Louisiana State University Agricultural Center

Annual Report, FY 2002

October 1, 2001-September 30, 2002

Submitted to

USDA-CSREES

March 1, 2003

Louisiana State University Agricultural Center

Annual Report, FY 2002
October 1, 2001-September 30, 2002

TABLE OF CONTENTS

Annual Report, FY 2002
October 1, 2001-September 30, 2002

Page

Louisiana State University Agricultural Center
Annual Report, FY 2002
October 1, 2001-September 30, 2002

Overview

The overall mission of the LSU Agricultural Center is to enhance the quality of life of the people of Louisiana through research and education programs that develop the best use of natural resources, conserve and protect the environment, enhance development of existing and new agricultural and related enterprises, develop human and community resources, and fulfill the acts of authorization and mandates of state and federal legislative bodies.

In realizing this mission, the LSU Agricultural Center's Plan of Work, FY 2000-2004, focused research and education programs under five goals established by USDA-CSREES in pursuance of the mandate of the Agricultural Research, Education, and Extension Reform Act of 1998 (AREERA). Annual reports of the research and extension programs conducted during FY 2000 and FY 2001 have been submitted.. This is the third report against the strategic plan covering the fiscal year 2002 (October 1, 2001-September 30, 2002). It updates information about several of the ongoing programs which were included in previous years' reports, and provides information on new initiatives and projects undertaken during FY 2002. Summaries of research projects and extension programs are included under each goal. These summaries are followed by information about the processes used for stakeholder input in and merit review of programs, and allocations of federal appropriations to multi-state and multi-function activities.

Research Projects

The majority of the LAES programs are in Goal 1. Research emphasis continues to focus on plant variety development and evaluation, pest management, aquaculture, animal production systems, and agricultural economics.

Variety development and performance evaluations continue on all major row crops, fruits and vegetables, and sweet potatoes. During 2002, two rice varieties, one oat, one sweet potato, and one wheat variety were released. All varieties demonstrated increased yields and enhanced disease resistance when compared to currently grown varieties. All the varieties developed resulted from teams of faculty, representing several scientific disciplines, located at research stations throughout Louisiana and in the academic departments in Baton Rouge. In addition to the development of new varieties, performance trials with varieties developed by other breeders at other U.S. institutions and private seed companies were conducted. Results from these trials are important to LCES personnel in their outreach efforts for stakeholders.

LAES scientists continue to evaluate experimental pesticides and to expand the labels of currently registered products. With vast acreage of corn, cotton, and soybean being planted to transgenic varieties, that demonstrate insect and herbicide resistance, studies of the impact of this new technology on management of pests were a major focus of research. Clearfield rice, a non-

transgenic rice resistant to herbicides used to manage red rice, was introduced during the 2002 growing season. Prior to and concurrent with this release, research has been conducted on outcrossing to estimate the potential for pollen transfer between red rice and Clearfield rice. An added benefit of Clearfield rice should be a reduction in the need to "muddy" the water in the rice paddies (red rice control strategy), which will result in cleaner water being released from rice fields.

Agricultural economics research examined the economic consequences of trade impacts stemming from changes in domestic agricultural and economic policies and to assess alternative strategies to improve the competitiveness of Southern Agriculture. Also, research analyzing the effect of increasing the sugar input quota for Mexico and Cuba was completed and is currently being distributed. The overall goal of this research is to develop road maps of policy options and consequences.

Fundamental research on the behavior of genetic strains of chickens revealed that behavioral characteristics can exhibit profound effects on the welfare and productivity of farmed poultry. Broiler chicks that could quickly negotiate a T-maze gained more weight, indicative of superior performance. Thus, this test may be an important selection criterion for future breeding programs. LAES scientists continue to participate in an intra-state multi-location cool-season annual forage variety testing program, and the results of these trials are used by extension personnel to develop a recommended list of varieties for Louisiana producers. Aquaculture research examined the effects of simulated drought on crawfish survival and reproduction. Variable rainfall during critical reproductive periods likely contributes to production variability. Research on marketing of cull cows in the spring (March) rather than the fall (November) indicated that value in the range of $2 to $24 per head could be realized.

Although the number of research projects conducted under Goals 2-5 are not as numerous as those under Goal 1, significant accomplishments were achieved in projects addressing food safety, the environment, human nutrition, and enhanced economic opportunity and quality of life for citizens.

Research conducted under the auspices of Goal 2 addressed food handler and consumer acceptance of country of origin labeling for fresh meats, use of ozonation to degrade aflatoxin in Louisiana grain crops, labeling of foods derived from genetically modified crops, and management of mastitis in dairy heifers.

