, consultants, and extension agents. The surveys were compiled and summarized. Results were used to determine what extension education programs were needed by the Louisiana cotton industry.

## **Problems Identified**

Need for cotton variety information  
Need for pest management information  
Need for weed control and herbicide information  
Ways to improve cotton fiber quality  
Soil management  
Need for information on conservation tillage systems  
Irrigation timing and management

## **Program Initiated**

A comprehensive Extension education program for cotton producers was implemented. The performance goal of the program was to increase yields and profits of Louisiana cotton producers by following recommended best management practices to produce their crop. The program provided information in the areas of variety selection, pest management, tillage, fertility, herbicide selection and weed control, defoliation, and irrigation. The following tasks were completed:

- Four agent-training sessions were conducted to inform LSU Agricultural Center personnel, working in cotton production, of the latest recommended best management practices.
- The state cotton specialist and parish extension agents conducted thirty on-farm demonstrations in the major cotton growing parishes.
- Three on-farm research projects were conducted jointly with faculty of the LSU Agricultural Center's Experiment Station.
- Forty educational meetings and five field days were conducted to keep growers informed of recommended practices.
- A monthly cotton newsletter was distributed to producers, consultants, and agribusiness personnel throughout the growing season. The newsletter contained updates on recommendations and kept clientele informed of current events.
- Mass media programs were produced weekly to keep clientele informed.
- Twenty news articles were written and distributed.
- The LSU AgCenter Cotton Web page was established and updated weekly.

- The state cotton specialist worked across state lines and attended professional work group sessions to insure that Louisiana growers are receiving the best possible information.
- Faculty from other Land Grant Universities in cotton producing states and industry personnel were used to conduct statewide educational programs.

### **Collaborators**

Extension Service and Research faculty within the cooperating land grant system (Louisiana State University and A&M College and Southern University and A&M College.)

Other educational institutions within the state.

Extension Service and Research faculty within the region's land grant institutions (University of Arkansas, University of Tennessee, Auburn, Mississippi State, Texas A&M, Virginia Tech, North Carolina State, University of Georgia, and Oklahoma State.

USDA Agencies

State environmental agencies

Louisiana Farm Bureau Federation

Louisiana Cotton Producers Association

Professional organizations

Louisiana Department of Agriculture and Forestry

Private industry

### **Impact of Program**

Over 2000 farmers, consultants, and industry personnel attended the field days and educational meetings.

Training sessions for LSU AgCenter personnel were attended by 100% of the Extension agents working in cotton production programs.

Extension agents and specialists made fifteen presentations at national meetings.

30 extension agents and/or specialists attended national meetings.

Extension agents and/or specialists conducted thirty on farm demonstrations.

Three joint research/extension farm projects were conducted.

Ten out of state speakers were used for educational programs.

Cotton acreage in Louisiana has increased by 10%.

Almost 80% of Louisiana cotton producers follow LSU AgCenter recommendations.

### **Source of Funds**

Smith-Lever 3 b+c

Cotton Incorporated

### **Scope of Impact**



### Multi-State

Information from Southern Conservation Tillage Conference was used to develop 20% of the cotton program. 6.5 FTE's were devoted to the program with a total multi-state effort of  $(20\% \times 6.5 \times \$54,500) = \$70,850$ .

### Multi-Functional

Researchers and Extension specialists collaborated on the development of publications and training of agents, consultants, agribusiness personnel, and farmers for a 100% multi-functional effort of  $(100\% \times 12.5 \times \$54,500) = \$681,250$ .

## WEEDSCIENCE

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

### Key Theme

Agricultural Profitability

### Stakeholder Input

Herbicide tolerant cotton varieties accounted for 60% of Louisiana's cotton acreage in 2000. Compared to 1999, herbicide tolerant cotton accounted for 10% of those varieties planted. This represented an 85% increase in herbicide tolerant cotton acreage in one year.

### Problems Identified

Critical need for herbicide application timing in herbicide tolerant cotton systems.  
Need for weed control and herbicide information.

### Program Initiated

A comprehensive Extension education program for cotton producers was implemented. The goal of these programs was to demonstrate the critical need for timely and precise application of herbicides to herbicide tolerant cotton. The following tasks were completed:

- Three agent-training sessions were conducted to inform LSU Agricultural Center personnel, working in cotton production, of the latest weed control recommendations.
- The state cotton weed specialist and parish extension agents conducted twenty on-farm demonstrations in the major cotton growing parishes.
- Two on-farm research projects were conducted jointly with faculty of the LSU Agricultural Center's Experiment Station.
- Forty educational meetings and five field days were conducted to keep growers informed of recommended practices.
- A monthly cotton newsletter was distributed to producers, consultants, and agribusiness personnel throughout the growing season. The newsletter contained updates on recommendations and kept clientele informed of current events.
- Ten news articles were written and distributed.

- LSU AgCenter weed control publications were revised and updated.

### **Collaborators**

Other educational institutions within the state.  
 Extension Service and Research faculty within the region's land grant institutions (University of Arkansas, University of Tennessee, Mississippi State, University of Missouri)  
 USDA Agencies  
 Louisiana Farm Bureau Federation  
 Louisiana Cotton Producers Association  
 Professional organizations  
 Louisiana Department of Agriculture and Forestry  
 Private industry

### **Impact of Program**

Over 2000 farmers, consultants, and industry personnel attended the field days and educational meetings.  
 Training sessions for LSU AgCenter personnel were attended by 100% of the Extension agents working in cotton production programs.  
 Extension specialist made five presentations at national meetings.  
 24 extension agents and/or specialists attended national meetings.  
 Extension agents and/or specialists conducted twenty on farm demonstrations.  
 Two joint research/extension farm projects were conducted.

### **Source of Funds**

Smith-Lever 3 b+c  
 Private industry

### **Scope of Impact**

#### **Multi-State**

Information from the Delta Weed Workers Meeting was used to develop 20% of the weed control program. 4.5 FTE's were devoted to the program with at total multi-state effort of  $(20\% \times 4.5 \times \$54,500) = \$49,050$ .

#### **Multi-Functional**

Researchers and Extension specialists collaborated on the development of publications and training of agents, consultants, agribusiness personnel, and farmers for a 100% multi-functional effort of  $(100\% \times 6.5 \times \$54,500) = \$354,250$ .

### **NEMATODE CONTROL**

1. Federal Goal 1
2. Key theme- Agricultural profitability

3. The reniform nematode has developed in to a serious pest of cotton severely impacting yields and profitability. A program has been initiated to teach producers better management options. Seven training meetings for producers and consultants and 7 field trials showing current management practices were conducted.

4. There were 235 producers and consultants who attended the meetings. About 90% of these people will adopt management ideas that were suggested resulting in a 10- 15% increase in yield and profit.
5. Source of funds- SmithLever
6. Scope of impact- most of the ideas and management options are the result of Regional Project S - 282, the Cotton Foundation Nematology Committee, and Cotton Disease Council. Fifty percent of the program is the result of these meeting. 0.5 FTE's were devoted to this program with an effort of (0.5 X \$54,500) \$27,250.  
Extension and Research specialists collaborated on this program to train agents, producers, and consultants for a 100% multi - functionaleffort

### **ORNAMENTALS/GREEN AGRICULTURE**

1. Federal Goal 1
2. Key theme- Ornamentals/Green agriculture
3. Ornamental plants shipped in or out of the state have the potential to import/export nematodes that are of quarantine importance. A joint project by the Extension Specialist and Department of Agriculture and Forestry is involved in surveying and monitorin g all nurseries and retail outlets in the state for potential problems with nematodes such as burrowing, reniform, or white tip.
4. Approximately 100 nurseries and retail outlets have been surveyed so far. The burrowing nematode has only been found in one nursery and corrective measures were undertaken to eliminate it. Only one nursery has had the reniform nematode detected which prevents it from shipping to California, New Mexico, and Arizona. The burrowing nematode has the potential to seriously impact our 150 million dollar ornamental industry if allowed to establish.
5. Source of funds- SmithLever
6. Scope of impact- Ideas for this project are from Society of Nematology and Organization of Nematologists of Tropical America meetings. Ten percent of the program is the result of these meetings. 0.1 FTE's were devoted to program with a state effort of (0.1 X \$54,500) \$5450.

### **RED IMPORTED FIRE ANT**

1. Federal Goal: 1

2. Theme: Invasive Species
2. Program: In a meeting with industry, nurserymen, legislators, foresters, scientists, and other agencies, the red imported fire ant (RIFA) and the Texas leaf-cutting ant were identified as two major pests. Programs were initiated to reduce the effect of these two pests. An area-wide community-based program was established to assist both homeowners and farmers in dealing with the RIFA. The LSU AgCenter, industry, the southern states, and the community associations have collaborated in this program.

The Texas Town Ant was identified by the forest and nursery industries and homeowners as a serious pest. An environmentally friendly bait was developed by industry and evaluated for efficacy. The LSU AgCenter, industry, and the State Forest Association collaborated on testing and evaluating this program.

3. Impact: Community and area-wide treatments have greatly reduced RIFA populations safely and economically through the use of IGR baits and properly applied insecticide. Fire ants cause approximately \$30,000,000.00 in losses in Louisiana yearly.

The chemical, Volcano, has been tested and labeled for use on the town ant. A separate formulation for homeowners has also been developed. Loss due to this pest in seedlings, trees, nursery stock, and home gardens has been reduced by 90% or better.

2. Source of Funds: Smith-Lever 3b+c
2. Scope of Impact: Ideas were generated by regional and local fire ant meetings, homeowners associations, legislators, and the public. One hundred percent of the RIFA program was from these meetings.

2.2 FTE's were devoted to the program with a total multi-state effort of  $(100\% \times 2.2 \text{ FTE's} \times \$54,500) = \$119,900$ . Extension personnel and researcher collaborated on this development of the program for a multi-functional effort  $(100\% \times 2.2 \text{ FTE's} \times \$54,500) = \$119,900$ .

The Town Ant Program was generated by meetings with the Forestry Association, Georgia Pacific, nurserymen, and homeowners. One hundred percent of the Town Ant Program was from these meetings.

## APICULTURE

1. Federal Goal: 1
2. Theme: Honeybees - Apiculture
3. Program: Training and educational programs for agents, farmers, schools, and beekeeper designed to update situations, problems, and solutions to the beekeeping industry. Nearly all beekeepers in Louisiana belong to one of nine local clubs throughout the state. Youth development in beekeeping is enhanced through meetings, exhibits and essay competition. Cooperative work and programs between the LSU AgCenter, the Louisiana Department of Agriculture and Forestry, the USDA Bee Breeding Physiology Lab, and the beekeepers enhance the management of hives and education of the public for a better industry.
4. Impact: There has been improved management and registration of hives throughout the state. Better management has saved beekeepers \$2,640,000, produced \$2,376,000 in honey production and earned the beekeepers another \$42,000 from hives leased for pollination. The overall effect of pollination by honeybees is estimated at \$375,000,000 plus. 4-H youth placed third nationally in 2000 in the Honeybee Essay Contest.
5. Source of Funds: Smith-Lever 3b+c
6. Scope of Impact: Ideas and programs are developed as the result of needs expressed by bee clubs, Louisiana Department of Agriculture and Forestry, National Apiary Inspectors, and advisory committees for state and local clubs. Problems associated with the industry are reduced and more cooperative working relationships between the LSU AgCenter, the Louisiana Department of Agriculture and Forestry, and the USDA Lab and beekeepers were developed. Approximately 75% of the programs developed are the result of collaboration with other entomologists at meetings of the Southern Region and National Entomological Society of America. Key collaborators are apiary specialists in the states of Mississippi and Florida.

1.2 FTE's are devoted to this program with a total multi-state effort of  $(75\% \times 1.2 \text{ FTE's} \times \$54,500) = \$49,050$ . Extension and research collaborated for the development of the program for a 100% multi-functional effort  $(100\% \times 1.2 \text{ FTE's} \times \$54,000) = \$65,400$ .

## SOYBEAN VERIFICATION

### **Federal Goal 1**

**Key Themes**– Agricultural Profitability, Precision Agriculture, Plant Production Efficiency

**Stakeholder Input**— Soybean and grain producers have indicated at Extension advisory committee meetings, at producer meetings and at grower association meetings that production of these crops is not profitable for the average grower. We instituted a program in 1994 to prove that profitability is possible if all extension recommendations are followed. This is a three -state program of Louisiana, Arkansas, and Mississippi and is known as the Soybean Research Verification Program. It involves showing growers what will contribute to higher yields and to lower costs. We incorporated the Precision Ag technology into the program in 1998 and continue this aspect to the present. Grant funds from both the state soybean promotion boards and from the United Soybean Board help fund necessary expenses which occur such as increased travel, extra technical help, and equipment. We collaborate with our neighboring states at special planning sessions in the spring, and at regional producer meetings such as the Tri- State Soybean Forum, Southern Soybean Conference, and the Commodity Classic. These meetings are also used as a means of comparing and sharing results and reporting to the stakeholders.

**Impact** – Growers in the program in Louisiana during this reporting period produced 93% more soybeans than the average grower in the state. They produced them at a cost of \$3.95 per bushel, which compares very favorably to the current price of about \$5.26 per bushel. The other cooperating states showed similar trends. These results have been shared at parish field days, statewide and regional grower meetings in the winter, and through publications which every grower receives. Because of the success of the soybean research verification program in Louisiana, the rice growers have funded a similar program. Cotton, hay and sugarcane specialists are also planning to develop research verification programs.

**Source of Funds**— Smith-Lever, grants from the Louisiana Soybean and Grain Research and Promotion Board and the United Soybean Board.

**Scope of Impact**— Much of the work in this program is derived from collaboration with Mississippi and Arkansas. Collaboration with research scientists of the LSU Agricultural Center, and with those from the above two states is responsible for our recommendations to growers. We have regional and state committees to formulate what we ask our growers to do. These committees are multi-discipline in nature and involve both Extension, Research, and USDA personnel. We use regional, technical meetings to train agents and growers on practices associated with the above stated themes. Some of these meetings are: Southern Weed Science Society, Southern Soybean Association, Tri- State Soybean Association, Commodity Classic, and the American Society of Agronomy.

About 25% of efforts are multi-state. Meetings, publications, and recommendations derived from these efforts amount to  $0.25 \times 3.41 \times \$54500 = \$46461$ . Multi-functional efforts amount to 35% of total effort and include agent training, formulation of recommendations, publications, and trouble shooting during growing season. These efforts amount to  $0.35 \times 3.41 \times \$54500 = \$65046$ .

## **DIGITAL DISTANCE DIAGNOSIS PROGRAM**

**Federal Goal:** 1

**Key Themes:** Agricultural Profitability

**Stakeholder Input:** Disease, weed and insect diagnosis has been an important educational and service function of the Louisiana Cooperative Extension service for years. Approximately 5000 samples are diagnosed annually. Traditionally, samples are received by mail and “drop-in” service. If by mail the turnaround time is slow and many times unacceptable for serious commercial problems.

Agricultural agents and large commercial agricultural production operations desired a faster way to send pest samples and to receive the identification or diagnosis.

**Impact:** A digital distance diagnostic network was developed with the University of Georgia. Named the Louisiana Distance Diagnostic Network (LDDN), approximately 650 digital image samples were received and diagnosed during the first year. Savings to Louisiana clients is being calculated, but preliminary estimates are approximately \$500,000. More is expected during the second year of operation.

**Source of Funds:** Smith Lever and state funding for technology enhancement.

**Scope of Impact:** Louisiana and Georgia (with other states expressing interest) have been impacted positively by this system. Extension and research scientists are involved in the reception and diagnosis of the pest problems. Time and money allocations for 64 agricultural agents and 9 specialists have averaged 3% with the PI averaging 10% in multi-state efforts. Total resources in FTE's of  $(73 \times .03 \times 54,500) + (0.1 \times 54,500) = 124,805$  or 2.29 FTE's.

## **DISEASE MANAGEMENT**

Federal Goal 1

Key theme - Plant Health

Stakeholders are educated about disease management in cotton, corn, soybean, and small grains via field days (2), agent training (1), producer meetings (3), seminars (2), on-farm (2) and experiment station tests (30), and published materials (14) (written and web-based). This information is obtained, in part, from multi-state efforts (Alabama, Arkansas, California, Georgia, Mississippi, Oklahoma, Tennessee, Texas, and Virginia). Cotton and soybean seed treatments and cotton in-furrow fungicides are evaluated at various locations within these states. Results are summarized and recommendations are formulated based on these results. In addition to these efforts, the Beltwide Cotton Conferences are held annually. This meeting is attended by cotton researchers, extension specialists, industry personnel, and producers from all over the world. Information gained from these meetings is used to gain insight into cotton production.



**Impact** - All cotton producers are exposed to this information via production meetings . Researched-based information has shown when in-furrow fungicides are likely to benefit producers. By utilizing this information producers can save as much as \$15.00/A. Other research has identified effective, as well as, ineffective products. By avoiding the ineffective products, producers can save time and money.

**Source of Federal Funds** - Hatch Act and Smith-Level 3b&c

**Scope of Impact** - Alabama, Arkansas, California, Georgia, Louisiana, Mississippi, Oklahoma, Tennessee, Texas, and Virginia

## **PLANT PATHOLOGY**

### **Federal Goal - 1**

**Key Themes** - Agricultural Profitability

**Stakeholder Input** - During the 1998 growing season, disease problems limited production of Leyland Cypress Christmas trees in parts of the mid-south including Mississippi, Louisiana and Alabama. The disease was identified as *Cercospora sequoiae* and traced to nursery seedlings from several locations in the tri-state area. Demonstrations were conducted and fungicides tested for control of this foliar blight on Leyland Cypress. Excellent control was achieved with currently labeled fungicides. The demonstrations took place over a two year period in 1999 and 2000. Results were reported at the Mississippi-Louisiana annual Christmas tree growers meeting. These meetings were held in Biloxi, Miss. in 1999 and in Slidell, La. In 2000. Growers in all states have been made aware of the problem and methods for controlling it. I have been in contact with specialists from the other southern states concerning this problem.

**Impact** - Fungicides demonstrations and multi-state educational program have resulted in Christmas tree growers solving a very serious disease in their tree plantations.

**Source of Funds** - Smith-Lever 3b + c

**Scope of Impact** - Multi-state effort. Approximately 5% of my program was devoted to this project.  
(.05 x 54,500 = \$2,725)

## **FRUIT & PECAN**

1. Federal Goal 1 – to achieve an agricultural production system that is highly competitive in the global economy.
2. Key theme – agricultural profitability.

3. Accentor Horticulturist and county agents – developed a comprehensive program to assure efficient production of high quality fruit and pecans. The program was based on input from Advisory Committees, Growers Associations, and inquiries from growers and county agents. Effective fruit and pecan production methods were taught through field days, grower meetings, bulletins and individual extension personnel contacts.
4. More than 4,000 people receive information on efficient fruit and pecan production, which is approximately 85 percent of the states major fruit and pecan producers. Nearly 80 percent of those surveyed that participated in the program indicated that they were planning or had made changes in their fruit and pecan operations. One blueberry grower had a 8-fold increase in production after installing recommended changes.
5. Source of funds – Smith-Lever 3b+c
6. Scope of impact – the ideas and material for the program are the result of Southeast Pecan Growers Conference, Ark-La-Miss Fruit Growers Conference, plus personal contact, publications and collaborative training from extension and research personnel from NC, GA, AL, MS, AR, TX, FL and OK. Forty percent of the program is a result of these meetings and materials. A total of 3.1 FTE's were devoted to the program with a total multi-state effort of  $(40\% \times 3.1 \times \$54,500) = \$67,580$ . Researchers and Extension specialist collaborated on the development and training of agents and farmers for a 100% multi-functional effort.  $(100 \times 3.1 \times \$54,500) = \$168,950$ .

## **HOME LAWN & GARDENING**

1. Federal Goal 1
2. Key Theme – Home Lawn and Gardening
3. Random sampling of stakeholders indicated a desire to receive LCES help and advice in home gardening to better succeed against the elements in producing home vegetable supply. County Agents in urban/suburban parishes are swamped with home horticulture call s and demands. Some report 75% of their calls are such. Some people wish in depth horticultural study beyond production agriculture as well as an opportunity to provide a community service in that area. The Louisiana Cooperative Extension Service developed and implemented a volunteer educational and service home horticultural program called Louisiana Master Gardeners. The program follows traditional Master Gardener format patterned after that found in most states.
4. Louisiana has an estimated 411,600 home gardens with a total production value of \$107,027,960. Most of these gardens are found in areas enhanced by LMGs. In FY 2000, the LMG Program trained 308 new volunteers and retained 284 others. These volunteers provided an estimated 18,000 hours of service to the parishes for a volunteer value of

\$180,000. This is 8.6 FTE's which would be valued at \$468,700 in professional program costs.

5. Smith-Lever 3b+c funding for professional CES staff; volunteers pay for training materials and pledge program hours.
6. Scope of impact – the ideas of LMG program come from regional and nationwide master gardening conferences and workgroups (100%). Materials were borrowed (southern region) 75% and adapted (25%) for LA needs. Some LAES involved in volunteer training (15%) as well as local volunteers (25%)  
(Note FTE's devoted to LMG programs in those participating parishes is not reported and unknown.)

## **AG MARKETING**

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

- a. Based on the plan of work developed with the input of the Extension Farm Management and Marketing Advisory Committee, Extension specialists developed a comprehensive educational and information program to assist Louisiana farmers in making profitably agriculture production, financial and marketing decision. The key components of the program are 1) enterprise budgets on most major and minor crops, 2) market outlook information on all major and most minor commodities, and 3) educational programs at parish, regional and statewide farmer meetings. Enterprise budgets are published annually and made available in both printed form and over the Internet. These budgets are used by most Louisiana farmers, agricultural lenders, consultants, and government agencies. In addition, these budgets serve as a key resource for specialist in performing special analysis at the request of individual producers and Extension field faculty. Market outlook and situation information on all major commodities is published in newsletters and over the Internet approximately once a month. Outlook information on all Louisiana commodities (both major and minor) is published in an annual report entitled "Outlook: Louisiana's Agriculture."

**Multi-state work** - Louisiana Agricultural Economics Extension specialists have been and continue to be heavily involved with the planning and implementation of several multi -state educational efforts. Some of these include the Tri-State Soybean Forum, the National Rice Outlook Conference, and the Mid-South Commercial Agricultural Meeting entitled "The Future of Mid-South Agriculture in the New Millennium'.

- b. Impacts -  
*Farm management* - Each year, approximately 1,000 copies of the budget publication is distributed to farmers, agricultural lenders, consultants, county agents and government agencies. The budgets are used by farmers to determine the profitable enterprise combinations, by lenders to make decisions on loan applications, and by county agents and consultants to advise farmers. In

addition, Extension specialists and agents assisted over 100 farm families with individual business plans. In many cases these farm plans enabled those producers to stay in business. In some cases Extension Farm Management Specialists assisted farm families in exiting farming in the least painful manner.

*Marketing* - Each year, over 1,500 farmers attend outlook presentation on the major commodities in over 30 parishes. In addition to providing market outlook information, Extension specialists also discuss other issues such as production costs, farm profitability, and government policy impacts on both production and marketing decisions.

*Multi-state work* - Extension specialists annually plan and participate in a number of multi-state conferences and committee meetings. Some of these are 1) the Southern Farm Management, Marketing and Public Policy Committee, 2) the Tri-State Soybean Forum, and 3) the National Rice Outlook Conference.” For the reporting period, Extension specialists participated in the planning and made presentations at four multi-state conferences. The Mid-South Limited Resource Workshop on April 10-11, 2000 in Memphis, Tennessee was attended by approximately 175 farmers and agribusiness men. The Future of Mid-South Commercial Agriculture meeting on July 17-19, was attended by approximately 200 farmers and agribusiness men. The 2000 Tri-State Soybean Forum was held on January 6-7, 2000 in Tallulah, Louisiana. Attendance at the Tri-State Soybean Forum was approximately 250 farmers. The National Rice Outlook Conference was held in Las Vegas, Nevada in December 2000. Over 800 producers and agribusiness representatives attended this meeting.

- Source of Funds - State and Federal Funds (Smith-Lever 3b+c)
- Scope of Impact - Louisiana Specific

**Multi-State:**

- Extension specialist effort on multi-state work in agricultural profitability is estimated at 0.53 FTE's (.53\* \$54,500 = \$28,885)
- The states involved in the Tri-State Soybean Forum include Louisiana, Arkansas, and Mississippi.
- The states involved in the National Rice Outlook Conference include California, Texas, Louisiana, Arkansas, Mississippi, and Missouri.
- The states involved in the Future of Mid-South Agriculture Meeting include Louisiana, Mississippi, Arkansas, Kentucky and Tennessee.
- The states involved in the Mid-South Limited Resource Workshop include Louisiana, Mississippi, Arkansas, Kentucky, Tennessee, Alabama, Florida, and Kentucky.

## RISK MANAGEMENT

### Federal Goal 1

#### Key Theme: Risk Management

- a. Extension Agricultural Economics specialists developed a comprehensive marketing course in 1997, entitled Marketing Agricultural Commodities (MAC), as a result of the advisory committee and county agent input and farmer demand. The course consist of seven three hour sessions and covers the following subjects:

Calculating breakeven prices and developing prices and developing price objectives.

Marketing alternatives.

Future markets.

Hedging.

Options.

Technical analysis.

The role of crop insurance in risk management.

During the reporting period, two classes were taught with a total of 35 farmers enrolled.

*Multi-state work and collaboration with non-governmental entities* - This course was developed with the assistance of the American and Louisiana Farm Bureau. Material from the University of Arkansas and Mississippi State University was reviewed in preparation of the teaching manual used in this course. In addition, personnel from the regional Risk Management Agency as well as the Louisiana Farm Bureau cooperate by serving as guest lecturers at the meetings.

- b. Impacts -

The Marketing Agricultural Commodities (MAC) program continues to be one of the most popular programs offered by the Extension Agricultural Economics division. For the reporting period, the MAC program was conducted in two areas of the state to approximately 35 producers and agribusiness representatives. A survey of the participants indicated an average response of 3.23 in their level of improvement in knowledge on a scale from 1 to 4 with 1 being no improvement and 4 being great improvement. The range of responses were from 2.64 to 3.38. In addition to the very favorable evaluation, several participants of the meetings held in 2000 thought enough of the program to petition for the MAC program to be offered again in their area in 2001.

- c. Source of Funds - State and Federal Funds (Smith-Lever 3b+c)

- d. Scope of Impact - Louisiana Specific

Multi-State:

Extension specialist effort on multi-state work in agricultural profitability is estimated at 0.70 FTE's  
(.70\* \$54,500 = \$38,150)

The MAC curriculum was initially developed from teaching information from Louisiana, Arkansas, and Mississippi. In addition, the curriculum continues to be updated and improved with the inclusion of material from the Chicago Board of Trade.

The MAC program was initially developed based on material from the American Farm Bureau. While the MAC program was evolved over the years, the influence of the American Farm Bureau program is still evident. In addition, input from the Louisiana Farm Bureau has and continues to be vital in the evolution of this program.

## **FOREST MANAGEMENT**

1. Federal Goal 1
2. Key theme: Natural resources sustainability, profitability, and stewardship in forested ecosystems among practicing natural resource professionals.
3. The Continuing Education in Natural Resources Program was established as a result of stakeholder input. Stakeholders, mainly natural resource professionals, desired continuing education workshops in such diverse areas as forest management, growth and yield modeling, managing forests for water quality, and wetlands forest management. Experts from Louisiana and around the South participate in the production and execution of these workshops.
4. FY 2000 results: over 600 natural resource professionals, loggers, and landowners from Louisiana, Mississippi, Arkansas, and Texas participated in these workshops. Participants evaluated the workshops as having a personal value of approximately \$2,500 per workshop per person. Therefore, the totally value of the program in FY 2000 was \$1,500,000.
5. Source of funds: RREA.
6. Scope of Impact: materials and methods developed for these diverse, multi-functional workshops are generated from research and extension materials from around the South. Approximately 1.8 FTE's are devoted to this program over the course of a year. The programs incorporate the expertise of researchers and extension specialists from various states for a total effort of (1.8 FTE's X \$54,500) \$98,100.

## **FOREST LANDOWNERS**

1. Federal Goal 1

1. Key theme: Natural resources sustainability, profitability, and stewardship in forested ecosystems among forest landowners.
2. Area agents have established local parish forest landowner associations. These associations work as conduits for technical, environmental, and social information pertinent to natural resources management, environmental protection, economic development, and stewardship. Each association has an executive board comprised of private and public sector stakeholders. Currently there are 18 organized parish forest landowner associations.
3. FY 2000 results: over 25 parish and regional meetings were held regarding diverse topics related to forest ecosystem management, environmental protection, forest stewardship, wildlife management and enhancement, and business considerations. Over 1,000 participants attended these meetings during the course of FY 2000.
4. Source of funds: RREA.
5. Scope of Impact: area agents use materials developed in Louisiana as well as extension materials from other states in the production of meetings, workshops, and field days sponsored by parish forest landowner associations. In addition, expertise from around the South serve as speakers and instructors at these meetings, workshops, and field days. Five FTE's devote approximately 50% of their time to the program to bring the multi-state, multi-disciplinary value to  $(5 \times .5 \times \$54,500) \$136,250$ .

**GOAL 1**  
**RESEARCH SUMMARIES**



## Key Theme--**Agricultural Competitiveness**

Harold S. Birkett, Audubon Sugar Institute

### Cane Washing

#### q Program Description

Audubon Sugar Institute researchers, in cooperation with the state's raw sugar factories, began a project in 1998 to study cane washing in Louisiana. With the increasing use of combine (or billet) harvesters over the conventional wholestalk harvester, many in the industry thought it relevant to determine if billeted cane lost more sugar upon washing than did that of washed wholestalk cane. The three objectives of the project were to (1) quantify the sugar being lost by washing and distinguish between billeted and wholestalk cane, (2) determine washing efficiency and (3) determine the amount of entrained water entering the factory (which can affect factory capacity).

#### q Impact

Results of the project show that (1) approximately twice as much sugar is being lost when washing billeted versus wholestalk cane, (2) the average washing efficiency of less than 50% indicates a great need for improvement and (3) an increased amount of entrained water is entering the factory with green billeted cane. Individual results were provided to each factory participating in the project. Overall results were provided to the industry as a whole. The information will continue to be used by factory managers when making decisions to improve factory performance (by optimizing their washing systems).

#### q Source of funds:

American Sugar Cane League grants, State funds

#### q Scope of impact: Multi-State

## **Key Theme - (Agricultural Competitiveness) Sugarcane Variety Development**

**I. Program Description:** The development of improved sugarcane varieties has been a major factor in sustaining a competitive sugarcane industry in Louisiana. With stagnant and decreasing sugar prices, new sugarcane varieties have offered higher yields, reduced production costs through insect and disease resistance, and improved stubble longevity. Concentration on economically important traits in the Louisiana Agricultural Experiment Station (LAES) sugarcane breeding program has been a major factor enabling a vibrant sugar economy for south Louisiana. New sugarcane varieties have been developed by both the LAES and the USDA - ARS sugarcane breeding programs since the late 1920s. Recently released varieties that were developed by the LAES were LCP82-89, LHo 83-153, LCP 85-384 and LCP 86-454. LAES sugarcane varieties are released in cooperation with the USDA - ARS and the American Sugar Cane League. At no time in the history of the Louisiana sugar industry have LAES sugarcane varieties dominated the state's sugarcane acreage.

Beginning in 1981, steps were taken to reorganize the LAES sugarcane breeding program. New photoperiod, crossing and greenhouse facilities were built at the St. Gabriel Research Station with the assistance of the Louisiana sugarcane industry. Successful variety development programs also require the cooperation of other disciplines, such as plant pathology, entomology, genetics and experimental statistics. With the proper team in place, sugarcane breeding efforts were undertaken with the goal of having LAES sugarcane varieties significantly impact the Louisiana sugarcane industry.

**I. Program Impact:** LCP 85-384, released in 1993, has significantly impacted the Louisiana sugar industry. The sugar yields of LCP 85-384 are about 20 percent higher than sugar yields of other previously grown sugarcane varieties. Along with excellent sugar yields, LCP 85-384 also has good disease resistance, excellent stubbling ability, and cold tolerance. The stubbling ability of LCP 85-384 allows farmers to grow more crops from a single planting, which reduces production costs. The good cold tolerance of LCP 85-384 gives farmers additional insurance against the harmful effects of early winter freezes during harvest. Sugarcane growers are quickly expanding their acreage of LCP 85-384. LCP 85-384 was grown on 71 percent of the state's 2000 acreage. Acreage in LCP 85-384 is expected to continue to increase. In fact, 82 percent of the state's plant cane crop harvested in 2000 will be LCP 85-384. Further expansion is expected to continue. It is estimated that the economic impact of LCP 85-384 in 2000 will be about \$150 million. This research has had a positive impact on the competitiveness of the Louisiana sugar industry.

**I. Source of Federal Funds:** Hatch funds, State funds

**Scope of Impact:** State specific

## **Key Theme-- (Agricultural Competitiveness)**

### Consumer Attitudes

a. Both the National Cattlemen's Beef Association and the Louisiana Cattlemen's Association have issued resolutions calling for the mandatory country -of- origin labeling of fresh beef in both grocery stores and restaurants. Preliminary interest in the country -of- origin labeling of fresh beef was evident in 1981 when the Louisiana Legislature passed an import labeling law for fresh beef in Louisiana grocery stores. However, this Law was declared unconstitutional in 1982, primarily because it applied only to beef. Strong support from both beef handlers and consumers for a country -of- origin label would be helpful in securing federal legislation for the mandatory label. A random sample of Louisiana beef handling firms was interviewed by phone in 2000 to determine their level of support for the mandatory label (82% of the responding firms expressed approval of the proposed mandatory label). A later mail survey of a random sample of 3,400 Louisiana households indicated that 88% of households approved of a mandatory label for restaurant offerings and 93% for grocery store offerings. Several beef handling firms and a number of households were contacted for input into the design of the two survey forms.

b. In 1998, the US Congress discussed, but did not enact, a mandatory country -of- origin labeling law for fresh meats sold in grocery stores and restaurants. In 1999, the Louisiana Legislature passed a state law requiring the source labeling of fresh meats sold in Louisiana grocery stores. This Law, which was scheduled to become effective on January 1, 2000, awaits a legal decision on its constitutionality. The results of this study provide strong support for federal legislation (which could eliminate the constitutionality question) creating a mandatory beef labeling requirement. The strong consumer desire for the label arises primarily from their concern with the safety and quality of imported fresh and frozen beef. Any additional spread of BSE (mad cow disease) from its origin in Europe would likely justify US country -of- origin labeling to allay consumer concerns with the safety of beef available in US grocery stores and restaurants.

b. State funds, Hatch funds

Results have regional application.

**Key Theme- (New Uses for Agricultural Products) Utilization of Undersized Crawfish**

a. **Program Description**—Crawfish grown and harvested in Louisiana exceed 100 million pounds annually. Problem facing Louisiana crawfish producers and processors is the abundance of undersized crawfish, which are typically not suitable for either hand processing or sales on live markets. Undersized crawfish may account for as much as 20% for the catch in some years and are usually priced much below the current market price or discarded by the processors. Since 1996, the Department of Food Science and Department of Agricultural Economics and Agribusiness, Louisiana Agricultural Experiment Station, have collaboratively developed a research program focusing on development of value-added food products derived from undersized crawfish. Focus-group interviews with seafood chefs, brokers, and processors from South Louisiana were conducted to explore potential use of mince recovered from undersized crawfish. A conjoint survey was conducted with 1,600 seafood restaurants in Louisiana, Mississippi, and Texas to evaluate preferences of product profiles of crawfish mince. A series of focus-group interviews and conjoint analyses with consumers was conducted to obtain concepts of two potential products--nugget and sausage. Systematic product formulation, process development and optimization of sensory quality were performed. Consumer sensory evaluation indicated that these 2 products are acceptable and have market potential. Over 75% of consumers indicated their positive purchase intent. In-store consumer testing of these two products in South Louisiana will be conducted. The objective is to determine consumers' willingness for trial, repeat purchase, adoption, and purchase frequency.

b. **Impact**—Maximizing the use of undersized crawfish would minimize pollution problems and offset costs involved in disposal of processing byproducts, and, at the same time, maximize the processors' profits. Adding value to undersized crawfish will not only enhance the competitiveness of the Louisiana crawfish industry, but also enhance the state's economic development. The information obtained from this research will be useful for processors who wish to adopt the technology for developing value-added new food products from undersized crawfish.

c. **Source of Federal Funds:** Hatch funds. USDA Specials Grant funds, State funds

c. **Scope of Impact:** Regional

## **Key Theme - (Agricultural Competitiveness) Beef Cattle Tenderness Inheritance**

a. State Agricultural Experiment Station scientists are evaluating genetic variation for tenderness in Brahman cattle. The general assumption has been that high grade Brahman cattle are tough, relative to *Bos taurus* breeds, and this has resulted in discounts up to 15% for high grade Brahman steers. Genetic variation for carcass quality traits and for tenderness in Brahman cattle is largely unknown. Brahman breeders in the state agreed to sell us 4 to 10 Brahman bull calves from their main herd sires at weaning for research. The primary objective of the study includes the prediction of Expected Progeny Differences for growth, carcass quality traits, and for tenderness for Brahman sires being used in Louisiana. Brahman calves are collected in the fall, backgrounded, grazed on ryegrass for 100 to 140 days, and then fed in a south Texas feedlot. A packing plant that processes Brahman cross steers purchases the steers at slaughter and allows the collection of carcass data as well as a primal rib from each steer for tenderness research. Animal breeding and meat science researchers lead the project with cooperative effort from a herd health veterinarian and a beef cattle Extension Specialist. Additional cooperators include the Louisiana Cattlemen's Association and the Louisiana Brahman Association.

b. Impact - Complete growth, carcass, and tenderness data have been obtained on 220 Brahman steers sired by 39 bulls. An additional 200 Brahman steers sired by some of the bulls already evaluated as well as 15 new bulls will be added to the data set. So far, significant sire differences have been found for growth, carcass traits, and for tenderness. Sire influence has a large role on tenderness when measured after a 14 day aging period. At least six sires have progeny who averaged less than 3.75 kg for shear force, the shear force that generally separates carcasses for consumer acceptance. Expected Progeny Differences for tenderness (Warner-Bratzler shear force) range from a low (tender) of -.7 kg (Accuracy = .57) to a high (tough) of .9 kg (Accuracy = .76). Additional data are expected to confirm the distribution of EPD's for carcass and tenderness traits and the ranges found earlier. Identification of Brahman sires that produce progeny with tough carcasses as well as identification of those that produce progeny with tender carcasses can provide cattle producers in Louisiana alternative choices of Brahman bulls if they want to change the image of their cattle that are being produced.

c. Source of Federal Funds - Hatch

d. Scope of Impact - Gulf Coast Region

## **Key Theme: (Animal Health) Brucellosis**

### Program description:

Brucellosis is characterized by abortion and infertility in cattle, goats, sheep, swine, elk, reindeer and bison. This zoonotic disease has worldwide economic ramifications. Researchers at the LSU AgCenter, in collaboration with scientists from USDA - APHIS - VS, US Geological Survey, Idaho Game and Fish, Texas A&M, Virginia Tech, University of Alaska, and University of Wyoming, continue to pursue new vaccine candidates to assist in the total eradication of the disease. Bovine brucellosis has essentially been eliminated in the United States; however, the threat from wildlife reservoirs (elk, bison, feral swine) of re-infecting domestic cattle necessitates continued pursuit of safe and efficacious vaccines. Mutant *Brucella* spp. as well as novel delivery systems are being investigated.