Projects directed at achieving a healthy well-nourished population (Goal 3) demonstrated that functional foods, dietary supplements, and exercise could play roles in reducing bone loss and weight gain in post-menopausal women, as determined using a model with ovariectomized rats. Other investigations focused on the thermal stabilities of "antioxidant" components of rice bran oil. A compound in rice oil, gamma-oryzanol, has been shown to lower serum cholesterol and has the potential to add-value to rice, a crop suffering from depressed prices. Studies to describe factors that influence consumer food preferences and dietary practices and identify behavioral obstacles to healthful foods revealed that nutrition-related chronic diseases disproportionally

affect low income women, excessive consumption and spending on fast foods depletes meager food resources and contributes to poor diet, and knowledge of use of nutrition education programs is lacking in families exiting welfare programs.

Highlights of programs focused on achieving greater harmony between agriculture and the environment (Goal 4) ranged from altering animal rations to reduce P in soils and potential run-off to greater utilization of cultural practices, rather than insecticides, to manage a serious insect pest of rice in this environmentally sensitive agroecosystem. Recently, a research initiative was implemented to evaluate the interactions of saltwater intrusion, lack of nutrient and sediment inputs, and insect herbivory as a precursor to planned and on-going state-federal restoration efforts in forested wetlands in southern Louisiana. Focus has been on keystone forest species such as baldcypress and tupelo. Results indicate that herbivory of young wetland trees along with low nutrient environments can reduce growth. Nitrogen loading of diverted Mississippi River water can enhance productivity of both species. Reducing inorganic nitrogen is a major focus of river diversions, and these tree-insect complexes are proving to be sinks for these compounds.

Goal 5 research is diverse. Value-added research has been conducted in the areas of improved oriented strandboard utilizing materials to reduce decay, mold, and termite damage; waste bagasse from sugarcane refining for nonwoven composites in automobile upholstery, furnishings, and packing; enhancement of resistant starch properties of rice flowers; and techniques to extract and standardize medicinal products from plants. In addition, research on improved plant types to reduce coastal erosion and wetland deterioration has made significant progress toward alleviating a major economic and environmental problem facing Louisiana's citizens. Documentation of the impact of welfare reform on rural families has provided insights to agencies and policy makers or they adjust policies to enhance rural family functioning within their communities.

Extension Programs

Education programs of the Louisiana Cooperative Extension Service were conducted in all five goals. In FY 2002, total Extension professional Full Time Equivalents (FTEs) amounted to 382.06, and 6,021,583 educational contacts were made. The distribution of professional FTEs and educational contacts by federal goals was as follows:

Federal Goal	Number of Extension FTEs	Educational contacts
1	101.12	1494468
2	5.11	173643
3	75.21	1160981
4	28.25	932973
5	172.34	2259491
Total	382.03	6021556

Printed publications on a range of topics were issued for dissemination to adult and youth clientele in support of extension education programs. Forty-six new publications were developed, 74 publications were reprinted, and 38 publications were revised.

Over the last several years, the Ag Center's aggressive technology initiative has led to an increased use of its home page to supplement the traditional print method of information dissemination. A number of extension publications have been placed on line for Extension clientele to access, download, and/or print copies to meet their needs. Currently, there are 288 publications covering a variety of agricultural and home economics topics on line. A monitoring system to record client use of this information is being designed.

Examples of accomplishments in the several federal goals are indicated to provide a brief summary of the overall extension program of the Ag Center. These examples are excerpts from selected examples in the report for each goal.

The impact of the wide-ranging and complex provisions of 1998 Farm Bill on the financial planning and management of agricultural enterprises in Louisiana was analyzed and over 500 farmers were trained on how to use this information to analyze their individual operations. Approximately 100 individual farm financial plans were prepared for producers, and 45 people trained in the FSA borrower training in financial planning and management.

Over 3,000 producers and agribusiness firms received monthly commodity market outlook newsletters, and 1,200 producers participated in over 30 producers meetings which assisted them in making crop enterprise selection decisions.

A 2001 survey of the aquaculture industry showed that over 90% of catfish and crawfish producers relied on the LCES for BMPs' information, while 53% of catfish farmers and 47% of crawfish farmers indicated they were following these practices. During 2002, almost 400 producers were exposed to marketing concepts, and 40 commercial producers were advised on key financial considerations affecting their profitability and competitive positions.

Several producers are expanding their acreages of TSWV-resistant tomatoes and bell peppers and BT sweet corn as a result of variety field tests and extension work.

Cyclical producer surveys in rice, cotton, soybean, sugarcane, horticulture crops consistently show the average adoption rate of BMPs in these commodities to be around 74%.

Approximately 1,300 digital image samples have been received in the first three years of the Long Distance Digital Network (LDDN), with an estimated saving to Louisiana farmers of nearly $750,000.

Over 20 forest landowner association meetings were held with 2,700 landowners attending. End-of-event evaluation of two workshop meetings showed that 80% of participants were following

extension natural resources management recommendations, who indicated that the personal value received from the workshops was $500 per owner.