*Brucella* spp. cause disease in a variety of animals throughout the world and are potential biological weapons because of their highly infectious nature. Both basic and applied research of these organisms will lead to further insight into the pathogenicity and immunogenicity of this and other intracellular pathogens. This knowledge will contribute to the overall health and well being of both man and animals.

**Impact:** Due to the lifting of regulations concerning bovine brucellosis, producers throughout the country enjoy fewer restrictions regarding the sale and transport of their domestic animals and are reaping direct economic benefits. As the bovine brucellosis eradication comes to a close, new vaccine candidates need to be evaluated for their pathogenesis and protective capacity in the remaining few wildlife reservoirs of this disease. The environmental impact of these vaccines will be closely monitored.

**Source of funds:** Animal Health; additional funding through USDA and USGS cooperative agreements

**Scope of Impact:** State, regional, national, and international effects

### **Key Theme - (Adding Value to Agricultural Products) Modified Atmosphere Packaging**

- a. A continuing research project within the state agricultural experiment station has focused on improving the safety and shelf -life of case-ready packaged fresh and processed meat products. Case-ready packaging is the fabrication and packaging of consumer - sized portions at the processing plant rather than in the retail store. Case-ready packaging reduces labor costs for meat cutting, provides increased product safety, increases product uniformity, and allows for a brand product identity. Information on modified atmosphere case-ready packaging for raw chilled meats was limited. Scientists have investigated different gas and meat product interactions during storage and retail display, the exchange of gas mixtures for other gas mixtures, and incorporation of bacteriostatic agents during the packaging process. Industry leaders have served as advisors to the conduct of the research.
- b. Impact- Studies with high amounts of oxygen in modified atmosphere packaging have given industry an attainable shelf -life goal of 12 days before spoilage under commercial storage conditions. Development and refinement of a means to exchange nitrogen :carbon dioxide mixes used for distribution and storage with oxygen: carbon dioxide gas mixes for retail display has provided a means to extend the distribution to 30 days with an effective display life of 4 days for ground beef and steaks. A company has been started to manufacture and distribute gas exchange machines for processor and retail use. The incorporation of moderate amounts of gaseous ozone into packaging has been demonstrated to reduce the growth of pathogenic microorganisms. The needed amounts and time of activity are being developed at the present time.
- c. Source of Federal Funds- Hatch with additional support from state funds, commodity board grants, and in-kind donations or loans of packaging machines, analytical equipment, packaging supplies and gases from industry suppliers
- d. Scope of Impact- National and in the future, International

## Key Theme-- **Adding Value to Agricultural Products**

Title: Value Added Products from Sugar

Team Leader: Donal F. Day

a. Situation/Problem: The Louisiana sugar industry is tied to a one product market which has been protected by legislation. The market protection is due to expire leaving the future of the industry in doubt. An expansion of market size by production of non-agricultural products will enhance the financial strength of this industry. A program was initiated in 1998 to develop a technology for the production from sugar of a biopolymer that will expand the market for this raw material. It was proposed to develop and demonstrate a viable technology for manufacture of a high-value sucrose based polysaccharide, building in part on the research conducted under a previous CRS project.

. The manufacture of glucooligosaccharides from sucrose offers direct and obvious benefits to the sugar industry. These polysugars have a significant market potential as functional foods, estimated as high as \$250 billion. We developed a new technology for production of these polysugars from sucrose, but specific markets must yet be established.

b. Impact: A technology is now ready for industrial application. Growth of sucrose use by widespread adoption of this product as an animal feed additive/antibiotic replacement may expand the profitability of the industry with indirect economic enhancement of all of south Louisiana.

C. Source of Funds: State, American Sugarcane League



## **Key Theme - (Diversified/Alternate Agriculture) Improving Poinsettia Production**

- A. Poinsettias are the number one flowering pot plant in U.S. floriculture; however the market value is low and many of the newer cultivars have poor lateral stem strength leading to unacceptable plants. The first objective of this research was to determine optimum levels of fertilization while minimizing leachate. The second objective was to quantitatively measure stem strength. The third objective was to determine the effect of fertilizer rate, fertilizer type, plant growth regulator, node number and stem diameter on resulting stem strength. This research was conducted in cooperation with a researcher in the Department of Physics and Astronomy.
  
- B. Impact - Poinsettias fertilized at each irrigation with 75 ppm N with 0 leachate were smaller than those plants fertilized at 150 and 300 ppm N but were of acceptable market quality. Therefore fertilizer rates used during poinsettia production can be reduced if a 0 leachate is applied leading to less fertilizer usage, lower cost and less fertilizer leaching. Fertilizers high in nitrate nitrogen with added calcium produced plants with greater stem strength and lateral stem area. The use of plant growth regulators can reduce stem strength and should be used at the minimum rates. Stem strength of poinsettias with 4, 5 and 6 lateral branches was greater as well as the lateral stem areas. The larger the diameter of the main stem of poinsettias the greater the lateral stem area and thus the greater the stem strength. For maximizing stem strength we recommend that cuttings be 7 mm in diameter or larger, pinch to leave no more than 6 nodes, use fertilizers high in nitrate-nitrogen and calcium, and use plant growth regulators on a limited basis.
  
- C. Source of Federal Funds - Hatch
  
- D. Scope of Impact - Multi-State

## Key Theme - (Agricultural Competitiveness) Crop Production Economics

- a. Program Description: The general objective of this project is to conduct economic research to evaluate physical, structural, governmental, and economic factors affecting the production of sugarcane as a single enterprise and the management of sugarcane farms within a whole - farm context in Louisiana. Communication with stakeholders (specifically The American Sugar Cane League and the Louisiana Farm Bureau Federation) is made on a continuing basis to identify relevant research issues which are important to the Louisiana sugar industry. In 2000, three specific production issues were identified by the stakeholders as areas in which economic research was needed to provide useful information to the industry. Those three issues include: (1) economic impact of the loss of the truck weight exclusion permit which specifies the weight limit of trucks hauling sugarcane to mills; (2) economic impact of the loss of the right to burn sugarcane; and (3) economic impact of the Louisiana sugar industry to the state's economy. Economic research studies were designed and conducted during the year to address these issues.
- b. Impact: Research results for these three studies was submitted to the stakeholder groups and provided useful, current information on the economic importance of the Louisiana sugarcane industry as well as the economic impact of specific issues such as truck weight exclusion and sugarcane burning. The results of these studies are briefly summarized below.
- (1) Economic impact of the loss of the truck weight exclusion permit: Analysis conducted to estimate the economic cost to the Louisiana sugar industry of reduction of cane truck weight limit from 100,000 pounds to 83,300 pounds. Estimates related to just sugarcane hauling include an estimated 109,510 additional truck loads to haul the 1999 crop at a cost of approximately \$5.9 million to the state's sugar industry.
  - (2) Economic impact of the loss of the right to burn sugarcane: Analysis conducted to estimate the economic cost to the Louisiana sugar industry of not allowing sugarcane to be burned prior to harvest. Estimated costs include only the additional harvesting, hauling, and milling additional tonnage resulting from not burning. These additional costs were estimated to be approximately \$3.2 million for every 1 percent increase in tonnage.
  - (3) Economic impact of the Louisiana sugar industry to the state's economy. Analysis conducted to estimate the economic impact of the Louisiana sugar industry to the state's overall economy. Results indicated that the total contribution of all sugar producing sectors in the state (production, raw and refined manufacturing) was \$1.9 billion in total gross output with a contribution of approximately 14,000 jobs to the state's economy.
- c. Source of Funds: Hatch funds and industry grant
- e. Scope of Impact: State specific

## **Key Theme – (Agricultural Competitiveness/Risk Management) Livestock Producers’ Decisions Under Changing Industry Structure**

- I. \_\_\_\_\_ As the structure of U.S. animal agricultural industries continues to evolve, farmers are faced with changing production costs, due in part to changing technology, increased risks associated with increased farm size, and changing transaction costs. This project assesses the effects of firm-level risk and uncertainty on animal producers’ business decisions. Specifically, costs and returns estimates are made for Louisiana livestock and aquacultural industries and efficiency analyses are conducted to determine the types of firms that are the most technically and economically efficient; risk preferences of animal agriculture producers are elicited; the impacts of risk and uncertainty on animal producers’ firm-level decisions are assessed; strategies are identified and analyzed that help animal producers to deal with risk and uncertainty; and the role of risk, uncertainty, and transaction costs in the evolution of the structure of animal agricultural industries is analyzed. While immediate stakeholders in the research are Louisiana animal agriculture producers, the research has direct implications for all U.S. animal agriculture producers, especially the portion of the research that deals directly with industry evolution.
- I. \_\_\_\_\_ Cost estimates for beef, dairy, swine, poultry, forage, crawfish and catfish production are compiled and mailed annually to over 400 producer groups, extension offices, and agribusinesses in Louisiana. Stakeholders also have access to the publication in parish extension offices. Cost estimates for ratite production and crawfish processing were sent to over 400 groups in 1996. Efficiency analyses have been conducted for ratite and beef cattle production, with results showing the types of producers and production practices (such as beef cattle breed) that are likely to lead to efficient operations. This research has been distributed widely via popular publication and refereed journal articles. Research dealing with the effect of risk and transaction costs on the evolution of the broiler, hog, and beef industries has been published in numerous outlets, with implications for how the beef industry should proceed in order to remain competitive with its competitor industries. Research involving improvements in methods to elicit producers’ risk preferences has been presented at two national professional meetings. This research has helped Agricultural Economists in Louisiana and other states to more appropriately characterize risk preferences in survey analyses. The author is aware of at least four national mail surveys analyzing producer decisions under risk, technical change, and industry structure change that have been influenced by this research. In total, over 70 publications have resulted from this research program since 1995. These publications have had varied audiences, including academic, producer groups, and other stakeholders.
- I. \_\_\_\_\_ Source of Funds: State, Hatch, Grants.

Source of Impact: State, Regional, and U.S.

## GOAL 2

LSU AgCenter Goal 2 is to provide a safe and secure food and fiber system which specifically will improve food safety and elimination of food-borne risk. LSU AgCenter conducted 21 research projects. Additionally, Extension devoted 49.4 FTE's and made 125,564 educational contacts. Twenty publications were written and an adoption rate 68.83 percent of recommended practices was reported.

### **Research Reports**

Major programs in food safety were to evaluate methods for detoxifying aflatoxin, a carcinogenic compound that is sometimes prevalent in corn and cottonseed. Ozone is being evaluated for its ability to break down aflatoxin and also to reduce microbiological agents and, in some cases, break down off-flavor compounds in catfish. Ozone can be a very effective agent in controlling microbial populations and aflatoxin but it is a potential toxin itself which dictates additional research on its activity and use.

### **Extension Reports**

Significant accomplishments include:

- A series of trainings on hazardous analyses and critical control points (HACCP) and sanitation control procedures, 340 food processors and handlers were trained and 24 processing plants were assisted with their HACCP plans.
- More than 125 food service personnel were trained at the fairs and festival organizations safe food handler training. Sixty-five percent of those personnel indicate that they have adopted the recommended food safety practices.

Total Extension expenditures for this program include 49.4 personnel at a cost of \$2,692,300, the federal expenditure is \$699,998, total multi-state activity attributed to this activity is \$113,310. \$89,925 was attributable to integrated activities.

**GOAL 2**  
**EXTENSION SUMMARIES**

## HACCP - FOOD SAFETY

1. Federal Goal 2
2. Key theme - HACCP, food safety
3. Hazard Analysis and Critical Control Point (HACCP) and Sanitation Control Procedures (SCP) are concepts that are the basis for federal food safety rules and regulations. Seafood processors are required to receive HACCP training. HACCP and SCP training is recommended for others involved in food processing and handling. One three-day HACCP training session was provided to seafood processors, one one-day HACCP training session for festival food handlers, three one-day HACCP training sessions for retail grocers, a three-day international train-the-trainer HACCP course and two one-day train-the-trainer SCP sessions.

Approximately 12 visits were made to food processing plants to assist in developing HACCP plans for regulatory compliance and to improve food safety. These visits were a team effort involving county agent staff, extension specialist and research faculty.

4. As a result of these HACCP and SCP training efforts approximately 340 processors, food handlers and others with interest in food safety successfully completed training and received certificates. In the case of required HACCP training for processors, these processors are now qualified to prepare HACCP plans and to review HACCP records. Those individuals that attended the train-the-trainer sessions are now qualified to train others in HACCP or SCP. Approximately 24 individuals were assisted with hands on training at the processing plant level. This training assisted processing in establishing those parameters necessary to achieve or maintain regulatory compliance.
5. Source of funds - Smith-Lever 3b+c
6. Scope of impact -  
State only  
HACCP, SCP training and plant visits = .5 FTE's x \$54,000 = \$27,000 = state money

### Multi-state:

TX, FL, CA, NC, and AK

HACCP, SCP training = 25% of LA programs x .4 FTE's x \$54,000 = \$5,400

## FOOD SAFETY

1. **Federal Goal:** 2
2. **Key Theme:** Food Safety

3. **Program:** Statewide food safety efforts included safe food handler training for more than 1,500 food handlers at fairs and festivals, day care centers, nursing homes, schools and community agencies. The “Safe Food Handler” training program, developed by LCES as a train-the-trainer program to target food handlers at fairs, festivals, and catered events, has provided safe food handling training for more than 1,500 food handlers.  
In addition, parish food safety presentations, exhibits and media efforts resulted in 123,276 contacts.
4. **Impact of program:** More than 125 New Orleans Jazz and Heritage food service personnel participated in a special safe food handler training and, as a result, fewer violations were cited at the 2000 festival than in the history of this annual event.  
Impact statement data from one parish showed that 65% of 51 clientele reported they would adopt recommended food safety practices, including using a food thermometer, separating raw meat, poultry and seafood separate from other foods, and washing hands with hot soapy water before handling food to reduce the risk of foodborne illness.
5. **Source of funds:** Smith-Lever 3b + c; USDA CSREES Restricted Fund S/L
6. **Scope of impact:**
  - a. Louisiana only - The ideas and materials for this program are a result of the USDA food safety emphasis. In FY 2000, 6.6 FTEs were spent on food safety, resulting in 123,276 contacts.  
Based on a FTE cost of \$54,500, the total cost of the program was \$359,700. Of this effort, 30% is involved in the acquisition and sharing of information through multi -state efforts.

## **GOAL 3**

The LSU AgCenter Goal 3 is to achieve a healthier more well nourished population by improving the dietary quality, food quality, and food choices of Louisiana citizens. There were 25 of research projects and 22.67 Extension FTE's made 372,458 educational contacts. Twenty-nine publications were written, seven on nutrition and five on health with an adoption rate of the recommended practices of 74.38 percent.

### **Research Reports**

Significant research programs in this area are addressing the prevention of obesity and osteoporosis and the evaluation of functional foods as part of an IFAFS grant. In particular, the separation of a number of anti-oxidants such as oryzanol from rice bran, a very low - value product, has been achieved and evaluations of their effects in the human diet are underway. Another program, part of a long-term multi-state research project, is investigating the roles of omega-3 and omega-6 fatty acids on cancer risk. Another example of the breadth of our research activity is a "medicinal plant" program. A number of herbal medicines derived from plant materials are being evaluated. Also, the production of the actual plants from which these materials are isolated are being evaluated in Louisiana as potential alternative/small farm crops.

### **Extension Reports**

Significant Extension programs include:

- A diabetes awareness education program impacted over 10,000 individuals in 64 parishes, who learned how to manage their diabetes by eating healthier and exercising. An estimated 400,000 individuals have been reached through media outreach and exhibits. In follow-up questionnaires, 128 participants who had committed to adopt at least one of the recommended behaviors was contacted, 102 reported that they were still following the behavior that they committed to adopt.
- The family nutrition program contacted 161,132 individuals face to face to give them information on nutrition, diet, and health food safety and food buying, 79 percent of clientele surveyed indicated that were consuming less fat, 98 percent were consuming more fiber, grains, fruits, and vegetables, 74 percent indicated that they eating less sodium and salt.
- In the expanded food and nutrition program, surveys indicated 95 percent of the homemakers are making positive dietary changes. The number of homemakers consuming two or more servings of milk daily went from 16 to 32 percent, 62 percent are comparing prices when shopping, 35 percent are using a grocery list, and 44 percent indicated that they ran out of food before the end of the month less often.

Total Extension expenditures for goal 3 is \$1,231,700 on 22.6 FTE's, the federal component is \$320,242, the multi-state effort attributable to this goal are \$728,972. The integrated activities attributable was 621,665.



**GOAL 3**  
**EXTENSION SUMMARIES**

## HUMAN HEALTH

1. **Federal Goal:** 3
2. **Key Theme:** Human Health
3. **Program:** The Diabetes Education Awareness Recommendations (DEAR) program has been implemented in all 64 Louisiana parishes. Agents have conducted diabetes awareness workshops, seminars on meal planning using the Food Guide Pyramid, healthy weight management, exercise, disease complications and foot care. Individuals learned how to better manage their diabetes through healthy eating and exercise and identify problems caused by diabetes.
4. **Impact of program:** More than 10,00 individuals in 64 parishes have learned how to better manage their maintain a healthy weight (5) maintain blood glucose levels as recommended by physician.
5. **Source of funds:** Smith-Lever 3b + c; Family Nutrition Program - funded by USDA, FNS, through the Louisiana Dept. of Social Services, Food Stamp Program
6. **Scope of impact:**
  - a. Louisiana only - In FY 2000, an estimated 8.9 FTEs were spent on diabetes education, resulting in 410,000 contacts.  
Based on a FTE cost of \$54,500, the total cost of the program was \$485,050. Of this effort, 40% is involved in the acquisition of sharing of resources and information through multi -state efforts. Contributions from research counterparts included assistance in determining program needs through focus groups meetings, development of nutrition education materilas, agent training and presentations for clientele, and amounted to \$145,515. (30%)

## HUMAN NUTRITION - FNP

1. **Federal Goal:** 3
2. **Key Theme:** Human Nutrition - FNP
3. **Program:** Extension Family & Consumer Science agents in 64 parishes and 15 nutrition assistants in targeted parishes conduct FNP (Family Nutrition Programs) to assist Food Stamp recipients and potential Food Stamp recipients improve their diets and budget their food dollar. All 64 parishes have been actively involved in community education and outreach programs. Fifteen parishes have a paraprofessional to help conduct the FNP program. The major topics taught include nutrition education, food buying, food safety, child feeding, and managing time and money as it relates to food buying and nutrition. Reported sites for the FNP outreach program included Head Start, Council on Aging, other senior citizen groups, Title 1, day care providers

workshops, grocery stores, teen parent groups, commodity distribution sites, health unit, health fairs, public housing, libraries and mental health centers.