Research verification programs for soybean and rice continue to grow and demonstrate to cooperators and other producers the value of adoption of a total production recommendation package. Soybean producers enrolled in the program in 2001 produced 49% (16 bushels/acre) more soybeans than the state average of 25 bushels, at a cost of $3.46/acre which compares favorably with the sale price of $5.25/acre. Conclusive results of the more recent rice verification program are awaited.

Ninety percent of those 615 producers who attended nematode control presentations during the year reported a 90% increase in yield and profit.

A total of 135 attendees from seafood processing plants received training in hazardous analysis of critical control points (HACCP) and Sanitation Control Procedures (SCP). As a result, seafood processors now better understand and can comply with state and federal regulations and prepare HACCP plans and records.

EFNEP food recall data show that significant proportions of 2,198 enrolled families made positive dietary changes, managed their food dollars more effectively, comparison shopped, and planned meals. The program also reached 7,083 youth and involved 639 registered volunteers.

FNP reached 48,728 families, including 3,469 food stamp applicants and recipients with information on nutrition and food buying. Evaluations of the program showed that 75% of FNP clientele intended to comparison shop and consume a diet lower in salt and sodium, and 70% planned to eat more whole grains and bread.

In the Portions Healthy Weight Program (Portions), emphasizing healthy lifestyles and addressing the growing obesity problem in Louisiana, 95% of the participants made at least one lifestyle change, such as learning the importance of moderate exercise most days of the week and beginning a regular walking or other exercise program, and lost an average of 4-8 pounds in nine weeks.

A total of 400 individuals participated in eight animal damage control workshops statewide, for a reported dollar value of $1,500 per participant or a total of $600,000.

Four hundred fifteen natural resource Louisiana professionals, loggers, and landowners participating in eight Continuing Education in Natural Resources (CENR) workshops statewide estimated the personal value of this program in forest management, growth, and yield modeling, and forest management for wetlands and water quality at approximately $913,000.

The Master Farmer Program, begun in November 2001 as a multi-agency effort spearheaded by Extension to help agricultural producers voluntarily address environmental concerns and regulations in production agriculture, as well as enhance agricultural production and farm

management/marketing skills for continued viability of Louisiana agriculture, has been implemented in four of the six watersheds in the State with 268 producers representing 250,000 acres enrolled and 350 producers pre-enrolled to be certified..

The Master Tree Farmer 2002 Program reached people via eight regional satellite broadcast facilities. Fifty-five individuals responding to an evaluation of the program said they expected to save approximately $19,947 per person (total of $1,097,100); and earn an additional $42,827 per person ($2,227,000) by applying the knowledge gained in their operations (90% said they would apply what they had learned).

Watershed Education (WE) programs during the year focused on environmental protection and restoring aquatic ecosystems and protecting human health. WE educators worked closely with the Louisiana Sea Grant College Program and the Louisiana's Master Farmer Program; involved producers in nonpoint source (NPS) pollution education; organized environmental camps, weekend sessions, special events, and club meetings for 7,500 youth; assisted 250 homeowners in testing their water supplies; and made presentations on and discussed water issues with several municipal and parish governments.

Water resources development programs focused on assisting producers develop a better understanding of and adopt optimal water systems in their operations. As a result of these programs in targeted areas of the state, crop yields have increased and the risk of crop losses from drought has decreased; more surface water is available for recreation, public water supply, business and industry; surface water quality and habitat in summer months has improved; and marsh in coastal areas has received proper nourishment.

A total of 700 landowners and natural resource professionals participated in eight wildlife management programs on habitat improvement and potential economic value of wildlife acreage. At a self-reported average value of $1,500 per participant, the total value of these programs was $1,050,000.

A total of 2,218,789 students in schools and 28,865 persons outside the school system were reached in the character education program which was taught by 4,378 school teachers and 3,002 youth peer teachers. Over 75% of teachers and principals participating in evaluations of the program reported improvement in the behavior of students in school.

Disaster education programs focused on coping with natural hazards and enhancing homeland security included continued collaboration with various state agencies, the use of the internet to disseminate information during floods and other emergencies, and access by LCES educators to the information resources of 45 states cooperating in the Emergency Disaster Education Network (EDEN).

Community Leadership and Economic Development seminars have resulted in the organization by participants of specialty livestock sales, a marketing association, a new yam festival, a

farmers' market in a small town, and two economic development associations focused on achieving economic stability in the shrimping industry.

Education programs in economic development have resulted in Louisiana residents and communities learning current social and economic conditions, increasing their understanding of economic development alternatives, and developing strategic plans for developing their communities; building of local capacity through community assets mapping and accessing sources of economic development resources and assistance; learning basic level entrepreneurship for starting new businesses or expanding existing businesses; and tourism development initiatives for strengthening the hospitality industry, making communities aware of their community infrastructure, and mapping community resources to attract tourists.

Over 9,000 individuals and families were assisted in learning and applying financial management and budgeting skills. Sample surveys of family resource management programs showed that over 75% of participants planned to follow recommended management practices such as paying bills on time, setting financial goals and priorities, tracking monthly spending, and organizing important appears.

In the Louisiana Master Gardener Program in FY 2002, 315 new volunteers were trained and 410 senior master gardeners were retained. These volunteers pledged 31,082 hours of service to home horticulture programs in their parishes (counties) valued at $435,148.

In FY 2002, the 4-H leadership development program had 8,669 adult volunteers and 9,044 youth leaders. A total of 7,021 youth leaders assumed leadership offices in their clubs, 21,273 youth demonstrated new leadership skills, and 9,445 youth took on leadership roles in their parishes (counties).

GOAL 1

LSU AgCenter Goal 1 is to achieve an agricultural production system that is highly competitive in a global economy.

Research Reports

The variety development team at the Rice Research Station in cooperation with colleagues in the Departments of Plant Pathology, Agronomy, and Entomology released a long grain variety 'Cheniere' and a short grain variety 'Pirogue'. Both varieties have demonstrated increased yields and enhanced disease resistance when compared to currently grown varieties. The sweet potato breeding program developed the 'Bienville' variety. It has yields comparable to the industry standard 'Beauregard' but has shown outstanding resistance to southern root knot nematode. LA841 wheat variety was released in 2002. It is a high yielding line that compares favorably with AGS 2000, the most widely grown wheat variety in Louisiana and most of the southern states. LA841 has excellent leaf rust and stripe rust resistance and presents a different source of resistance to leaf rust than varieties currently grown. This should be valuable if biotypes of the pathogen appear. Genetic resistance to these fungal diseases reduces production costs about $15 per acre and reduces the environmental pesticide load. The development of improved sugarcane varieties has been a major factor in sustaining a competitive sugarcane industry in Louisiana. LCP 85-384 developed by the LSU Ag Center in cooperation with the USDA-ARS and the American Sugarcane League was harvested on 86% of state's plant cane acreage in 2002. It is estimated the economic impact of this variety will be about $250 million for the year.

Transgenic cotton cultivars expressing insecticidal activity have been grown commercially on over 60% of Louisiana's cotton acreage since 1998. The consistent cotton insect pest problems in the state coupled the experience of LSU Ag Center entomologists with this transgenic technology has provided opportunities for evaluating novel insecticidal transgenes and the development of strategies to extend the sustainability of these technologies. One of these strategies is the implementation of insecticide resistance management using non-transgenic cotton and alternative host refuges to optimize the longevity of plant based bioinsecticides. The Mexican rice borer currently poses as a serious threat to sugarcane production in Louisiana. LSU Ag Center and Texas A&M University entomologists, in cooperation with personnel from the extension services and Departments of Agriculture in both states, have developed a monitoring effort to track the movement of the pest from its present distribution along the Texas Gulf Coast. Over the past three years, the pest has steadily moved closer to the Louisiana border. Insecticide evaluations, cultural practice management, and evaluation of Louisiana cane varieties in the pest's current location in Texas are building the foundation for a pest management plan for the insect, if and when, it does appear in Louisiana.

Aquaculture research investigated the effects of simulated drought on crawfish survival and reproduction. Variable precipitation, especially during the critical reproductive period when crawfish are in sub-surface burrows, is a likely contributor to inconsistent survival and

reproduction, thus, production variability. Overall, the water table access had little effect on reproduction, but restricted rainfall resulted in 62% reduction in survivors that spawned. Further studies are needed to corroborate these findings with additional observation that drought negatively impact crawfish production.

Studies conducted to determine whether feeding cull cows for added income revealed that marketing in March rather than November could add value in the range of $2 to $24 per head. Low markets in the fall coupled with an oversupply of cows were factors affecting the results. For cows that did not exhibit health problems, income reached as much as $85 per head. Considering all factors, this change in marketing of cull cows has the potential to add approximately $500,000 of value to the Louisiana beef industry.

Extension Reports

Selected accomplishments for Extension programs include:

- The impact of the wide-ranging and complex provisions of 1998 Farm Bill on the financial planning and management of agricultural enterprises in Louisiana was analyzed and over 500 farmers were trained on how to use this information to analyze their individual operations. Approximately 100 individual farm financial plans were prepared for producers, and 45 people trained in the FSA borrower training in financial planning and management.

- Over 3,000 producers and agribusiness firms received monthly commodity market outlook newsletters, and 1,200 producers participated in over 30 producer meetings which assisted them in making crop enterprise selection decisions.

- A 2001 survey of the aquaculture industry showed that over 90% of catfish and crawfish producers relied on the LCES for BMP's information, while 53% of catfish farmers and 47% of crawfish farmers indicated they were following these practices. During 2002, almost 400 producers were exposed to marketing concepts, and 40 commercial producers were advised on key financial considerations affecting their profitability and competitive positions.