4. **Impact of programs:** Extension agents in 64 parishes and the 15 FNP nutrition assistants in targeted parishes reached over 161,132 individuals in face-to-face contacts during FY2000 with information on nutrition, diet and health, food safety and food buying.  
Impact statement data from parishes showed that 79% of 183 clientele reported they would consume no more than 30% calories from fat and less than 10% (of total calories) from saturated fat. 98% of 102 clientele reported they would choose a diet with plenty of fiber from grains, fruits and vegetables. Another 74.5% of 117 clientele reported they would consume a diet lower in salt and sodium.
5. **Source of funds:** Family Nutrition Program - funded by USDA, FNS, through the Louisiana Dept. of Social Services, Food Stamp Program
6. **Source of impact:** In FY 2000, FNP nutritional program outreach, including mass media contacts, totaled approximately 13,053,041. An estimated 12.3 FTE's was spent on the Family Nutrition Program. Based on a FTE cost of \$54,500 for extension professionals and \$10,000 for FNP nutrition assistants, the total cost of the program was \$438,800. Of this effort, \$131,640 or 30% is involved in the acquisition of sharing of resources and information through multi-state efforts. Contributions from research counterparts included assistance in determining program needs through focus group meetings, development of nutrition education materials, a gent training and presentations for clientele, and amounted to \$113,450. (25%)

## **HUMAN NUTRITION - EFNEP**

1. **Federal Goal:** 3
2. **Key Theme:** Human Nutrition - EFNEP
3. **Program:** Fifteen Louisiana parishes currently participate in the Expanded Food and Nutrition Education Program (EFNEP). EFNEP works cooperatively with food assistance programs such as food stamps, WIC and commodity foods. One hundred fourteen EFNEP nutrition assistants conduct a special nutrition program for low-income families with young children. Through EFNEP, families learned what they needed to eat for good health, how to make more nutritious selections, how to be better shoppers, and how to better extend their resources. A planned curriculum of 12 lessons is taught to enrolled participants and their children in small groups. To graduate from the program, participants must complete a minimum of 10 of the 12 lessons. Eighty-four percent completed the program.
4. **Impact of program:** EFNEP helped families meet the overall objective of the program of improving the nutritional value of diets of disadvantaged families, especially those with young children. Participation in EFNEP improved the nutritional value of homemakers' and their families diets. Food recall data indicate that 95% of the EFNEP homemakers made positive dietary changes. The percent of homemakers consuming the recommended 2 or more servings of milk daily went from 16% to 32%. At the beginning of the program only 18% consumed two or more servings of fruit a day compared to 35% at the end. 60% had at least one serving

of fruit daily. Only 37% had the recommended daily intake of vegetables of 3+ servings. Upon completion of the program, 53% had! In addition to a better diet, homemakers were managing their food dollars better. 62% more often compared prices when shopping; 35% more often used a grocery list; and 44% less often ran out of food before the end of the month.

5. **Source of funds:** Smith-Lever 3b + c.
  
6. **Source of impact:** In FY 2000, 114 EFNEP nutrition assistants in 15 parishes reached 4,837 enrolled program families, 18,042 youth and 1598 volunteers. An estimated 8.4 FTE's was spent on the Expanded Family Nutrition Education Program. Based on a FTE cost of \$54,500 for extension agents and \$6,000 for nutrition assistants, the total cost of the program is \$1,344,375.00. Of this effort \$403,312.50 or 30% is involved in the acquisition of sharing resources and information through multi -state efforts. Contributions from research counterparts included assistance in determining program needs through focus groups meetings with clientele, development of EatSmart Internet curriculum, EFNEP curriculum and agent training, and amounted to \$363,700 (35%).

**GOAL 3**  
**RESEARCH SUMMARIES**

**PROJECT TITLE:** Role of n-3/n-6 polyunsaturated fatty acids in health maintenance

**PROJECT LEADER:** Daniel Hwang

**KEY THEME:** (Human Health) Dietary fat and cancer risk

- q Many epidemiological studies have demonstrated that aspirin and other non-steroidal anti-inflammatory drugs (NSAIDs) can reduce the incidence of colon cancers. The well-documented pharmacological action of aspirin and other NSAIDs is inhibiting cyclooxygenase, [the rate-limiting enzyme in prostaglandin (PG) biosynthesis]. It is also well documented that dietary n-3 fatty acids suppress the cellular production of PGs and tumor cell growth both in vitro and in vivo. Thus, it has been a prevailing hypothesis that the suppression of tumor cell growth by dietary n-3 polyunsaturated fatty acids (PUFAs) as compared with n-6 PUFAs is mediated through the inhibition of COX. However, experimental evidence to support this hypothesis has not been demonstrated. Contrary to general belief, results from our studies convincingly demonstrated that the suppression of tumor cell (HCT-116) growth both in culture and xenografted nude mice by dietary n-3 fatty acids is mediated through COX-independent pathways.
- q **Impact:** It is important to identify the molecular targets and effector molecules and to elucidate the signaling pathways through which n-3 PUFAs mediate beneficial effects in reducing the risk of different types of cancer. If we identify the molecular target and effector molecules through which n-3 PUFAs mediate the beneficial effects, we will be able to search and find dietary or pharmacological agents that mimic the effects of n-3 PUFAs in reducing the risk of cancer.
- q **Source of Federal Funds:** Multi-State funds, USDA, NCI, American Institute of Cancer Research, State funds.
- q **Scope of Impact:** National. Information gained and to be gained will give potential benefit to the general public at all levels.

## **Key Theme: (Nutriceuticals) Deriving High-Value Functional Food Components From Rice Bran.**

Everyone knows that brown rice is better for you than white rice. It is ironic, then, that rice bran, which is the material that is removed from brown rice to make white rice, is considered a low-value by-product of the rice milling industry. Obviously, rice bran must have considerable nutritional value, so why do we feed it to our livestock, or worse yet, spread it on our fields? That is a question that has been the focus of considerable research at LSU over the past 10 years. Original efforts were directed at stabilizing rice bran in order to make it more fit for human consumption by reducing its tendency to rapidly become rancid. This work was conducted in the departments of Biological and Agricultural Engineering and Food Science and in the School of Human Ecology. Through that effort, it was realized that rice bran had an abundance of antioxidant components including tocopherols, tocotrienols,  $\gamma$ -oryzanol and inositol phosphates (phytic acid). Work in the laboratory of J. Samuel Godber has now been focused on extracting these components from rice bran, determining their functionality as antioxidants both *in vivo* and *in vitro* and incorporating them into food products such as beef and dairy products.

**Impact** - The component of rice bran that we have concentrated on in the last two years is  $\gamma$ -oryzanol. On average, rice bran contains approximately 20% lipid, of which 2% is  $\gamma$ -oryzanol, which indicates its relatively high abundance and suggests commercial potential.  $\gamma$ -Oryzanol is actually a mixture of esters of ferulic acid and a variety of triterpene alcohols including sterols and stanols. Ferulic acid is a phenolic acid that has both antioxidant and UV light absorbing characteristics. The triterpene alcohol component has been suggested to lower serum cholesterol and may prevent certain types of cancer. These components are very similar to the pine tree extract that is being used in the Benecol® margarine and salad dressing products. Indications are that  $\gamma$ -oryzanol could become a high value component of rice bran if its health promoting potential were better understood and emphasized. One can now find it advertised in health-food stores and online for its influence on muscle development, and it is touted in horse and show-dog circles as a musculature development aid, although these claims have not been proven. Our interest has been in more practical aspects such as extractability and antioxidant activity.

We have developed a supercritical extraction process that allows us to concentrate the  $\gamma$ -oryzanol fraction and facilitate purification. We use preparative scale high performance liquid chromatography to purify  $\gamma$ -oryzanol and individual ferulic acid esters. We have established that individual ferulic acid esters have antioxidant characteristics similar to ferulic acid, which is slightly less active than  $\alpha$ -tocopherol in a liposome model. Our current effort is related to evaluating the antioxidant function of individual ferulates in cell culture. Preliminary evidence suggests that ferulates give greater protection to the cells against oxidative damage than either ferulic acid or  $\alpha$ -tocopherol. We theorize that this may be due to greater membrane permeability due to the triterpene alcohol ester component of the molecule.

The whole area of functional foods is taking off and foods that are found to have health benefits beyond their nutritional value will be in high demand. Rice bran appears to have an abundance of potentially therapeutic compounds, which could either be consumed with the bran or may be extracted and concentrated, as we are doing in our research. The value of these components is now incalculable but there may come a day when rice will be grown for its bran and white rice will be the by-product. Source of Federal Funds: USDA-NRI, USDA-IFAFS, Hatch funds, State funds

Scope of Impact: National.



## Key Theme – Medicinal Plants Program

- a. Current surge in the use of herbal dietary supplements underlines the importance of medicinal plants research. Louisiana Agricultural Experiment Station researchers are developing hypothesis-driven research on techniques of providing quality raw materials for herbal dietary supplement products. Teaming up with cooperators in the LSU School of Veterinary Medicine, LSU Pennington Biomedical Research Center, and M.D. Anderson Cancer Center, the Medicinal Plants Program places great effort in developing licensable technology for marketing herbal dietary supplements, which will eventually create new cropping opportunities in Louisiana and spin-off businesses in processing and extraction, pharmaceutical manufacturing, and global marketplace. Sponsors include the Louisiana Board of Regents, Pacific West Cancer Funds, and Sage Pharmaceuticals.
- b. So far, micropropagation techniques and production protocols for the anti -cancer *Camptotheca acuminata* trees have been established. Crude extracts from this tree have been characterized chemically and tested positively in vitro against six human cancer cell lines. Further in vivo tests on animal models are underway. If these tests continue to show positive results, pilot-scale agricultural production using the above-established techniques will be required. The other medicinal tree under concentrated evaluation is *Eucommia ulmoides* in a well-designed formula for its anti-hypertensive properties. Micropropagation techniques have been studied and field plantations established. Crude extracts have been obtained and chemical characterization of it has been initiated. Tests on animal models are to be conducted in the mid-2001.
- c. Source of Funds – McIntire-Stennis funds, State funds, private sector grants
- d. Scope of Impact – International

Key Theme - **(Human Nutrition/Human Health)** Prevention of obesity and maintenance of bone health in a rat model for postmenopausal women

I. The State Agricultural Experiment Station researchers are using ovariectomized retired breeder adult female rats as a model for postmenopausal women. The older adult population in the United States is increasing; and older women past the age of menopause represent the majority of this segment of our society. Poor skeletal health and obesity are common problems in women after menopause. Research studies using exercise have been conducted to prevent obesity and maintain bone density. Exercise studies have included either swimming or access to running wheels for voluntary wheel running, with the purpose of preventing the weight gain and bone density loss that normally follows ovariectomy. In one study, the rats had access to three diet choices that were not equal in energy: high-fat, high-protein or high carbohydrate.

I. Impact - Exercise was effective in preventing femur bone (thigh) density loss and weight gain in the ovariectomized rat. Femur bone density was greater in ovariectomized rats that either swam or had access to running wheels compared to ovariectomized rats that did not exercise. Control rats that were not ovariectomized had femur bone densities similar to ovariectomized rats that exercised. Thus, both swimming and voluntary wheel running maintained femur bone density in ovariectomized rats. Rats that exercised also gained less weight than rats that did not exercise. Swimming prevented the weight gain that normally follows ovariectomy and was much more effective than voluntary wheel running in preventing weight gain. Prevention of weight gain occurred in rats in the diet-choice study, despite the fact that rats chose a predominantly high-fat, high-energy diet. These results should encourage postmenopausal women to continue or to become active on a regular basis and support the Dietary Guideline (2000) to exercise daily. Our results may also ultimately prove beneficial to older individuals in our society that suffer from arthritis or other causes of skeletal joint problems. Traditionally, swimming, a non-weight bearing activity, or water-aerobic exercises have not been recognized for promoting skeletal health. Studies in humans have not reported benefits of swimming on the skeleton, possibly because studies do not usually focus on elderly subjects that are less mobile. Because these rat studies compared swimming rats with non-exercising rats isolated in a wire-bottom cage with basically no weight-bearing activity, benefits of swimming were observed without the confounding weight-bearing activity of free-living, highly mobile human subjects.

I. Source of Federal Funds - Hatch, Grants

National, International

## GOAL 4

The LSU AgCenter Goal 4 is to achieve greater harmony between agriculture and the environment. The integrity of Louisiana's diverse ecosystem must be insured by developing, transferring and promoting the adoption of efficient and sustainable agriculture, forestry, and other resource conservation policies, programs, technologies, and practices. There were 74 research projects conducted on environmental programs. 30.2 Extension professionals were devoted to the program who made 419,711 educational contacts, 33 publications were written in the environmental area and the adoption rate was estimated at 90 percent in the one survey taken.

### **Research Reports**

Major on-going programs relating to Louisiana's environment quality are conservation tillage programs, especially in rice, cotton, and other row crops, animal waste management programs, especially poultry litter and dairy manure, and BMP development.

Conservation tillage with planted and natural vegetation (sometimes called stale - seed bed system) has been developed by LAES scientists and has been widely adapted by growers. Conservation tillage research for rice is making good progress and is a very critical program due to the need to change traditional "water working" of rice field to improve water quality.

Poultry litter management programs are defining the limits of sustained application to pastures without saturating the soil profile with phosphorus and creating water quality problems. Also, the fertility value of poultry litter is being better defined, especially in southern pine plantations. Dairy waste management research is geared toward the identification of the origins of coliform bacteria used as indicator organisms and quantifying runoff and water quality in extensive grazing systems.

Finally, LAES scientists have teamed with LCES specialists to produce a series of BMP guides based on research findings and NRCS practices. These guides are being used in statewide extension education activities.

### **Extension Reports**

Significant accomplishments include:

- 600 natural resource professionals, loggers, and landowners from four states were trained in forest management, growth and yield modeling, managing forest for water quality and wetland forest management.
- Establishment of 18 parish forest landowners associations that meet regularly to learn about forest management and ecology.
- Improvement of waste management and dead bird disposal was taught to poultry producers.

- Louisiana smoke management guidelines were developed for sugarcane harvesting, 1,375 growers were certified as prescribed burners.
- Seven best management practice publications were developed to improve the waste management and water quality of Louisiana.
- 20,010 people were trained in methods used to reduce run off from subdivisions in cities, 163 people surveyed indicated they are adopting the recommended practices to reduce loadings in urban storm water.
- 1,436 teachers were trained to conduct lessons dealing, with non-point source water pollution.
- A composting training school was developed in which 26 participants from nine states completed a four and one-half day course on large scale composting.
- Training was conducted for 200 poultry producers in the safe utilization of poultry litter.
- Training on energy conservation was held in 66 public school districts resulting in 10 to 20 percent energy savings for school districts.
- Training and certification of 3,000 to 4,000 pesticide applicators in Arkansas, Mississippi and Louisiana was conducted.

The Extension funding for Goal 4 is estimated at \$1,645,900 from all sources. The federal portion of Goal 4 was \$427,934. The portion that is attributable to multi-state activity is \$160,711 and the multi-functional efforts associated with Goal 4 is \$636,015.

**GOAL 4**  
**EXTENSION SUMMARIES**

## WETLANDS RESTORATION

1. Federal Goal 4
2. Key Theme - Wetlands Restoration
3. Key Impacts

The program specialist worked with local, state, and federal governments, ngo's and individual citizens on a variety of programs and projects. The primary focus of the work in wetland restoration with adult and youth audiences pertained to wetland functions and values, wetland delineation, wetland plant materials hypoxia/water quality, fisheries ingress and egress in coastal wetland hydrologic units, and fisheries impacts of fresh water diversions. The specialist published a quarterly newsletter titled "The Louisiana Wetland News" and produced and/or contributed to multiple outreach oriented materials (fact sheets, videos, CD-ROMs, web sites), six youth education camps, and over 25 oral/PowerPoint presentations. Additionally, the program specialist maintained active participation on various committees involved in wetland restoration, including: the Barataria-Terrebonne National Estuary Management Programs' Management Conference, the BTNEP Scientific Advisory Committee, Louisiana Department of Natural Resources' Atchafalaya Basin Program Policy Committee, USDA/NRCS State Wetlands Advisory Committee Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) Public Outreach Committee and Citizens Participation Group, NOAA Coastal Restoration Network, Extension Education/Electronic Communication Group, Louisiana Wetland Plant Materials Advisory Committee, Mermentau River Basin Water Resources Committee.

4. Benefits to Clientele

Coastal residents became more aware of the functions and values of wetlands and the associated local, state, and federal policies which govern the conservation and restoration of these resources in Louisiana. Entrepreneurs learned more about the status and potential development of ancillary restoration industries such as wetland mitigation banking and wetland plant nursery production. The final version of the Coast 2050 strategic conservation document was utilized to increase public awareness of the state's coastal land loss dilemma and to illustrate specific strategies for abating deterioration and land conservation value of urban wetlands and the state and federal permitting process regulating their activities. Agricultural and fisheries -related stakeholders gained increased appreciation for the environmental and economic realities facing each group. In cooperation with the BTNEP, citizens gained greater understanding of estuary health issues related to water quality and biological productivity. Youth gained knowledge and understanding of wetlands functions and values, marine and estuarine science and productivity, natural resource management and policy, and the environmental and economic issues currently Louisiana in our effort to abate coastal landscape loss. As evidenced by exit surveys at the Marsh Maneuvers Coastal Education Camp, 4-H students also gained an increased appreciation for the Louisiana's estuarine ecosystems. Many of these youth state that they had never seen or heard about this unique portion of our state.

5. Source of Funds: Smith Lever 3b&c
6. Scope of Impact

A total of 3.3 FTEs of professional effort was expended on the coastal and wetland resources education program. This effort was divided between adult work (2.8 FTEs, 17,025 contacts) and youth work (0.5 FTEs, 5,010 contacts). Based on a FTE cost of \$54,500, the total cost of the program was \$179,850. Of the total professional effort, 90% (2.97 FTEs) was expended in actual teaching, and 20% (0.33 FTEs) in preparation, travel and other support activities.

### **AQUACULTURE, SUSTAINABLE AGRICULTURE, BIOTECHNOLOGY**

1. Federal Goal 4
2. Key Theme - Aquaculture, Sustainable agriculture, Biotechnology
3. Key Impacts

As part of a residual project from the program specialist's doctoral research, three technical publications were completed on topics related to aquaculture, sustainability, and aquatic biotechnology. The publication, *Developing Consensus Indicators of Sustainability for Southeastern United States Aquaculture*, was submitted and accepted for publication as an LAES bulletin. This research documents the results of an iterative, twelve -state delphi survey of aquaculture stakeholders in the Southeast United States which resulted in the development of 31 sustainability indicators along various economic, environmental and social horizons.

Two additional publications were completed in cooperation with Dr. Terrance Tiersch, LSU Aquaculture Research Station. These publications focus on economic considerations associated with the production and marketing of an application of biotechnology in for aquaculture and fisheries management. "Economics and Marketing" was published as a chapter in Cryopreservation in Aquatic Species, Tiersch and Mazik eds, World Aquaculture Society. The journal article, "Cost analysis for integrating cryopreservation into existing fish hatcheries" appeared in the spring 2001 issue of the Journal of the World Aquaculture Society.

4. Benefits to Clientele

Non-parametric statistic analyses of survey data demonstrated increasing levels of consensus across disciplinary categories, respondent groups, and indicators. A companion publication (in preparation) details the structural and mathematical integration of these parameters into a Multi-criteria Index of Delphi-Assessed Sustainability (MIDAS). The MIDAS model provides a systematic approach for constructing a multi-stakeholder, consensus-based method for sustainability assessment of agricultural commodities. Additionally, the program specialist has begun utilizing a MIDAS conceptual framework to address resource sustainability issues related to coastal and inland wetland conservation and restoration. Preliminary studies of MIDAS with

wetland-based applications are under on-going evaluation in cooperation with Dr. Richard Kazmierczak, Associate Professor, Department of Agricultural Economics and Agribusiness.

Results of the aquatic biotechnology assessment revealed that costs associated with the cryopreserved gametes of aquatic species vary dramatically according to scale, application, and institutional arrangements. Artificial insemination has yet similar commercial applications for aquatic species are only recently emerging. By documenting the se cost and benefits, public and private decision-makers have become more capable of determining the feasibility of this technology under various investment scenarios.

5. Source of Funds: Smith-Lever 3b&c

6. Scope of Impact

A total of .5 FTEs of professional effort was expended on the research related to aquaculture sustainability and biotechnology. Based on a FTE cost of \$54,500, the total cost of the program was \$27,250. Of the total professional effort, 90% (.45 FTEs) was expended in actual research, and 10% (0.05 FTEs) in preparation, travel and other support activities.

## **POULTRY**

1. Federal Goal 4

2. Key Theme - Agricultural Waste Management

3. In meetings with poultry producer shareholders, problems with litter and dead bird management, EPA regulations and general management practices were identified. Also, various problems in the processing portion of the industry have identified by meetings with complex managers. A poultry BMP (Best Management Practices) publication was developed and released. Relationships with the state regulatory agencies and integrators have been developed. Meetings with producers to explain and demonstrate proper litter and dead bird management practices were held. A program of On Demand response to processing questions is in place.