- Thirty-three beef producers participated in the Calf-to-Carcass Program consigning 427 calves, and 16 seed-stock producers took part in the Forage-Based Bull Testing Program consigning 104 bulls.

- Several producers expanded their acreages of TSWV-resistant tomatoes and bell peppers and BT sweet corn as a result of variety field tests and extension work.

- Producer surveys in rice, cotton, soybean, sugarcane, forestry, horticulture crops and other agricultural commodities conducted on a four-year rotation consistently show the average adoption rate of BMPs in these commodities to be around 74%.

- Dairy producers in the DHI program continue to produce about 4,000 pounds more milk annually through improvements in management, profitability, and longevity in the business.

- Approximately 1,300 digital image samples have been received in the first three years of the Long Distance Digital Network (LDDN), with an estimated saving to Louisiana farmers of nearly $750,000.

- Over 20 forest landowner association meetings were held with 2,700 landowners attending. End-of-event evaluation of two workshop meetings showed that 80% of participants were following extension natural resources management recommendations, and the value received from the workshops was $500 per owner.

- Research verification programs for soybean and rice continue to grow and demonstrate to cooperators and other producers the value of adoption a total production recommendation package. Soybean producers enrolled in the program in 2001 produced 49% (16 bushels/acre) more soybeans than the state average of 25 bushels, at a cost of $3.46/acre which compares favorably with the sale price of $5.25/acre. Conclusive results of the more recent rice verification program are awaited.

- Ninety percent of those 615 producers who attended nematode control presentations during the year reported a 90% increase in yield and profit.

- Over 2,000 farmers, consultants, and industry personnel attended field days and educational meetings focused on reduced tillage, which is increasing in the state, combined with a program of vegetation management based in proper selection, application, and timing of herbicides to maximize weed control, reduce insect pests, and reduce input costs.

- Seventy five percent of production acreage in Louisiana is under integrated pest management programming.

Total extension expenditure on Goal 1 programs was $8,103,352. Of this amount, multi-state expenditure is estimated at $2,351,365 and multi-function at $5,016,914.

Total Extension FTEs in Goal 1 programs were 101.12 and 1,494,468 educational contacts were made.

GOAL 1
EXTENSION SUMMARIES

Federal Goal 1

AERIAL APPLICATION

Key Theme:

Program Description

The specialist is actively involved in the Louisiana Agricultural Aviation Association (LAAA) to stay abreast of the current needs and issues of the industry, and collaborated closely with the Louisiana Department of Agriculture and Forestry (LDAF) which regulates the aerial application industry in Louisiana.

Surveys of aerial applicators were conducted to determine their needs and issues and reports from LDAF on drift complaints, violations, and accidents and other aspects were reviewed to design the aerial application education program.

One of the greatest needs identified in FY2002 was the need to synchronize state rules and regulations governing aerial application with current aerial application research. In addition, drift of 2,4-D on to cotton in some areas of the state was killing the cotton. Over 30 complaints were registered in 2001. Spray and spreader patterns, although in check overall, continued to need testing and improvement.

Meetings were held with individual aerial applicators, aerial application researchers, and LDAF personnel to determine what rules and regulations needed to be updated and revised. Subsequent discussions with influential stakeholders regarding changes that needed to be made in the rules and regulations led to several changes being approved immediately and others requiring more investigation and research to document the effect of the proposed changes.

A drift minimization education workshop was conducted at the annual meeting of the LAAA and meetings were held with officials from the LDAF to discuss potential causes of the 2,4-D drift problem. Aerial application of the product was only one of many possible sources of the problem. In 2002, the number of complaints was reduced from over 30 to 2 (93% reduction).

A total of 15 pattern testing clinics were conducted throughout the state. Forty-eight spray and spreader systems were tested, modified, and improved. The aerial applicators who voluntarily participated in these pattern testing clinics appreciated the ability to see what kind of work their plane was doing on paper, make improvements in their patterns and remain competitive in their businesses. Improvements to their systems were done on-site and these changes stay in effect until new or different equipment is purchased.

Collaboration with agencies and groups was as follows:
Louisiana Agricultural Aviation Association – Represents Louisiana aerial applicators and their interests. Provides $500/year in financial support to the LSU AgCenter Aerial Application

Program.
Louisiana Department of Agriculture and Forestry – Regulates the aerial application industry and communicates regulatory information and statistics.
USDA-A0RS – Provides aerial application research reports

Program Impact

The Aerial Application Program has helped aerial applicators do a better job of uniformly applying pesticides, fertilizer, and seed. This minimizes the over-application of materials, which results in less wasted product and reduces the run-off potential of chemical inputs. A uniform pattern also minimizes the under-application of chemical inputs which results in better pest control and reduces streaking in the fields. Aerial applicators have demonstrated increased knowledge and understanding of the factors affecting drift and have adopted drift control strategies to reduce drift.

Source of Funds

State and Federal (Smith-Lever 3 b, c)

Scope of Impact

Multi-state: The Aerial Application Program in Louisiana is part of a nationally coordinated educational program called Operation S.A.F.E. (Self-regulating Aerial Flight Efficiency). This program is coordinated through the National Agricultural Aviation Association and has analysts from Texas, Nevada, Oklahoma, Arkansas, Georgia, Minnesota, Colorado, Kansas, Mississippi, Nebraska and North Carolina. Approximately 75% of the Louisiana Aerial Application Program materials, research, software, and equipment are derived from this national effort. A total of 1.1 FTEs were devoted to the Aerial Application Program. Hence the dollar value of the multi-state effort = [(75% of the program) x 1.1 (FTEs) x $80,136 ($ equivalent of 1 Extension professional FTE)] = $66,112.

Multi-function: The Louisiana Aerial Application Program relies on research-based information. Most of the aerial application research comes from the USDA-ARS Pest Management Unit in College Station, Texas. Texas' research contribution to the program along with others constitutes approximately 50% of the program. The dollar value of the multi-function effort = [(50% of the program) x 1.1 (FTEs) x $80,136 ($ equivalent of 1 Extension professional FTE)] = $40,068.

Federal Goal 1

AGRICULTURAL FINANCIAL MANAGEMENT

Key Theme: Agricultural Profitability

Program Description

Program content ranges from basic record keeping to financial analysis and planning. An important part of the planning component during the year involved the effects of the new farm bill on the farm. Information was provided to producers on the consequences of different commodity proposals before final passage of the farm bill. After passage, explanations of the farm bill provisions and methods to analyze their impacts on farm organization and income were presented.

The program is delivered by extension specialists located in the LSU AgCenter's Department of Agricultural Economics and Agribusiness. There are 100% extension appointments and extension/research/teaching split appointments. There is one area agent. County agents have completed and are in the process of completing the Agricultural Economics specialty training. After this agent training, the selected agents will assume a multi-parish agricultural economics extension teaching responsibility.

Program delivery is broad in scope ranging from informal education to formal classroom style training. In addition, a service component builds upon the training aspects of the program. A Farm Management webpage including Extension and Research materials has been developed for the departmental website. Materials used have been developed by the extension specialists or modified from regional committee/workgroup/taskforce materials or educational materials developed at other institutions.

Advice on program direction is gathered in several ways. Assessment by specialists of the financial condition of agriculture is done through personal contact with growers, processors, lenders, USDA officials, commodity organizations, agents, and research scientists. In addition, USDA official reports of financial condition are reviewed. An Extension Farm Management and Marketing Advisory Committee meets periodically to review the current program and give advice on future program direction. The committee is made up of producers, lenders, agribusiness, and commodity organization representatives.

A program review of the past four years of extension financial management and planning program work was completed this year. This review is the part of the evaluation of the program.

Program activities directed at farm bill education included two major conferences drawing on statewide audiences. Approximately 500 producers, lenders, landowners, agency representatives, and agribusiness personnel attended. Numerous parish and regional workshops/meetings were also held. The provisions of the new farm bill and their effect on farm income were the topics at

these meetings. An assessment of the base acreage and program yield update provision of the new farm bill was a major topic. A spreadsheet analysis template was developed and distributed. This template was one of the first made available to the general public via the departmental Farm Management webpage.

FSA Borrower Training was again offered at five different locations.

The rice marketing specialist continued to do multi-disciplinary work in the Rice Research Verification project.

Extension specialists continued providing individualized assistance to producers. In an effort to assist producers deal with low commodity prices and yields, extension specialists have analyzed the financial situation of several individual farming enterprises. Producers are provided with a complete analysis of the options available with regard to crop selection, debt structure, and cost of production thus allowing them to choose the farm plan offering the most profit potential. Sixty farm plans were developed for producers across the state. Part of this effort is directed through the Northeast Louisiana Farm Management project. Approximately 40 producers were assisted through this project during the winter of 2001-02. It is expected that efforts of this type will be expanded in the winter of 2002-03.

Multi-state work: Extension specialists continue to be involved in multi-state programs. Specialists are involved with the Southern Region Extension Farm Management, Marketing, and Policy Committees. Many programs used in the state have been developed, in part, from work in the Southern Extension Committees and with extension counterparts from throughout the South. Specialists continue to serve on the Tri-State Soybean Forum Board which provides production, farm management, and marketing education to producers in Louisiana, Mississippi, and Arkansas. Extension specialists and their research counterparts are also involved with the Delta States Farm Management Committee. An extension agricultural economist as well as LSU beef researchers were part of a multi-state, multi-discipline committee addressing the topic of Improving Beef Profitability in the Southeast. A final report is forthcoming from the committee management.