4. Producers are improving their waste management and dead bird disposal practices. Producers are improving their awareness of EPA regulations and management practices. Producers are improving overall management practices.

5. Source of Funds – Smith Leaver 3b&c

6. Scope of Impact-some of the ideas and material for these programs are the result of attendance at the International Poultry Scientific Forum and the International Poultry Exposition head in Atlanta, GA; National Poultry Waste Management Symposium at Ocean City, Maryland and World's Poultry Congress, Montreal, Canada.



40% of the program is a result of these meetings and materials.  
.27 FTEs were devoted to this effort for a value of \$14,715.  
\$5,886 were the result of multi-state work.

Researchers and extension specialists collaborated on the development and training of agents and producers for a 100% multi-functional effort.  
.27 FTEs of adult work valued at \$14,715 were a result of these activities.  
\$14,715 were the result of multi-functional effort.

## AIR QUALITY

1. Federal Goal 4
2. Key theme - Air Quality
  1. Prescribed burning as a harvest management tool in sugarcane is a widely used practice. There are numerous environmental and public issues associated with this practice. In response, a voluntary smoke and ash management program to assist growers in addressing these issues has been instituted. Additionally a number of research projects are under way to address possible remedies to cane burning. Smoke and ash management can be defined as conducting a prescribed burn during recommended weather conditions using burning techniques to lessen the impact of smoke and ash on the environment, public health and welfare. Application of these guidelines minimizes concentrations of smoke and ash in sensitive areas and assists in maintaining air quality standards. The Certified Prescribed Burn Manager (CPBM) program is administered by the Louisiana Department of Agriculture and Forestry. The Louisiana Department of Agriculture and Forestry (LDAF), the American Sugar Cane League and the LSU AgCenter developed the *Louisiana Smoke Management Guidelines for Sugarcane Harvesting* and the LSU AgCenter provided training and program information for growers. The main collaborators were the Louisiana Department of Agriculture and Forestry, the American Sugar Cane League and the LSU AgCenter who acknowledge the additional assistance provided by the Office of Soil and Water, (LDAF) and Forestry, the Office of Forestry, (LDAF), the Environmental Science Division, Louisiana Cooperative Extension Service, the Florida Sugar Cane League, the USDA Forest Service and the National Weather Service in preparing the program guidelines.
  2. There were nine training sessions during the summer of 2000 in the 23 parish sugarcane growing area. As a result of the trainings, 1,375 growers were certified as Prescribed Burners. During this year's harvest season, there was a 90% decrease in smoke and ash complaints to the Department of Agriculture. The decrease in complaints have been directly attributed to the smoke management trainings.
  3. Source of funds - Smith-Lever 3b+c
  4. Scope of impact - state only

## **YARD WASTE/COMPOSTING**

1. Federal Goal 4
2. Key theme - Yard Waste/Composting
1. The solid waste disposal problem is one of growing concern to agriculture, municipal officials and corporate managers. Because of this concern, the LSU Agricultural Center's 8-acre Organic Recycling Facility was established. This new initiative is now complete and includes a new eighty-five hundred square foot building and the composting site for research and training in handling, processing and using solid waste. The new building provides storage for equipment, a shop area, and space for the organic degradation research laboratory (ODRL). The ODRL acquisition has provided the Ag Center with a state-of-the-art testing/research laboratory for evaluating the degradation of organic materials. It will allow research and teaching on composting of new and different feed stocks under controlled conditions and on bioremediation of hazardous wastes and contaminated soils in a safe environment. This year, the Compost Facility Operator Training course was conducted in May and October and has become the foremost school of its type in the country.
2. As a result of the trainings, 26 participants from nine states completed the four and one half day course on large scale composting. This course should prepare participants for their state certification if required.
3. Source of funds - Smith-Lever 3b+c
4. Scope of impact - state only

## **SUSTAINABLE AGRICULTURE**

1. Federal Goal: 4
2. Key Theme: Sustainable Agriculture
3. Program: In meetings with the Southern Region Professional Development Program, Southern Ag Worker Group, Organic Gardeners, small farmers, BREADA, other agricultural and governmental agencies and scientists, it was determined that better management of resources and a holistic approach to agriculture would improve our potential for a continued supply of safe, economical food. Training and educational meetings have provided extension agents, master gardeners, farmers, schoolteachers, and homeowners with information and ideas to improve technique and management skills to be more efficient and effective in farming and gardening. The LSU AgCenter is continually evaluating new and different ideas to improve the agricultural outlook. The LSU AgCenter, Southern University, University of Louisiana at Lafayette, Breda, Southern Mutual Help Association, Organic Farmers, Louisiana Farm Bureau, Regions Bank, Master Gardeners, Louisiana Department of Agriculture and Forestry, New Orleans Agriculture

Coalition, high school agriculture teachers, Louisiana Forestry Association, farmers, and homeowners have collaborated on the program.

4. **Impact:** There has been increased interest in small farms, farmers markets, and composting for better soil management. There has been a reduction in the use of pesticides through scouting and the use of threshold.

5. Source of Funds: SARE

6. **Scope of Impact:** Program ideas are presented at regional training and local advisory meetings with Breda, organic farmers, Southern Ag Workers Group, agent advisory committees, and farmers. One hundred percent of the training program are the results of their meetings. Extension personal and researchers collaborated on the development of the program and devoted 3.5 FTE=s to the program with a multifunctional effort of  $(100\% \times 2 \text{ FTE=s} \times \$54,500) = \$109,000$ .

2.2 FTE's were devoted to the program with a multi-state effort of  $(50\% \times 2.2 \text{ FTE's} \times \$54,500) = \$59,950$ .

### **BEST MANAGEMENT PRACTICES**

1. **Federal Goal:** 4

2. **Key Theme:** Water Quality

3. **Program:** TMDLs are being developed for most of Louisiana's streams and stream segments. Agriculture is a contributor to the impairment of these surface waters. In response to agriculture producers in Louisiana, commodity specific Best Management Practices (BMPs) publications were developed in an effort to educate producers on conservation practices they could use to reduce production agriculture's contribution to these impaired waterways. Working with representatives from the agricultural commodity groups, the Natural Resources Conservation Service (NRCS), the Louisiana Department of Environmental Quality (LDEQ), the Louisiana Farm Bureau Federation (LFBF) and the Louisiana Department of Agriculture and Forestry (LDAF), the LSU AgCenter has taken the lead in assembling a group of Best Management Practices (BMPs) publications for each agricultural commodity in Louisiana.

4. **Impact:** BMP publications and quantity printed to date include: Rice (4000), Poultry (4000), Dairy (750), Agronomic Crops (5000), Sugarcane (3000), Swine (1500) and Sweet Potatoes (750). These publications were distributed at grower meetings, commodity conferences and workshops. These BMP publications are available at parish extension offices state - wide.

5. **Source of Funds:** Smith-Lever 3b+c

6. **Scope of Impact:** Information and guidance on BMPs to be used by agricultural producers were derived from the Southern Region Water Quality Initiative. Fifty percent of document development is a result of this information and guidance. 2 FTE's were devoted to the program with a total multi-state effort of  $(50\% \times 2 \times \$54,500) = \$54,500$ . Researchers and Extension specialists collaborated on the development of these publications for a 100% multi-functional effort  $(100\% \times 2.9 \times \$54,500) = \$158,050$ .

## WATER QUALITY

1. **Federal Goal:** 4
2. **Key Theme:** Water Quality
3. **Program:** An educational program directed towards urban homeowners to reduce levels of nutrients, sediment, hazardous materials and bacteria in runoff was developed and presented in Monroe and Baton Rouge. The program consisted of on-site demonstrations, printed educational materials and educational meetings. A mobile self-contained urban stormwater exhibit was developed and continues to be used in educational efforts. Water quality data collected from various land use areas in Baton Rouge indicates that levels of nutrients and fecal coliform bacteria are exceptionally high in runoff from subdivisions. On site reductions in these loadings could reduce major expenditures for treating stormwater. Nine meetings were conducted in Baton Rouge and five meetings were conducted in Monroe to deliver these educational materials. A total of 20,010 people attended these meetings.

The dead zone or Hypoxic area in the Gulf of Mexico has received a great deal of publicity and attention in recent years. Nitrogen in the Mississippi river is currently considered to be the major cause of this low oxygen area. Initial reports have placed agriculture as the major contributor of this nitrogen, however, review of the data used in this analysis has revealed that up to 50% of this nitrogen load may come from urban point and nonpoint sources. An educational program directed toward all audiences has been developed to point out the contributing role of both agriculture and urban sources to this problem.

4. **Impact:** As a result of the urban nonpoint training 163 people have indicated that they were interested in adopting recommended practices to reduce loadings in urban stormwater. Presentations at national and local meetings have resulted in incorporation of the contributing role of urban nonpoint and point sources in the federally directed effort to reduce the Hypoxia zone in the Gulf of Mexico. Agricultural producers and organizations are initiating efforts through Best Management Practices (BMPs) to reduce agricultural contributions to the nitrogen load.
5. **Source of Funds:** Smith-Lever 3d and Environmental Protection Agency 319.
6. **Scope of Impact:** Approximately 75% of the ideas, methods and materials for the urban nonpoint programs were acquired at or developed as a result of attending the Southern Region Water Quality Conference or adapted from information published by other cooperative extension

services. 3.2 FTE's were devoted to the program with a total multi-state effort of (75% x 3.2 x \$54,500) = \$130,800.

### **NONPOINT SOURCE WATER QUALITY**

1. **Federal Goal:** 4
2. **Key Theme:** Water Quality
3. **Program:** The purpose of this program was to educate K-12 teachers, Extension agents, volunteer leaders and teen leaders in Louisiana on nonpoint source water pollution. It was designed to provide them with the training to enable them to include nonpoint source water pollution topics and best management practices in their environmental education activities. Sixty-one water quality educational workshops were conducted utilizing surface and groundwater models to graphically describe where nonpoint source pollution originates and methods to employ to reduce it.
4. **Impact:** As a result of this program, 1,436 educators received hands-on experience in conducting lessons dealing with nonpoint source water pollution. A groundwater model and a surface water model along with lesson plans and educational kits are located in 22 county extension offices for use by staff and teachers and during camps.
5. **Source of Funds:** Smith-Lever 3b+c
6. **Scope of Impact:** The materials for the program were developed and modified through experience with the lessons. Four sets of lesson plans were adapted for use by Louisiana teachers from science programs of California, Oklahoma and Florida, and from the Southern Region Water Quality program. Supplementary materials were developed and distributed. 100% of this program which involved 3.4 FTE's was the result of this multi state effort. (100% x 3.4 x \$54,500) = \$185,300

### **COMPREHENSIVE NUTRIENT MANAGEMENT PLANS**

1. **Federal Goal:** 4
2. **Key Theme:** Nutrient Management
3. **Program:** With the impending TMDL issues and the proposed changes to the CAFO regulations, nutrient management and the development of Comprehensive Nutrient Management Plans (CNMPs) by poultry producers is a major concern to Louisiana. A program was initiated, with Conagra's support, to educate poultry producers about CNMPs and their relevance to poultry litter applications to pastures. Ten meetings with poultry producers were held to explain what CNMPs were and their impact on future litter applications. The Louisiana Department of Environmental Quality (LDEQ), Natural Resources Conservation Service (NRCS), Louisiana

Farm Bureau Federation (LDAF), Louisiana Department of Agriculture (LDAF) and Conagra assisted with the trainings.

4. **Impact:** As a result of the trainings, 200 poultry producers were instructed on what CNMPs were, their impact on their operations and what they would need to do prior to development of their individual CNMPs.
5. **Source of Funds:** Smith-Lever 3b+c
6. **Scope of Impact:** Information on CNMP regulations and educational materials from participating states concerning CNMP development are a result of the Animal Waste Initiative: Promoting Environmental Stewardship Workshop held in Kansas City, Missouri on October 17 - 19, 1999. Fifty percent of the program is a result of this meeting and materials. 2 FTE's were devoted to the program with a total multi-state effort of  $(50\% \times 2 \times \$54,500) = \$54,500$ . Researchers and Extension specialists collaborated on the development and training of producers for a 100% multi-functional effort  $(100\% \times 2.5 \times \$54,500) = \$136,250$ .

## **ENERGY CONSERVATION**

1. **Federal Goal:** 4
2. **Key theme:** Energy Conservation
3. **Program:** The Louisiana School Energy Management Program was a three year project to serve the school systems in the state with the necessary technical information to enable them to make wise decisions regarding maintenance and operations of school facilities. This program built on and addressed the issues that had been identified in previous school programs. Clientele with significant input into the development of the program were school facility managers, principals, food service supervisors, and superintendents. The program targeted the 66 public school districts in the state with energy management and facility management information. A variety of educational outreach methods were used, since the audience was comprised of people with varied backgrounds, educational levels and areas of responsibility within the school systems. Targeted audiences included school board members, school administrators, principals, faculty, maintenance supervisors, food service managers and technicians, and custodians. Four newsletters were developed and distributed to over 300 individuals, a series of fact sheets was developed, 10 workshops and in-service trainings were conducted, and an energy management plan was developed for one parish. At the request of several parish school facility managers, the series of fact sheets was modified and compiled into a training manual for each parish to use with the faculty and staff. Collaborators in this program include the Louisiana Department of Natural Resources, LSU AgCenter Cooperative Extension Service, parish school boards, and the Louisiana School Facility Managers Association.
4. **Impact:** Using conservative projections based upon earlier studies indicating that a 10-20% energy savings could be realized with a maintenance program and an additional 5-10% reduction

could be achieved through a change in operating procedures, a potential energy savings of 2,622,000,000 BTUs can be projected as a result of this program. One school system realized a savings of \$46,964 in its first year's involvement in the program.

5. **Source of Funds:** Louisiana Department of Natural Resources - PVE Funds
6. **Scope of Impact:** This project was a multi-functional project with Extension and the Louisiana Department of Natural Resources providing recommendations, publications, and training to the participants for a 100% effort ( $100\% \times 1.25 \text{ FTE's} \times 54,500$ ) = \$68,125.

### e Applicator Training

1. **Federal Goal:** 4
2. **Key Theme:** Pesticide Application
3. **Program:** Meetings/Conferences/Workshops were held throughout the state for both commercial and private pesticide applicators to allow them to become certified or to maintain their certification.
4. **Impact:** As a result of this program approximately 3000 – 4000 pesticide applicators received this educational program.
5. **Source of Funds:** EPA Pass-Through
6. **Scope of Impact:** This program has been conducted since about 1975 and serves all pesticide users in Louisiana. One hundred percent of the educational materials used in this program are the result of a partnership with Arkansas and Mississippi Extension and attendance at various regional and national meetings. Some materials were developed in previous years and are reprinted or revised as needed. Three multi-state meetings were conducted (with Arkansas & Mississippi) involving approximately 100 Louisiana residents. These three states are working together to develop an Ornamental & Turf Pest Control Study Guide. Approximately 100% of 3.6 FTE was devoted to this multi-state effort, ( $100\% \times 3.6 \times 54500$ ) = \$196,200.

### IPM OF SWEET POTATOES

- a. **Federal Goal:** 4
- b. **Key Theme:** Integrated Pest Management
- c. **Program:** Training county agents and growers to recognize insect pests and sample for their presence before applying chemical controls. This program improves IPM practices and reduces pesticide applications. Five meetings were held with growers in different areas of the state to explain IPM practices and to teach them insect identification and recommend proper use of

labeled insecticides. Five field demonstration plots were used to demonstrate effectiveness of insecticides and to evaluate new chemicals.

- d. **Impact:** County agents in 4 parishes and Sweetpotato growers expressed more familiarities with insect pest identification and a better understanding of IPM practices, including cultural controls. There has been better timing of insecticide applications and better use of new chemicals, Spintor and Confirm, to control foliar feeding Lepidoptera.
- e. **Source of Funds:** Smith-Lever 3b+c.
- f. **Scope of Impact:** Ideas were generated by meeting with Parish Advisory Boards, Sweetpotato Advisory Board and Sweetpotato Parish Associations. One hundred percent of the program is the result of these local, state and regional meetings, including the annual Sweetpotato Collaborators Meeting. The portion of this work that can be allocated to participation in regional and national meetings is approximately 50%. The FTE's devoted to the program equal 0.90 for a total multi-state effort of  $(50\% \times 0.9 \times \$54,500) = \$24,525$ . Research and extension specialists collaborated on the development and training of agents and growers for a 100% multi-functional effort  $(100\% \times 2.0 \times 54,500) = \$109,000$ .



**GOAL 4**  
**RESEARCHSUMMARIES**

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

Water Quality Impact, Control and Treatment of Dairy Waste Point and Nonpoint Source Pollutants.

Drapcho, C.M., Beatty, J.F., Achberger, E.C. Louisiana State University AgCenter

- a) A majority of Louisiana's milk is produced in Washington, Tangipahoa and St. Helena Parishes. Since 1988, a health advisory limiting primary contact recreation, such as swimming, has been in place for 79 miles of the Tangipahoa River due to elevated fecal coliform (FC) levels. The Louisiana Department of Environmental Quality (LDEQ) identified runoff from confinement areas of dairy farms as one of three potential sources of FC contamination to the river. This research will provide information on the treatment effectiveness of no-discharge anaerobic/aerobic lagoon systems used for dairy wastewater treatment in Louisiana and on the decay, regrowth and transport of FC to surface waters due to grazing of dairy cattle.

A watershed-scale study is being conducted to monitor surface water from both forested land containing no livestock and from grazed pastures at the LSU AgCenter Southeast Research Station dairy facility. A field-scale study was also conducted on the station to investigate the transport and decay of FC bacteria from grazed dairy pastures. Manure was applied to pasture plots to simulate the manure deposited by grazing cattle. Other plots served as controls. Surface water runoff was collected after simulated rainfall. In addition, a laboratory study was conducted to determine the decay constant for FC bacteria in dairy wastewater under anaerobic conditions. Four replicate 1-L batch reactors were filled with dairy wastewater and operated under anaerobic conditions at four temperatures ranging from 18 to 32 °C, and FC counts were measured daily over the course of 2 - 3 weeks.

Results from the watershed study revealed that the FC levels in surface runoff from timberland with no livestock frequently exceeded the standard set by LDEQ for swimming and other primary contact recreation. FC counts in surface runoff from grazed pastures routinely exceeded the primary standard by a factor of 10 or more. Results from the field-scale study indicated the following: 1) FC counts in runoff from manure-applied plots declined with each rainfall event, but still exceeded the primary standard after two weeks and three 15-minute, 6.2 cm/hr rainfall events; 2) the percentage of the FC count in surface runoff from manure-applied pastures that was due to *E. coli*, the primary FC in dairy waste, decreased with each rainfall event, with extremes of 90% for the first rainfall after manure application to 10% for last rainfall; 3) surface runoff from control plots contained microorganisms which manifested as FC colonies in numbers that exceeded the primary standard; and 4) the percentage of the FC count attributable to *E. coli* in surface runoff from control plots was typically less than 5%. In the lab study, the mean fecal coliform decay constant at 20 °C in the anaerobic dairy wastewater environment was determined to be  $0.0062 \text{ hr}^{-1}$ . The dimensionless temperature correction factor ( $q$ ) used in a modified Arrhenius expression was determined to be equal to 1.1420. This information can be used to predict FC concentrations in dairy waste environments and to aid in the design of waste treatment systems to reduce the FC concentration.

USDA Special Grant, Hatch funds, State funds

Multi-State

## Key Theme - (Water Quality) BMPs and Nonpoint Source

- a. AgCenter scientists are developing best management practices (BMPs) which minimizes losses of applied agricultural chemicals from fields grown to sugarcane in south Louisiana. Ongoing research focuses on evaluating the effectiveness of pesticides and nutrient management practices on runoff losses of atrazine, metribuzin, and fertilizer nutrients in surface run off from sugarcane fields in South Louisiana. The selected BMPs compared conventional practices with practices recommended through USDA-NRCS and the Louisiana Cooperative Extension Service includes; (i) integrated pest management, (ii) nutrient management, and (iii) cover crops. The treatments chosen in this effort were such that different amounts and/or methods of applications of fertilizers and pesticides were implemented. Three types of chemical applications were implemented; a full broadcast (high treatment), a 36-inch band application (conventional or standard treatment), and a 24-inch band application (low treatment). Cumulative amounts of chemical loss in runoff waters were highest for full broadcast (high treatment) and lowest for the 24-inch band treatment. These data are necessary to quantify water quality benefits and effectiveness of best management practices (BMPs) on sugarcane on reducing nonpoint source pollutants from herbicide, and insecticide applications.
- b. Based on data for an entire sugarcane cycle (three growing seasons followed by one fallow year), we found that use of broadcast application of atrazine is not recommended due to excessive losses in runoff water. We recommend the use of band application of 24 inches (60 cm) on the rows as a BMP for sugarcane. During the winter months, atrazine application for south Louisiana should be avoided. For metribuzin, use of band application of 36 inches (90 cm) or 24 inches (60 cm) on sugarcane rows is recommended. Use of broadcast application is not recommended due to excessive losses of metribuzin in runoff water. Planting of wheat as a winter cover crop during the fourth year resulted in increased soil as well as nitrogen losses compared to the fallow treatment. We do not recommend the planting of wheat as in the fourth year as an MPB. Soybean as a cover during the spring and summer months during the fourth year provided the best water quality among all treatments. We recommend soybean planting during the fourth year as the best BMP.
- c. Source of Federal Funds: Hatch funds, Multi-State funds, State funds, Louisiana DEQ grants

Scope of Impact - Multi-State

**Key Theme - Alternative Natural Resource Management Practices for Private Lands**

- a. An extensive land base, plentiful water, a long growing season, and existing manufacturing facilities provide an excellent foundation for rural economic development. Land management practices must integrate natural resource conservation and profitable commodity production. Successful rural development requires land use policies that sustain ecosystems capable of maintaining local economic stability. A land use management system that produces marketable commodities and maintains long-term land productivity will encourage enterprise diversification. This integrated approach could be used to develop landowner production alliances providing raw materials to support vertically integrated production systems. The long-term goal of this project is to evaluate the impact of small farm management and natural resource conservation on rural economic development. Three farm types, open pasture grazing, silvopasture grazing, and timber production, will be established at a study site in northwest Louisiana. Forage and timber management practices will be applied to optimize commercial livestock and timber production on each farm. Forage, livestock and timber yield and economic responses will be monitored to evaluate the cost efficiency of each farm type. Data will be used to validate the U. S. Agroforestry Estate Model. The project also monitors the impact of small farm management on soil nutrient recycling, water quality impairment, changes in plant and animal species abundance and diversity, and changes in soil properties. Three stakeholder research and demonstration farms will be monitored for model validation and environmental impact. National Agroforestry Center will provide technical assistance of model validation.
- b. Impact - Scientific, economic, and field data will be compiled to provide immediate and continuous source of updated knowledge to educate relevant stakeholders and the general public. Land use management publications and educational programs will be developed and disseminated through State Cooperative Extension Services. Economic development models will be created to assist rural communities in planning and establishing commercial commodity production systems. The research site and field demonstration areas will be used as teaching laboratories for undergraduate courses, secondary education life science courses, and field tours for elementary education classes. Economic models will assist rural communities in developing small farm alliances that incorporate forage, livestock, and timber management practices to produce marketable levels of fiber, food, and fuel.
- c. Source of Federal Funds - NRCS Partnership funds, USDA Special Grant funds, State funds

Scope of Impact - Multi-State (Western Gulf Coastal Plain)

## **Key Theme – Water Quality Improvement**

- a. \_\_ Over a period of three years, personnel in the School of Forestry, Wildlife, and Fisheries developed a series of 12 workshops for forest landowners, forest managers, and loggers throughout the state to provide a background for implementation of forest BMPs to protect water quality in forested streams. Each workshop examined how streams function, how forestry activities can affect the ecology of adjacent streams, and how implementation of BMPs can help protect riparian habitats, maintain levels of stream organic material, reduce sedimentation, and protect the diversity of resident stream invertebrates and fishes. Additional presentations covered EPA regulation of water quality, and federal and state programs for protection of wetlands and other sensitive habitats. Each workshop included a field trip to a nearby forested stream habitat for demonstration of various BMP activities, and collection of fishes and invertebrates as well as water quality data. Cooperating Institutions/Organizations: Louisiana Cooperative Extension Service, Louisiana Forestry Association, Louisiana Office of Forestry, Louisiana Department of Environmental Quality, Environmental Protection Agency, Natural Resource Conservation Service, Forest Service, Louisiana Forest Stewardship Program.
  
- b. \_\_ Impact – Forestry is the number one renewable resource industry in Louisiana, with an economic impact of nearly \$4.4 billion to the Louisiana economy. However, sedimentation and other water quality impacts from forestry-related activities have been identified in many of Louisiana's streams that are currently classified as impaired. It is vitally important that protection of water quality become an important issue for Louisiana landowners and loggers, over 400 of which attended the workshops. Non-implementation of federal regulatory programs will depend on the success of the current voluntary BMP program in protecting water quality in forested streams, so it is in the best interest of all people involved in the Louisiana timber industry to help maintain the integrity of riparian forests.
  
- c. \_\_ Source of Federal Funds: McIntire-Stennis funds, Environmental Protection Agency Section 319 program, State funds.

Scope of Impact: Multi-State.

Key Theme- (**Agricultural Waste Management/Water Quality**) Broiler Litter Best Management Practices

- a. Poultry production is the largest animal industry in Louisiana and it is concentrated on hill lands of the north Louisiana Coastal Plain. More than 66,000 tons of broiler litter are produced annually. As a fertilizer source for bermudagrass hay production, broiler litter is more cost effective than any commercial inorganic sources. The State Agricultural Experiment Station researchers are developing “Best Management Practices” for broiler use on pasture land devoted to bermudagrass hay production in the Coastal Plain of north Louisiana. The work involves a holistic approach where the impact of broiler litter use rates on bermudagrass hay production, hay quality to meet protein and mineral requirements of livestock, removal of applied nutrients as broiler litter by harvested hay, and soil nutrient build-up are determined. Rainfall runoff water quality and exiting nutrient loads are also determined in the presence of broiler litter use rates and bermudagrass hay cropping. Runoff water quality is focused on evaluating fecal coliform bacteria, non-metal, light metal, and heavy metal concentrations in waters, and determining the suitability of runoff waters for recreational use and consumption by humans and livestock. Runoff nutrient loading focuses on determining the amount of non-metals, light-metals, and heavy-metals in runoff waters and predicting the impact of these nutrient loads on the water quality of area lakes, streams, and bayous.
- b. Impact - Best Management Practices will assure continued beneficial use of broiler litter on more than 60,000 acres of hill land cropped annually for bermudagrass hay production. Annual application of 8 tons per acre, 17.92 Mg/ha, of broiler litter produced highly acceptable hay yields. Forage met the protein and mineral requirements of most classes of livestock. Fecal coliform levels of exiting runoff waters were not affected by broiler litter use rate. Water quality, non-, light, and heavy metal concentrations, was acceptable for recreational use and/or livestock consumption. Exiting runoff loads had predicted minimal impact on water quality of area lakes.

I. Source of Federal Funds: US-EPA 319 Funds, State funds

Scope of Impact – Regional

## GOAL 5

The LSU AgCenter Goal 5 is to enhance economic opportunities and quality of life among families and communities. Twenty research projects were conducted in the economic development, family life area. Extension devoted 158.9 FTE's and made 1,948,389 educational contacts and published 45 publications in the area of youth development, two in financial management and seven in parenting.

### Research Reports

Rural labor markets have been extensively studied to define the economic attributes that describe employment opportunities in rural and SMSA locations. Attributes important to attracting tourists to rural areas have been evaluated. A study is underway to determine the factors that might predict secondary school dropouts and resulting low educational achievement. Welfare reform and its effects on rural populations is being evaluated through participation in two multi -state research projects.

### Extension Reports

Significant Extension accomplishments include:

- 170 workshops were conducted in 37 parishes that reached 5,410 parents, grandparents, and teen parents. Surveys indicate that approximately 80 percent of them gained knowledge and 75 to 80 percent of them intend to change their behavior.
- Over 400 child care providers were trained in child development and developmentally appropriate practices.
- Sixty-four of sixty-six school districts in the state participated in a character education program which reached 3,192 student trainers, 4,059 teachers, and 147,306 youth. Surveys indicate that much improvement in classroom behavior is a result of the character education lessons, 191 principles reported that 75 percent of the students had shown some improvement in behavior.
- 2,111 youth were introduced to ways to determine and prepare for new and different careers.
- Youth and adults were trained on farm safety, workforce safety, and home safety. Extension personnel conducted 41 meetings, 4 displays, 32 newsletters, 17 mass media pieces and numerous other individual contacts regarding safety on the farm, at home, and in the work place.
- An area wide project was begun to control the formosan subterranean termite in the New Orleans area and there has been a reduction in number of termites in the area compared to outside areas.
- Flood and disasters are a major problem in Louisiana and materials have been developed and presented to the National Disaster Centers and the Association of State Floodplain Managers.



This information is widely distributed in times of disasters and is a great help to clientele of Louisiana.

- A community leadership and development program has been conducted in three parishes this year, approximately 200 rural leaders increased their knowledge of the basic techniques and strategies for community and economic development. Projects resulting from this ten week course continue.
- Extension specialists working with farm service agency borrowers developed a program with 35 hours of classroom instruction to help borrowers understand farm management, farm plans, and develop the technical expertise to become more efficient and productive farmers. In 1999-2000 reporting period, 74 Louisiana farmers completed this course and surveys they indicate that it was a very valuable to them. Most indicated that it has allowed them to stay in business.
- In the strategic planning process, the Louisiana Cooperative Extension Service identified economic development as one of the key concerns of many constituents; therefore, a task force has been developed to address the economic development and materials and projects are currently in the process of being developed.

Approximately 158 Extension FTE's and \$8,660,050 from all sources was spent of Goal 5 programs, of that amount, \$2,251,613 were federal funds; of that amount \$3,837,342 attributable to multi-state activities and \$456,555 is attributable to multi-function activities.

**GOAL 5**  
**EXTENSION SUMMARIES**

## PARENTING

1. **Federal goal:** #5
2. **Key theme:** Parenting
3. **Program:** Lack of parenting skills was identified as a concern by the statewide advisory committee that determined the focus areas. Education in parenting skills is also a requirement for teen mothers receiving welfare assistance. 170 workshops were conducted in 37 parishes reaching 5410 parents, grandparents and teen parents. Audiences have included incarcerated and early release parents, single parents, fathers, pregnant teens, shelter residents, parolees, Head Start families, and the general public.
4. **Impact:** Knowledge Gained
  - ▶ 80.22% of 91 parents report they learned child behaviors that are expected for my child's age
  - ▶ 88.66% of 97 parents report they learned about activities that will help their child's development
  - ▶ 82.05% of 117 parents report they learned the importance of proper nutrition for their child's health and development
  - ▶ 73.26% of 172 parents report they learned parenting skills to nurture children
  - ▶ 80.36% of 56 parents report they learned where to seek further information of my child's development
  - ▶ 76.36% of 110 parents report they learned how to communicate in a positive manner with other members of family
  - ▶ 98.2% of 92 parents report that they learned about activities that will help with their child's development, how to teach about character to their child, and that they would choose activities to help with their child's development

### Intent to change behavior

- ▶ 84.6% of 78 parents report they will use the best recommended child guidance techniques for my child's age
  - ▶ 75.2% of 157 parents report they will provide a safe and healthy home for their child
  - ▶ 89.4% of 85 parents report they will talk with and spend more time with their child)
  - ▶ 83.8% of 99 parents report they will choose activities that will help with their child's development
  - ▶ 68.1% of 116 parents report they will provide a nurturing environment for their child
  - ▶ 76.8% of 95 parents report they will communicate in a positive manner with the other members in their family
5. **Source of Funds:** Smith-Lever Funds and State contract (Children's Trust Fund)
  6. **Scope of Impact:** In FY 2000, 5.5 FTEs were sent on parenting, resulting in 20,238 contacts. Based on a FTE cost of \$54,500, the total cost of the program was \$299,750. Of this effort, \$89,925 or 30% is involved in the acquisition and sharing of information through multi-state

efforts. Contributions from research counterparts included assistance in curriculum development, agent training and presentations to clientele, and amounted to \$58,740 (20%).

## CHILD CARE

1. **Federal Goal # 5**
2. **Key Theme:** Child Care
3. **Program:** Child care providers are required to attend 12 hours of training per year in order for their center to be licensed. Over 400 child care employees, agency directors and others gained knowledge on child development and developmentally appropriate practices by participating in extension sponsored workshops.
4. **Impact:** 400 professional child care workers received training which will enable them to continue working.
5. **Source of funds:** Smith-Lever
6. **Scope of Impact:** In FY 2000, 2.0 FTE's were spent on child care, resulting in 6,392 contacts. Based on a FTE cost of \$54,500, the total cost of the program was \$109,000. Of this effort, \$32,700 or 30% is involved in the acquisition and sharing of information through multi-state efforts.

## FAMILY RESOURCE MANAGEMENT

- q **Federal Goal # 5**
- q **Key Theme:** Family Resource Management
- q **Program:** Research indicates that in the tri-state area of Arkansas, Louisiana and Mississippi, almost one-fifth of all families and one third of children under the age of five live in poverty. The median income of families with children is 76 percent of the national average. Many families are transitioning from welfare to work. Effective management skills can extend limited resources and improve family stability and quality of life. Extension faculty from Arkansas, Louisiana and Mississippi are developing a multi-state educational program for limited resource audiences to learn to manage their available resources to improve their quality of life.
- q **Impact:** Faculty are nearing completion of an eight unit multi-state curriculum teaching concepts of decision making, goal setting, budgeting/spending plans, consumer skills, credit, basic financial services, risk management, savings strategies, employment skills and financial management life skills. Multi-state educational programming materials, in-service training, marketing, and awareness campaigns, publications, and electronic dissemination of information are included.
- q **Source of funds:** FNP and Smith Lever 3b+c

- q **Source of Impact:** In FY 2000, 11.7 FTE's were spent on family resource management, resulting in 140,175 contacts. Based on a FTE cost of \$54,500, the total cost of the program was \$637,650. Of this effort, \$191,295 or 30% is involved in the acquisition and sharing of information through multi-state efforts. Contributions from research counterparts included assistance in curriculum development, agent training and presentations to clientele, and amounted to \$128,040 (20%).

## **CHARACTER/ETHICS EDUCATION**

1. Federal Goal #5
2. Key Theme – Character/ethics education
3. The governor and key legislators identified character education as a major issue. A survey of school districts by the State Education Department identified character education and discipline as a major concern by over two thirds of the school districts. Louisiana 4-H was awarded \$300,000 new dollars, by the State Legislature to develop and implement a character education program statewide.
4. As a result of the development of new curricula and training;
  - 64 of the 66 school districts in the state participated.
  - Conducted 95 trainings reaching 3,192 student trainers and 4,059 teachers
  - In 1999-2000, 44 districts reported reaching 147,306 youth
  - A survey of 735 teachers found “some” to “much improvement” in classroom behavior after the character education lessons were taught.
  - A Survey of 191 principals found 75% “some” to “much improvement” in student behavior after character education lessons were taught.
5. Source of Funds – State Funds

- q **Scope of Impact** – The initial ideas and curriculum was obtained through training provided at the National Collegiate 4-H Conference, Southern Region 4-H Volunteer Forum, and the National Association of 4-H Agents Conference. In addition, Louisiana provided training to other states at a national 4-H character education workshop held in Knoxville, Tennessee. Fifty percent of the program is a result of those meetings and curricula. 60 FTE's devoted 5% of their time to character education resulting in a multi-state effort of (5% x 60 FTE's x \$54,500) \$163,500. This is in addition to the \$300,000 spent on curriculum material and instructors.

## **4-H YOUTH DEVELOPMENT**

1. Federal Goal #5
2. 4-H Youth Development

3. Concern with positive youth development was a major issue of two thirds of the 64 Louisiana parishes participating in local forums. Additional emphasis is being given to the recruitment of volunteer project leaders and more in -depth project learning for 4-H members.
4. In the past year 59,000 youth were involved in project work. The curriculum was developed on a multi state basis.
5. Source of Funds – Smith/Lever
6. At least 20% of all 4-H agent time is devoted to project work and 50% of the project work relates to the project manuals. \$317,000 was spent purchasing project manuals from 4-HCCS. The total multi-state effort is \$1,19,000 (20% x 130 FTE's x 50% effort x 54,500 = \$702,000+ 317,00)

### **WORK FORCE PREPARATION**

1. Federal Goal #5
2. Work Force Preparation
3. The 4-H program collaborated with National 4-H Council and the Southern Region Rural Development Center to develop a web site composed of the best curricula for training youth and volunteers on workforce preparation. Louisiana 4 -H also collaborated with National 4 -H Council to implement a hospitality career program in Jefferson.

The Southern Region State 4-H Staffs collaborated with National 4-H Council and the Southern Rural Development Center to provide training for agents and volunteers on workforce preparation. Curriculum from the National 4 -H Curriculum Cooperative System and Kentucky Extension Service is used by Louisiana 4-H.

Forums held in every Louisiana parish identified workforce preparation as a major issue. Collaboration with the Louisiana School to Work program resulted in District training for 4 -H agents and institution of career camps in three districts.

4. As a result of the new curriculum and training, 2,111 youth were introduced to ways to determine and prepare for their careers.
5. Source of Funds – Smith Lever, National 4-H Council Louisiana School -to- Work
6. 100% of the programming in this area is a direct result of collaborative efforts between Louisiana 4- H and National and multi -state cooperative efforts. Four FTE's were devoted to the programs  $4 \times \$54,000 = \$108,000$

## LEADERSHIP TRAINING AND DEVELOPMENT

1. Federal Goal #5
2. Leadership Training and Development
3. A major emphasis of the Louisiana 4-H Program is the development of leadership in both youth and adults. Research concludes that leadership skills are best developed through practice and application. Members are encouraged to assume some leadership roles within their club. The Illinois 4-H Curriculum “Leadership Skills You Never Outgrow” serves as the leadership project manual.

Adults receive training at the parish, district, state and regional levels. Salaried and volunteer staff attend the Southern Region 4-H volunteer Forum for training ideas. What is learned is then offered to other volunteers in workshops offered at the state, district and parish levels.

4. In the past year, 10,000 adult volunteers received training and support. There were 13,188 youth enrolled in the 4-H Leadership Project. There were 6,114 youth who assumed leadership offices in their clubs, 6,547 youth demonstrated new leadership skills in the past year and 6,607 youth assumed volunteer leadership roles within their parishes.
5. Source of Funds – Smith-Lever and Louisiana 4-H Foundation Funds
6. Volunteer leader Guides from the National 4-H Curriculum Cooperative System cost \$25,000. Training ideas obtained from other states, from the southern region and from national entities impacted all 4-H agents in the state. At least 20% of each agent’s time is devoted to leadership development (20% x 130 x \$54,000) \$1,404,000.

## SAFETY

1. Federal Goal: 5
2. **Key Theme:** Adult and Youth Farm Safety, Workforce Safety, Home Safety
3. **Program:** Safety is always an important issue since it impacts every aspect of life. Meetings with stakeholders identified agriculture safety, highway safety, home safety including lawn and garden equipment and practices and pesticide safety as safety areas which should be addressed since our overall educational program encompasses these activity areas, safety should be a part of these activities, and these activities are particularly prone to accidents or unsafe practices. Collaborators include Progressive Farmer and extension services from Arkansas, Mississippi, Alabama and Texas.