Program Impact

Approximately 100 individual farm financial plans were prepared for producers.

Two computerized farm records classes were held, reaching 55 people. One class was a part of the Louisiana Cattleman's Association Cattleman's College.

Traditional farm record books continue to be utilized and have been made available via the Farm Management webpage.

FSA Borrower Training in financial management and planning, risk management, and marketing and production technology was held at five locations reaching 45 people.

Farm Bill training reached over 500 people.

Source of Funds

State and Federal (Smith-Lever 3 b, c)

Scope of Impact

Multi-state: The multi-state component of the program is estimated to be 20% based upon collaborations arising from the Southern Extension Farm Management Committee, Delta States Farm Management Committee, Tri-State Soybean Forum, Improving Beef Profitability in the Southeast and other individual out-of-state professional relationships. The total FTE's devoted to this program are 4.57. The dollar equivalent of 1 Extension professional is $80,136.

The dollar equivalent of the multi-state share of the program is $121,166 (.2 x 4.57 x $80,136 = $73,244).

Multi-function: The rice verification program utilizes research-based cost data in providing cost analyses for each of the involved producers. The Improving Beef Profitability in the Southeast project involved extension, research, agency, and industry members. Technical production problems identified as a result of the individual farm financial analyses are referred to the appropriate research/extension personnel for resolution. In addition, many of the seminars, fact sheets, and other publications utilized in the program are a result of collaboration between extension and research personnel. It is estimated that 10% of the FTEs expended in this program is multi-function for a dollar equivalent of $60,583 (.1 x 4.57 x $80,136 = $36,622).

Federal Goal 1

AGRICULTURAL MARKETING

Key Theme: Agricultural Profitability

Program Description

The focus of the extension agricultural marketing program has been, and continues to be, twofold. First, the marketing program is designed to provide the most up-to-date information regarding market supply and demand factors for all of our major agricultural commodities. This information is crucial in allowing our clientele to make the most informed marketing decisions possible. Secondly, the program is designed to provide clientele with educational opportunities that allow them to increase their knowledge of marketing alternatives and strategies. These educational seminars provide the basic tools needed by clientele that allow them to take advantage of marketing opportunities as they occur.

The effort to supply our clientele with the most up-to-date marketing information possible is accomplished through several different avenues. First and foremost, monthly market outlooks are prepared for the major agricultural commodities in the state. These reports are made available to every county (parish) extension office by e-mail to ensure that this information is disseminated in the timeliest manner possible. In addition these outlooks are made available through our Extension Farm Management webpage. Besides the monthly outlook reports, summary reports for supply and demand factors are prepared as they become available. Reports such as quarterly grain stocks reports and intended planted acreage reports are provided. The monthly outlook reports and other market factor reports not only provide our clientele with the most up-to-date information possible, but also allow county (parish) personnel to keep abreast of these factors so that they can be better prepared to assist clientele with marketing decisions.

Another avenue used to disseminate market information is producer meetings. In January and February of each year, county (parish) or multi-county programs are held to provide production and commodity information to producers. Extension economists not only provide market outlook information but also information on marketing strategies and alternatives. These meetings are extremely important as they assist producers in making decisions with regard to their crop enterprise selection and ultimately the crop mix for the upcoming growing season.

In addition to producer meetings, Extension economists also prepare an annual agriculture outlook publication in February of each year. As with the producer meetings, this publication provides clientele with information to assist them in making their crop decisions for the upcoming growing season. This annual outlook publication is prepared in cooperation with research personnel in the Department of Agricultural Economics and Agribusiness, along with Extension specialists in other disciplines.

Each year, Extension economists in the Department of Agricultural Economics and Agribusiness, along with Extension specialists in other disciplines, work with the state Farm Service Agency in developing planning prices for all commodities commercially grown in the state.

The other focus of the agricultural marketing program is providing educational opportunities on various topics in marketing. Each year, Extension economists hold marketing seminars or provide marketing education as a component of some other program. During the planning year, a Dairy Options Pilot Program was conducted with cooperation from Mississippi State University and the Risk Management Agency of USDA. This Dairy Options Pilot Program was designed to introduce dairy producers in the state to the use of futures markets in the marketing of their commodity.

In addition to the Dairy Options Pilot Program, a stocker cattle program was conducted for livestock producers at which clientele were introduced to using futures contracts and futures options as risk management tools.

Extension economists also coordinate an FSA borrower training program. While the major focus of this program is farm and financial management, a marketing component has also been included. During the reporting year, the marketing component was revised. Curriculum was developed to stress the importance of marketing in the success of the farming enterprise.