4. **Impact:** A major focus of the safety program was the safe use of pesticides. Accordingly, 34 pesticide certification classes and 25 pesticide safety meetings were held. Mass media was also utilized with articles in newspapers and local magazines. Home safety covering such topics as lead paint, fire, home security, internet safety, first aid and infant/child safety was addressed with 41 meetings with 1318 total participants, 4 displays seen by 1557 adults, 32 newsletter articles and 17 mass media pieces (radio and newspaper). 1 meeting exclusively on farm safety was held with 60 attendees, 3 displays of safety with livestock were exhibited at livestock shows and were viewed by 300 adults, 1 brochure on farm safety was distributed to 400 adults and 11 personal contacts dealing solely with farm safety were made. 612 adults received "Coaching the Experienced Driver II", a National Safety Council approved defensive driving course. Outdoor skills such as hunter firearm safety, ATV safety, safety around animals, boating and aquatic safety, insect, sun, and poisonous plants were the subject of 76 meetings attended by 4578 youth. Safety in everyday living both in the home and on the street was the subject of 103 meetings in which 5671 youth were taught topics as varied as electrical safety, 911 usage, latch key safety and Halloween safety. Highway safety topics were taught in meetings and bicycle rodeos to 1610 youth. 35 events were held in which subjects such as proper equipment (emphasis on bicycle helmets) and seat belt usage were covered. Equipment safety, including power tools, electrical hazards and lawn and farm equipment safety was taught at 38 meetings to 1552 youth. First aid was taught at 9 meetings to 590 youth.

e. **Source of Funds:** Smith-Lever 3d

f. **Scope of Impact:** A total of 2.34 FTEs of professional effort was expanded on the safety education program. This effort was divided between adult work (1.33 FTEs, 14167 contacts) and youth work (1.01 FTEs, 28545 contacts). Based on a FTE cost of \$54,500, the total cost of the program was \$125,350. Of the total professional effort, 60% (1.4 FTEs, \$75,210) was developed from national material including 0.1 FTE spent developing regional curriculum on Safety for Fish Farm Workers in cooperation with Arkansas, Mississippi, Alabama and Texas

## FORMOSAN SUBTERRANEAN TERMITE

1. **Federal Goal:** 5

2. **Key Theme:** Promoting Housing Programs

3. Program: In meeting with citizens, legislators, government agencies, and scientists, the Formosan subterranean termite was identified as the most destructive insect in Louisiana attacking structures and live trees. A program was initiated to reduce the numbers of Formosan subterranean termites in the French Quarter and show the effectiveness of area-wide integrated pest management. Nearly all of the properties in 15 blocks in the French Quarter were treated with non-repellent termiticides or baits. Monitoring of the program is continuing. An additional program was initiated to treat public trees in infested areas. Over 100,000 trees have been drilled and treatment attempted. The LSU AgCenter is evaluating the program and the



evaluation is continuing. The LSU AgCenter, University of Hawaii, Florida State University, Texas A & M University, legislators, Louisiana Department of Agriculture and Forestry, Governor's task force, New Orleans Mosquito and Termite Control Board, Agricultural Research Service and citizens have collaborated on the program.

4. **Impact:** There has been a reduction in the number of alates and monitoring stations with termites in the French Quarter. There has been a reduction in the number of infested trees.
5. **Source of Funds:** Louisiana Agriculture Finance Authority and Agricultural Research Service. Funds were appropriated by state and federal legislatures.
6. **Scope of Impact:** The ideas for the program are from meetings with the national Formosan subterranean termite task force, Louisiana Formosan subterranean termite task force, Governor's task force, legislators, and the public. One hundred percent of the French Quarter program is a result of these meetings. 3.2 FTE's were devoted to the program with a total multi-state effort of  $(100\% \times 3.2 \times \$54,500) = \$174,400$ . Extension personnel and researchers collaborated on the development of the tree treating evaluation program for a 100% multi-functional effort  $(100\% \times 2.2 \times \$54,500) = \$119,900$ .

#### **DISASTER EDUCATION: FLOODS**

- A. **Federal Goal:** 5
- B. **Key Theme:** Community Development and Family Resource Management
- C. **Program:** In southeast Louisiana there are over 150,000 properties insured by the National Flood Insurance Program (NFIP); ten percent of them have flooded on more than one occasion. Flooding in most cases is shallow and preventable. Over 80,000 of the insured flood-prone properties in Louisiana were built before flood hazard areas had been identified; these properties are insured at subsidized rates and are a drain on the national flood insurance fund. Yet little has been offered to encourage or assist the owners of these properties to protect their property from flood damage. There is a strong move by the Federal Emergency Management Agency (FEMA) to maintain solvency by removing the insurance subsidy. It is likely the property-owner will be forced financially to protect his/her property.

Extension's three-year flood damage reduction program included agent training, public education and preparation of resources in multiple media. A dedicated website, <http://www.LouisianaFloods.org>, was established as an information source and meeting place for anyone interested in, and affected by, flooding in Louisiana. This site provides information to consumers on flood risk, management and development regulations. It provides links to real-time flood threat information (offered by the National Weather Service and U.S. Geological Survey), in addition to emergency protection, permanent protection and flood recovery information. It also provides "tools" for floodplain and emergency managers and real estate

professionals and researchers. It is unique in its approach and the best source nationally of some of the information provided.

Flood-protection information was prepared as a series of Louisiana Flood Mitigation fact sheets and presented in a 60-minute segmented video called “Ready for Rain: Floodproofing Tips and Techniques”. The fact-sheets and video were developed as part of a funded “Flood Mitigation Agent Training and Public Education Program”. Training for this program included attendance at two national meetings organized by LCES as expansions of our training program: 1) the joint national meeting of the Association of Housing Educators and Extension Disaster Education Network, and 2) the first National Floodproofing Conference of the Association of State Floodplain Managers. Extension agents in 15 southeast Louisiana parishes presented over 30 flood mitigation outreach activities as part of this program. Eleven thousand brochures were mailed to owners of flood-prone properties advising them of our resources. LCES flood-protection educational resources are catalogued in the searchable database of the Extension Disaster Education Network (EDEN).

The AgCenter hosted a 7-site distance learning training for 200 local floodplain management officials on the use of FEMA’s new flood elevation certificate. FEMA and NFIP representatives conducted training.

- D. **Impact:** Even though south Louisiana has experienced drought conditions since these programs were launched, agents receive inquiries from clients. The number of citizens obtaining information through the website has not been assessed, but the website has been promoted by two national organizations in their publications. The floodproofing video has been requested by local access cable. We are well prepared to assist citizens in building appropriately for their flood risk and protecting their flood-prone homes and businesses – when it does start to rain again in Louisiana. We are becoming a resource for floodplain professionals at local, state and national levels. Our website is the “Flood Info” link for the local ABC-affiliate in Baton Rouge.
- E. **Source of Funds:** The Flood Mitigation Agent Training and Public Education Program was funded in part by the Federal Emergency Management Agent Hazard Mitigation Grant Program, which is administered in Louisiana by the Office of Emergency Preparedness. Development of the website and its recovery materials was funded in part by two USDA-CSREES Special Needs grants.
- F. **Scope of Impact:** 30% of this program is a result of information received at the National Floodproofing Conference of the Association of State Floodplain Managers and the joint national meeting of the Association of Housing Educators and Extension Disaster Education Network. 2.5 FTE’s were devoted to this program with a multi-state effort of  $(30\% \times 2.5 \times \$54,500) = \$40,875$ .

70% of the program was the result of multi function collaboration between extension and other state agencies.  $(70\% \times 2.5 \times \$54,500) = \$95,375$ .

## **EXTENSION DISASTER EDUCATION NETWORK**

### 1. **Federal Goal: 5**

- b. **Key themes:** Community Development and Family Resource Management
- c. **Program:** Disasters have become a prominent issue in many American lives in recent years. Typically, it is the immediate impact and response that have attracted attention. However, for disaster reduction programs to be effective, they must also have significant research, education, mitigation, planning, recovery and review components. The Extension System has a long-standing commitment to disaster preparedness and recovery through the USDA Emergency Programs and the Federal Response Plan.

Most Extension educators/agents act locally and have access to materials and expertise that can address typical decisions and issues that disaster victims face. Extension is an obvious, but often under utilized, resource in disaster education. Involvement and experience in dealing with local disasters is the best preparation for responding realistically and effectively to large scale disasters.

The Extension Disaster Education Network (EDEN) was formed originally as a North Central Region committee with the coordinating function located with Illinois Cooperative Extension. At its October 1997 annual meeting the EDEN membership announced their desire to expand to a national network; Louisiana Cooperative Extension Service was invited to join the network and assumed the leadership role in February, 1998. Membership stood at thirty-one states plus Puerto Rico and USDA when the coordinating role was assumed by Missouri in October 2000. The web site, developed originally by Dr. Aaron Ebata at the University of Illinois, now resides on an LSU Agricultural Center server, and Louisiana continues to maintain the website and keep membership records. EDEN's communications are served by a group e-mail system hosted by Michigan State University.

Collaborators: In Louisiana: Gene Baker, Assoc. Vice Chancellor - Information Technology. National EDEN leadership (states): Oregon, North Dakota, South Carolina, Indiana, Wisconsin, Missouri.

- d. **Impact:** Extension educators in the field have Internet access to disaster education materials developed by their states and by other states. Extension educators can obtain immediate help with specific disaster problems using the e-group. Extension is being recognized increasingly for its role in mitigating disasters and has developed positive relationships with the Federal Emergency Management Agency, DOC/NOAA the Natural Hazards Center and the Association of State Floodplain Managers.

- e. **Source of Funds:** Development of the EDEN website and coordination of EDEN activities was funded in part by USDA-CSREES Special Needs funds.
- f. **Scope of Impact:** 100% of this program can be attributed to a multistate effort between the 31 participating states. 1.2 FTE's were devoted to the program by a total multistate effort of (100% x 1.2 x \$54,500).

## COMMUNITY DEVELOPMENT

- a. **Federal Goal:** 5
- b. **Key Theme** - Community Development
- c. Specialist has been involved in a wide array of community economic development activities. Specialist began coordinating community economic development training for agents. Specialist and agents attended week long Community Development Institute (CDI) sponsored by Southern Rural Development Center at Mississippi State University and attended the three day "Sustainable Development: Building Quality Communities" conference in Nashville, Tennessee. A major emphasis in this training is that community economic development must encompass more than industrial development. Specialist has broadened the scope of LCES's community development program to include educational programs and facilitation in industrial development, workforce development, civic participation, social capital development, physical infrastructure development and heritage (natural, historical and cultural resource) development. Specialist chaired Economic Development Initiative Team, dedicated to developing curricula for community economic development training for agents and the public. The team focused on four areas of need as determined by Louisiana Communities Futures Forums: business retention and expansion, workforce preparation, heritage development and leadership. Specialist led an LCES and LAES team in successfully submitting a proposal to the Red River Waterway Commission for a project on sustainable economic development in the Red River parishes.
- d. **Key Impacts** - Agent training and curriculum development in economic development will exponentially increase LCES's capacity to provide community economic development educational programs. One of the goals of this training is to create a network of agents throughout the State that will concentrate on economic development. This training provides agents with an awareness of the importance of economic development for the State of Louisiana. It is designed to make agents the "go-to" people in the field. Four agents attended the in-depth and for college credit CDI training and four agents attended the Sustainable Development Conference. Four specialists, two district agents and 10 agents have been working together on the Economic Development Initiative Team. The Red River Waterway Commission and residents in Red River parishes will benefit from the sustainable development project. Approximately 100

people throughout the State have attended various educational programs on sustainable development.

- e. **Source of Funds** - Smith-Lever 3b&c
- f. **Scope of Impact** - Statewide impact. Ideas, materials and efforts for these programs came from the Southern Rural Development Center at Mississippi State University and from other CES programs across the United States. Approximately 75% of the efforts and materials for these programs were derived from these sources. A total of four FTEs were devoted to agent training and curriculum development/programming for a total multi-state effort of (75% x 4 x \$54,500) for a total of \$163,500. The LCES and LAES collaborated on development and writing of Red River proposal for a 100% multi-functional effort (100% x 1 x \$54,500) for a total of \$54,500.

### **WORKFORCE PREPARATION**

- 1. **Federal Goal 5**
- 2. **Key Theme** - Workforce Preparation
- 3. Specialist worked with national 4-H office, Southern Rural Development Center and Land-Grant faculty from throughout the South on review of workforce preparation curricula for youth. Specialist and others reviewed 20+ curricula and planned Southern Workforce Development Conference for February 2001. Conference is designed to teach community-based workforce preparation to community and youth leaders. National 4-H office will publish a review of curricula, including topics covered and suitability for clientele.
- 4. **Key Impacts** - Community and youth leaders attending conference will learn new and innovative programs for workforce preparation. Although many of the curricula were designed for youth of all ages, some of the curricula are suitable for undereducated adults. Curricula review will enable clientele to adopt curricula that best suit their needs.
- 5. **Source of Funds** - National 4-H Council
- 6. **Scope of Impact** - Multi-state impact. All materials reviewed were derived from CES throughout the United States and the private sector. (100% x .1 FTE x \$54,500) = \$5,450.

### **IMPACT OF CHANGE ON RURAL COMMUNITIES**

- 1. **Federal Goal 5**
- 2. **Key Theme** - Impact of Change on Rural Communities

3. Specialist conducted numerous sessions for the public throughout the State on impact of change on rural communities. Issues addressed included demographic, social and economic changes, and their impacts on rural Louisiana communities. Training focused on economic conditions with Louisiana as well as on the kinds and extent of data available and when to use different sources of data.
4. **Key Impacts** - Approximately 300 community and agricultural leaders participated in training. Participants learned about current socioeconomic conditions and trends in Louisiana. Participants learned how to find these data on the Internet, how to evaluate the data and what types of conclusions can be drawn from these data.
5. **Source of Funds** - Smith-Lever 3b&c
6. **Scope of Impact** - Statewide impact. Specialist derived approximately 50% of material from State datacenters and approximately 50% from USDA for a total multi-state effort of \$6,812.5 (50% x .25 FTE x \$54,500).

## JOBS/EMPLOYMENT

1. **Federal Goal 5**
2. **Key Theme** - Jobs/Employment
3. Specialist wrote and presented training material on welfare reform in the South. Material was presented to a multi-state audience and covers brief history and work requirements, conditions in the South affecting welfare reform, and potential and limitations of welfare reform in the South. Material includes data and state-by-state comparisons on poverty, income transfers, and labor market conditions for each of the Southern states. Five-hundred copies of the report were sent to a wide audience of policy makers, workforce development agencies, academicians and other stakeholders in the South.
4. **Key Impacts**- Clientele throughout the South gained an awareness of welfare reform efforts and the conditions that may affect its success in moving welfare recipients into the workforce. They learned about the conditions in their states that may challenge the successful movement of the poor off welfare roles into gainful employment.
5. **Source of Funds** - Funded by USDA and the Southern Rural Development Center.
6. **Scope of Impact** - Multi-state impact. Specialist derived 50% of the material for this document from USDA sources. The document was sent to clientele throughout the South and the material presented to a multi-state audience. The project resulted in a multi-state effort of \$6,812.5 (50% x .25 FTE x \$54,500).

## TOURISM

1. **Federal Goal 5**
2. **Key Theme** - Tourism
3. Specialist worked with Department of Culture, Recreation and Tourism in several capacities; Atchafalaya Trace Commission, Department of Parks and Recreation in tourism development. Specialist also implemented a visitor infrastructure awareness program adopted from the University of Wisconsin Extension Service. These efforts include educational programs and facilitation in tourism related activities.
4. **Key Impacts** - Specialist and a team of agents working have facilitated meetings for CRT resulting in a major heritage development effort for the Atchafalaya Basin area and in the planning and construction of equestrian trails in the State Park system. With help from LCES, CRT has been able to involve citizen volunteers in these efforts. Both projects are expected to increase tourism and recreational activities in Louisiana significantly. Specialists and agents have also just initiated the First Impressions Louisiana program, and to date approximately 30 residents in a Southwest Louisiana community have been working together to improve the climate for tourism in their parishes.
5. **Source of Funds** - Smith-Lever 3b&c
6. **Scope of Impact** - The First Impressions program was developed in Wisconsin and adapted for use by six other states. Specialist further adapted the program for use in Louisiana. Facilitation skills were derived from Louisiana Communities Futures Forums training. Therefore, the multi-state effort is \$40,875 (100% x .75 FTE x \$54,500).

## COMMUNITY DEVELOPMENT

1. **Federal Goal 5**
2. **Key Theme** Community Development
3. In a series of public forums conducted by LCES, our stakeholders identified community and economic development as the single greatest concern. In response, Extension specialists have developed a package of rural community and economic development programs that will enable rural communities to become more successful in attracting new industry, retaining and expanding existing businesses, creating more jobs and reducing unemployment and underemployment rates. At the Louisiana Community Economic Development seminar, 36 volunteer leaders from rural areas spent 2.5 days in a comprehensive program designed to increase their economic and community development skills. In addition, two parishes (Grant and DeSoto) finished Community

and Economic Development Programs (CLED), a 10 week course designed to develop leaders capable of addressing the issues facing their parishes. A preliminary feasibility study was done for a grain elevator to give local farmers and investors an idea of the benefits and costs of such an enterprise.

4. **Key Impacts** - Parish reports indicate that more than 200 rural leaders increased their knowledge of the basic techniques and strategies of community and economic development (including tourism), received information on how to ascertain the assets and liabilities of their respective communities and became more aware of the leadership skills needed by the leaders of successful communities.
5. **Source of Funds** - Smith-Lever 3b&c
6. **Scope of Impact** - State specific. A total of 4.7 FTEs of professional effort was expended on the community and economic development education program. This effort was divided between adult work (3.9 FTEs, 33,091 contacts) and youth work (.8 FTEs, 30,526 contacts). Based on an FTE cost of \$54,500 the total cost of the program was \$256,150.

## **AGRICULTURAL FINANCIAL MANAGEMENT**

1. **Federal Goal 5**
2. **Key Theme** - Agricultural Financial Management
3. In 1994, Extension Specialists designed and developed the course material to teach agricultural financial management to Farm Service Agency borrowers as mandated by the 1992 Farm Bill. This course consists of 35 hours of class room instruction. The course teaches farmers record keeping; how to construct cash flow statements, net worth statements and income statements. It also teaches farmers how to interpret and use these financial instruments. In addition to the FSA Borrow Training program, Extension specialists have provided training in computerized record keeping and estate planning. Quicken workshops are conducted to provide agricultural producers with a basic understanding of the importance of record keeping and their use in farm planning and financial management. Annual estate planning meetings have been conducted in various parts of the state to provide participants with a basic knowledge of the critical regulations and issues that should be considered when developing plans for distribution of their estates to heirs. No multi-state work..
4. **Key Impacts** - In the 1999-2000 reporting period, 74 Louisiana farmers successfully completed this course thus meeting the educational requirement to be eligible for an FSA loan. Over 700 Louisiana farmers have successfully completed this course since its inception in 1994.



During the reporting period, three Quicken workshops were conducted by Extension specialists throughout the state. Given the nature of the workshops, participation is limited to approximately 10-15 people. In addition to the workshops, individual consultation with producers in setting up and using their Quicken record keeping system was done with three producers.

During the reporting period, one Estate Planning seminar was conducted focusing on the dairy producers in the state. Approximately 45 dairy producers from the major dairy production region of the state attended. A survey of the participants indicated an average response of 4.04 in their level of improvement in knowledge on a scale from one to five with one being no improvement and five being great improvement. The range of responses were from 3.69 to 4.25.

5. **Source of Funds** - Smith-Lever 3b&c
6. **Scope of Impact** - Louisiana specific. No multi-state work was conducted in the area of Agricultural Financial Management. Cooperation from private and other non-government organizations is vital in the success of the estate planning seminars. For the seminar conducted during the reporting period, personnel from the Louisiana Farm Bureau played a large role in conducting and implementing the seminar.

**GOAL 5**  
**RESEARCH SUMMARIES**

## **Key Theme - (Family Resource Management) Consumer/Economic Well-being**

- a. Predictions are that 18 million Americans will need long -term care by the year 2040. Half of all women and a third of all men who are now 65 will spend some time in a nursing home, at an average cost in today's prices of \$40,000. Since the aging population has a high likelihood of needing the services of a nursing home and the services are expensive, it is important that the elderly and their caretakers be informed consumers.

A State research project has been concentrating on strategies that consumers use to choose a nursing home and their subsequent satisfaction. Questionnaires were mailed to the responsible parties in a random sample of nursing homes in Louisiana. Collaboration occurred with personnel of the Louisiana Nursing Home Association and Louisiana Department of Health and Hospitals. Findings have been disseminated through writings in journals and newsletters, presentations to professional and lay audiences, and advising individual consumers.

- f. Impact

Effective decision making in nursing home selection serves to enhance the well -being of consumers of such services. Quality of family life is highly dependent upon effectiveness of both economic and social decisions, and knowledge gained from this research provides a basis for assisting families to improve the quality of life of aging family members.

- I. Sources of Funds - Hatch funds; State funds; Louisiana Nursing Home Association Grant

- I. Scope of Impact - National

Prepared by Forrest A Deseran, Rural Sociology

Key Theme – (Jobs/Employment) Economic Change and Rural Labor Markets

- a. Rural sociologists in the Louisiana Agricultural Experiment station are conducting a series of coordinated studies to analyze the social and economic consequences of the re-organization of work in rural areas. A goal of this research is to determine how individuals and families, as well as communities, can buffer themselves from external economic forces. The research includes three case studies of local labor market areas in Louisiana that are particularly susceptible to social and economic fluctuations: a small industrial diverse community in the southern part of the state, an oyster harvesting occupational community on the Gulf Coast that is experiencing a severe downturn in the industry, and the labor market options for welfare recipients in the Mississippi Delta area of northern Louisiana. In a latter effort, a series of town meetings were held in one parish with the purpose of promoting communication and civic-society building. Findings from the case studies indicate that at the community level, geography, history, and agricultural and industrial diversity all play a role in sustaining local economies. For families and individuals, ethnic identity and social capital were found to be as important as human capital resources in determining labor market opportunities and options. In addition to the case studies and with the help of external funds, the research has produced two major data sets from secondary data sources. One database provides detailed demographic, economic, and social information from 1930 to 1990 for all parishes and counties in the 8-state Gulf of Mexico region. The other database is a unique compilation of social and economic data for 1970 to 1990 which, in addition to a county/parish geography, includes 120 labor market areas and more than 4500 places. Both databases have been issued in CD-ROM format and are available through the Louisiana Population Data Center.

I. Impact: Our understanding of how broad economic fluctuations impact individuals and communities is of particular importance in a state that largely depends upon the fortunes of a volatile gas and oil industry. This research has shown policy makers that labor market decisions are not made solely in terms of maximizing economic benefits; social factors such as ethnic identity and occupational attachment affect family and individual decisions as well. An immediate consequence of the town meetings was the establishment of a position for an economic development specialist that would report to the local police jury. Finally, the databases developed in the research have been used extensively by other researchers and organizations and agencies throughout the state and the country.

I. Source of funds: State funds, Hatch funds, Multi - State funds, Louisiana Sea Grant funds, U.S. Mineral Management Service grants.

I. scope of impact: state, regional, and national

## The Role of Tourism in Economic Development Strategies of Rural Louisiana Communities

### Key Theme - Economic Impact of Rural Tourism

- a. Two areas of interest were addressed under this project. First, previous research (based on 1987 data bases) evaluated alternative methods of estimating the economic impact of tourism in rural parishes (counties) in Louisiana. That research developed an export base model for Cameron Parish, Louisiana. The researchers concluded that the export base model would be more cost efficient and timely than alternative multiplier generating techniques. The previous model was re - evaluated using more current data bases (1992) to determine the accuracy of the estimated export base multiplier over time. The estimated export base multiplier was reduced from 1.69 (1987 data) to 1.45 (1992 data). Given the relatively small change in the size of the multiplier, it was concluded that the size of the multiplier is not time sensitive for parishes with a few dominant and stable industries. The second area of research investigated approaches for rural communities, with limited tourism budgets, to collect and evaluate data on visitor characteristics to be used in developing marketing strategies. Previously implemented visitor registers at Sabine National Wildlife Refuge (NWR) in Cameron Parish, Louisiana were used to develop visitor profiles for the parish. Visitor registers at other sites in the parish failed to generate adequate responses for analysis and were not readily accepted at commercial sites. Data from Sabine NWR were collected from June 1991 to June 1995. Results from the last year of the study were typical. A total of 3,457 records, representing 9,400 visitors, were collected between July 1994 and June 1995. Respondents represented all fifty states and 31 countries. Louisiana (27 percent) and Texas (13 percent) were the most numerous respondents. International travelers were about nine percent of total respondents, with about 21 percent from Canada. Seventy-three percent of the respondents were either in a group of adults only or over the age of 55. These age groups also tended to be on longer trips with overnight stays in the area. Families (adults with children under age 18 in their group) represented 21 percent of the respondents. Families tended to be on shorter day trips to visit wildlife refuges in the parish. In summary, the analysis suggests that a marketing strategy consider two audiences or markets: 1) Louisiana families on day trips and 2) adults and seniors from Louisiana and Southeast Texas on longer trips.
- b. The researchers concluded that the export base model was still more cost efficient and timely than alternative multiplier generating techniques requiring more data and analysis. As a result, the export base multiplier provides a reliable estimate of indirect economic impacts within the parish, and is particularly effective at capturing the effects of tourism. Visitor register data collected at Sabine NWR illustrated the feasibility of collecting and analyzing data locally. Such data can be useful in determining visitation patterns and influencing local tourism marketing decisions.
- c. Source of Funds - Hatch funds, State funds
- d. State Specific

## **An Economic Analysis of the Rural Real Estate Market in Louisiana**

### **Key Theme - (Impact of Change on Rural Communities) Land Market Research**

- A. The general objective of this research is to develop a statewide database for conducting rural land value market research. More than 2,700 Louisiana rural land sales have been collected and used to establish rural land values and trends in land values within the state. Other objectives of the research include the use of Geographic Information System and spatial econometric procedures to identify factors that are important in rural land markets and how these factors influence rural land values. The research effort has developed procedures that can be used to measure and present a visual representation of the effects of different factors in the rural land market. Spatial econometric techniques are used to develop rural land value predictions, which are used with GIS procedures to estimate rural land value contours. Rural land value contours provide a spatial view of the variation in rural land values throughout Louisiana.
- B. Impact - Spatial econometric procedures were used to estimate the effect that various factors have in different rural land submarket areas. For instance, a one mile increase in distance of the tract from the nearest town was estimated to decrease per acre value in the Southeast area of Louisiana by \$16.57, whereas this influence in the Red River area of Louisiana was estimated to decrease per acre rural land values by \$3.93. Similarly, the research indicated that if the tract has paved road access, it sells for \$460 more per acre than a tract not located on a paved road in the Southeast area of Louisiana, while this estimate in the North Delta area of Louisiana is estimated at \$69 per acre. These research results have been presented at annual meetings of the Louisiana Realtors Land Institute. These presentations are part of a program that provides Louisiana Realtors with the opportunity to earn six hours of continuing education credit. The information has also been used by the Farm Services Agency Farm land Market Advisory Committee in developing rural land value projections.

The research, which integrates GIS and spatial econometric procedures, has been recognized by several professional organizations. The research has been recognized by the American Agricultural Economics Association, the Southern Agricultural Economics Association, the Appraisal Institute, the American Society of Appraisers, the American Society of Farm Managers and Rural Appraisers, and the Southwestern Society of Economists.

- C. Source of Federal Funds - Hatch
- D. Scope of Impact - State Specific

## **STAKEHOLDER INPUT**

### **Extension Section:**

LSU AgCenter consistently seeks stakeholder input on all research and extension programs, in order to maintain a focus on clientele needs and insure the impact and value of its research and extension programs. The AgCenter works with all the major commodity associations including the Louisiana Farm Bureau, cattlemen, rice producers, grain producers, sugarcane producers, family and community development associations, 4-H youth associations, and others in an effort to seek input and guidance on programs. These organizations not only give guidance but support to many of the programs in terms of monetary and physical assistance in conducting both research and educational programs.

The Cooperative Extension Service conducted a strategic planning process during the 1999-2000 fiscal year. They conducted forums in every parish in the state and brought in a wide base of advisory committee members including representatives from each strata of society including public officials, industry representatives, youth, minorities. Representatives of all gender, age, and ethnic groups were involved. Each group was asked to identify the key concerns in their parishes, concerns identified were economic development, environmental changes, education, youth development, family support and structure, crime and numerous other social issues. As a result of this process, the Extension Service has developed several new initiatives and programs to address the concerns of clientele. The five initiatives are economic development, after school education, waste management, water resources, and a master farmer program. Many of the ongoing programs were also strengthened based on the emphasis they received in the strategic planning process. Additionally, each Extension specialist has an advisory committee in their commodity and/or program area that helps them to identify the problems that Louisiana clientele are having in that area and programs are adjusted to have an impact on clientele needs.

### **Research Section**

Louisiana Agricultural Experiment Station scientists and administrators continued to meet regularly with a number of stakeholder groups as indicated in the Plan of Work. A representative but not a comprehensive list of some of these meetings is attached. The generalized forum for these stakeholder sessions is a series of presentations of research findings and questions and discussion led by the stakeholders which provides focus, direction, and proposed research activities by scientists directly to the stakeholder panels. This is followed by specific suggestions that are incorporated into the respective research programs.

On a broader dimension, LAES scientists and administrators participate each year in the Louisiana Farm Bureau Federation Annual Convention. As reflected in the Plan of Work, this is the predominant agricultural organization in Louisiana representing the total spectrum of agriculture, natural resources, youth, and policy issues of concern in Louisiana. Beyond the general sessions, scientists and administrators participate and interact directly in "commodity advisory committees" which are constituted by stakeholders and provide another important feedback opportunity relative to research needs and recommended directions.



Another dimension of obtaining stakeholder input for research programs are the “Agricultural Center Exchange” groups which meet in conjunction with the LSU Agricultural Center’s Annual Conference each year. These groups cover all of the economically important commodities produced in Louisiana as well as environmental, value-added, family, economic, and nutrition issues. Each session is attended by all Ag Center research scientists and extension specialists and agents with programs in the respective areas. Stakeholder input into research programs is provided by the cooperative extension personnel who bring a statewide perspective of the highest priority needs and researchable problems.

***MERIT REVIEW***

***Meetings with Stakeholders - (1998 - 2000)***

Cotton Support Committee:	March 18, 1998 March 17, 1999 March 14, 2000
Rice Research Board:	October 28, 1998 December 16, 1999
Soybean and Grain Research & Promotion Board:	December 1-2, 1998 December 8-9, 1999
American Sugarcane League:	February 3, 1998 February 4, 1999 February 23, 2000
Louisiana Beef Industry Council:	May 5, 1998 October 14, 1999
Louisiana Catfish Promotion and Research Board:	September 2, 1998 June 23, 1999 September 29, 1999
Louisiana Crawfish Promotion and Research Board:	May 19, 1998 August 10, 1999
Louisiana Sweet Potato Commission:	June 11, 1998 June 17, 1999 June 14, 2000
Louisiana Farm Bureau Federation	July 3, 1999 July 15, 2000

## **PROGRAM AND PROJECT REVIEWS:**

Two comprehensive CSREES program reviews were held during the reporting period. A review of the statewide research and extension programs in Forestry, Wildlife, and Fisheries was held on February 21-23, 2000. Statewide research and extension programs in Plant Pathology and Crop Physiology were reviewed on March 27-30, 2000. Both reviews were conducted by panels consisting of CSREES leaders and research/extension peers from other universities. The focus of the reviews was directed toward the future roles of research and extension professionals working in an integrated manner to address Louisiana's needs.

Project peer reviews of the proposed research activities of individual scientists continued according to CSREES guidelines as reflected in the Plan of Work. Approximately 49 project reviews were conducted which led to the establishment of approved projects with initiation dates during the reporting period, 10/1/99 to 9/30/00. Following the established policy, review comments are solicited from peer scientists and extension specialists and the comments and a synthesis of recommendations are provided to the originating scientist by a member of the LAES administrative team. The changes made in the proposed project by the originating scientist are then reviewed at the LAES administrative level prior to final project approval.

## **EVALUATION OF SUCCESS OF MULTI-STATE ACTIVITIES**

### **Extension Section:**

The evaluation of the multi-state and joint activities have been beneficial in identifying the on-going multi-state and joint activities of the LSU Agricultural Center. In several cases, new opportunities for collaboration between states and extension/research personnel were identified and greatly strengthen the cooperative efforts of both. In all cases, programs were identified and developed that had been identified by stakeholders. Unserved and unrepresentative populations were identified specifically in youth programs and family consumer science programs. Preliminary indications are that the programs are having an important impact. Effectiveness and efficiency in utilizing materials from other states, collaborating on research projects, and communications among all people has been improved. A multi-state effort among Arkansas, Mississippi, and Louisiana was developed on pesticide applicator training, digital diagnostic centers and limited resource management program for young families. All of these programs have been successful and new materials, publications and joint training is occurring. Results for each of these programs is reported in previous documentation. Additionally, Extension specialists participate in the Southern Extension Research Association information exchange groups, the Southern Ag and Natural Resources committees and numerous other national and regional meetings to get ideas and obtain materials and develop collaborations that result in new programs and more effective programs in Louisiana. Additionally, the economic development efforts of Louisiana Cooperative Extension Service has been greatly enhanced by the Southern Rural Development Center in Mississippi. Approximately, ten agents and three specialists have participated in the training on economic development and has resulted in much of the economic development objective of the Louisiana Cooperative Extension Service. Reports on the specific activities are included previously.

### **Research Section:**

The Louisiana Agricultural Experiment Station has traditionally encouraged and supported multi-state (formerly regional) research activities. LAES scientists have played significant leadership roles in many multi-state activities and they continue to do so today. In fiscal year 2000-2001 LAES scientists were active participants in 43 approved multi-state projects. Of these 43 projects, 16 (over 1/3) were North Central, North East, Western, or NRSP-based activities which reflects the truly national scope of what we refer to as multi-state research. These 43 projects address each of the five national goals. To further reflect the LAES support and involvement scientists' travel expenses to annual technical committee meetings is currently being supported from administrative funds. Finally, to further indicate involvement and support, LAES Directors currently serve as administrative advisors to 6 active multi-state research projects.

## **INTEGRATED ACTIVITIES OF EXTENSION AND RESEARCH**

Research and extension personnel are working closely together to develop publications, coordinate research, and carry out educational activities. Twenty-four joint appointments have been made to help researchers move their information more quickly to the clientele. Several new appointments have been made in the last few months. Reports on these research and extension activities are included previously. LSU AgCenter has greatly improved its communication between research and extension personnel and consequently improved service to the clientele of Louisiana. Special initiatives previously reported on the formosan subterranean termite project, the fire ant initiative, and the water quality project are being jointly conducted by the Extension Service and Experiment Station personnel. These efforts have been greatly expanded the LSU AgCenter's effectiveness in meeting the needs of Louisiana citizens. \_\_\_\_\_

Each year the research and extension specialists meet in an AgCenter exchange group. Researchers update extension service personnel on the latest research projects and educational programs of extension personnel are discussed. The third component of those meetings is an interaction and discussion of needs which identify research efforts needed and extension programs needed to address clientele needs. Additionally, teams of research and extension personnel meet in discussion groups two to four times a year to update each other on the latest research and educational programs.

In the plant science area, researchers and extension specialists meet each year to review research and make recommendations for varieties, fertilizer recommendations, new pesticide recommendations, recommended cultural practices and other research based recommendations which subsequently form the management practices that are recommended to clientele.

## **INTEGRATED ACTIVITIES**

### **Farm Production Budgets/Market Economics:**

Projected costs and returns for numerous Louisiana commodities were developed and/or updated and provided to farm management specialists. These “production budgets” are used cooperatively with extension specialists and presented at grower meetings. Among the crops covered are catfish, crawfish, beef, dairy, broilers, forages, cotton, soybeans, corn, milo, wheat, rice, sugarcane, and vegetables.

### **Crop Genetics/Variety Trials/Variety Recommendations:**

Variety trials were conducted on corn (hybrid), wheat, soybeans, cotton, warm and cool season forages, sweet potatoes, and sugarcane. Results are published and provided to seed dealers, producers, and extension specialists. Researchers participate directly with extension specialists as the varieties recommended for planting are being selected. Both research and extension personnel became involved in outreach activities in variety recommendations through participation in parish (county) agent training sessions and commodity producers meetings.

### **Insecticide Efficacy/Insecticide Recommendations\*:**

Insecticide efficacy studies are conducted on all major Louisiana plant and animal pests. The data from the efficacy studies are provided to extension specialists, crop consultants, and producers at seasonal meetings and through direct contact. Research scientists participate directly with extension specialists to prepare insect control recommendation guides which are used throughout the extension system in educational activities.

### **Herbicide Efficacy/Herbicide Recommendations\*:**

Herbicide efficacy studies are conducted on all major Louisiana crops. The data from these efficacy studies are provided to extension specialists, crop consultants, and producers at seasonal meetings and through direct contact. Research scientists participate directly with extension specialists to prepare weed control recommendations which are used throughout the extension system in educational activities.

### **Plant Health/Treatment Recommendations\*:**

When cooperative extension specialists encounter plant health diagnosis problems they are assisted by research scientists. The scientists involved carry applied research activities on the efficacy of disease preventive agents and are active in providing assistance in the formulation of disease control recommendations used by extension specialists in educational programs.

### **Food Processing/Packaging/Safety:**

Research scientists interact with and coordinate programs with extension specialists to develop new food safety procedures and deliver food processing and food safety information. Scientists participate in

HACCP training sessions and a “Muscle Foods Laboratory” is jointly used for research studies and extension demonstration.

**Animal Health/Treatment Recommendations:**

Veterinary science researchers conduct programs on aquatic animal health, anthelmintic delivery and efficacy, bovine respiratory disease, and brucellosis. Programs are closely coordinated with the extension veterinary specialist, the School of Veterinary Medicine Diagnostic Lab, and the Louisiana Department of Agriculture and Forestry.

**Soil Testing/Fertility Recommendations:**

The Soil Test Laboratory is operated by the LAES and all results are provided to the LCES soil scientist for fertility recommendations. County agents are involved in the delivery of the fertilizer recommendations .

**Animal Waste Management:**

Major research and extension outreach activities in this area are closely integrated. Land application of poultry litter and runoff from extensive dairy operations are the highest priority areas. Research scientists teamed with extension specialists to prepare the waste management sections for BMP manuals used in extension outreach programs.

\*Parish (county) agent training meetings, commodity producer meetings, the Louisiana agricultural Consultants Association annual workshop and the annual meeting of the Louisiana Plant Protection Association are characterized by programming that includes the integrated activities engaged in by research and extension professionals in entomology, weed science, and plant pathology. These educational venues highlight integrated activities conducted throughout the year and by their nature –are integrated activities.

## **MULTI-STATE AND MULTI-FUNCTION BRIEFS**

The LSU AgCenter is fully engaged with other institutions. Many of the materials, ideas and programs have come from other states. The free sharing of materials, ideas and programs at regional and national scientific meetings is the strength of the Land Grant System. Many specialists assist with agent and producer training in the surrounding states and those efforts are expanding continually. Additionally, all of the recommendations and programs are research-based and research personnel are used extensively in developing recommendations, publications, training agents and producer meetings.

To determine multi-state work, each specialist estimated the percentage of material, ideas or programs that were obtained from other states through publications or meetings. The percent multi-state effort was multiplied by the number of FTEs devoted to the program times the average salary per FTE.

Percent Program Due to Multi-State  
Publications  
Meetings  
Training