The direction of the programs offered in agricultural marketing is provided through several avenues. An Extension Farm Management and Marketing Advisory Committee comprised of producers, agribusiness, agricultural consultants, and others from throughout the state provides the basis of the direction for the program. In addition to the underlying direction provided by the committee, Extension specialists along with county agents, routinely have both formal and informal discussions regarding the needs of clientele. Also, producers and county agents review computer-based software, fact sheets, newsletters, etc. and provide their input prior to the final development of these materials. Finally, during the planning year, Extension economists conduct surveys focused both on our field agents and clientele. Each field office was asked to provide information on the importance of every program offered through the department as well as areas for new program development. More than 100 producers from throughout the state results were also surveyed to get their views of the programs offered through the department and the suggested areas of future focus.

Multi-state work: Extension specialists have and continue to be very involved in multi-state work. During the reporting year, Extension economists were involved in the Southern Region Extension Outlook Conference, the National Rice Outlook Conference, and the Tri-State Soybean Forum. Along with attending the conferences, Extension economists also presented information at the Southern Extension Outlook Conference.

In addition, much of the material used in the marketing alternative education programs is information shared from other states. The marketing component of the FSA borrower training program was, in part, taken from material from Oklahoma, Kansas, and Texas.

Program Impact

Monthly Market Outlooks and Other Market Reports – Extension economists prepare monthly commodity outlook newsletters which are e-mailed to county agents and placed on the Department's Farm Management webpage. County agents electronically forward these newsletters to producers as well as make printed versions of these newsletters available. It is estimated that over 3,000 producers and agribusiness firms receive these newsletters. These newsletters provide clientele with the latest supply and demand information and have been cited by clientele as extremely helpful in making informed marketing decisions. In addition, county agents have expressed that these newsletters are very useful to them in providing a summary of market conditions so that they may stay informed with the markets that affect the commodities grown by their clients.

Producer Meetings – During the reporting year, Extension specialists (economists) participated in an estimated 30 meetings throughout the state covering various marketing topics. It is

estimated that roughly 1,200 producers were in attendance. These meetings are typically concentrated in a January to March time period. The information provided by Extension specialists has been cited by clientele as extremely important in the crop enterprise selection decisions made by producers.

Annual Agriculture Outlook Publication – In February of every year, Extension economists, with cooperation with other Extension specialists and researchers, prepare an agriculture outlook publication. During the reporting period, approximately 850 copies of this publication were made available to producers, agribusiness firms, and other agriculture-related clientele. As with the producer meetings, this publication continues to be a very popular publication in assisting producers with their crop enterprise selection decisions.

FSA Planning Prices – Each year, Extension economists in cooperation with other Extension specialists and personnel with the state Farm Service Agency, develop planning prices for the upcoming year. These planning prices are used in the Farm Service Agency's farm loan programs and are critical to the ability of producers and lenders in preparing projected cash flow statements.

Marketing Education Program - During the reporting year, five dairy option pilot program meetings where held in Louisiana and Mississippi. These meetings were a combined effort of the LSU AgCenter, Mississippi State University, and the Risk Management Agency. These programs provided participants with a basic understanding of the use of futures markets as a risk management tool. As dairy futures markets and their use are a comparatively new risk management tool, these meetings are critical in introducing these new tools among dairy producers of the state.

Source of Funds

State and Federal (Smith-Lever 3 b, c)

Scope of Impact

Multi-state : Extension economists' efforts in multi-state work is estimated at 15% of the FTEs devoted to the agricultural marketing program.

Extension economists participate in the Southern Region Extension Outlook conference, the National Rice Outlook conference, the Tri-State Soybean Forum, and the Dairy Options Pilot program. In addition to their participation in these multi-state conferences, Extension economists also share much of the information used in development of curriculum for marketing education programs such as the Marketing Agricultural Commodities (MAC) program and the FSA borrower training program. It is estimated that 3.5 FTEs were expended on the agricultural marketing program and 15% of this effort is attributed to multi-state work for a dollar equivalent of $42,071 (.15 x 3.5 x $80,136)

Multi-function : The annual agriculture outlook publication and the FSA planning prices are a result of Extension economists working closely with Extension specialists from other disciplines. It is estimated that 10% of the FTEs 3.5 expended on the agricultural marketing program was due to multi-function work for a dollar equivalent of $28,048 (.10 x 3.5 x $80,136).

Federal Goal 1

AQUACULTURE

Key Theme: Aquaculture

Program Description

The aquaculture program focuses on the delivery of research-based information, as well as updates on national issues and international trade concerns. This information is provided through newsletters, leadership group activities, producer meetings, and phone consultations.

This is an ongoing program facilitating information exchange and dissemination through established channels. Collaboration has been obtained from agencies such as the NRCS, FSA, and Louisiana Department of Wildlife and Fisheries as well as from producer organizations such as the Louisiana State Seafood Industry Advisory Board, Louisiana Alligator Farmers and Ranchers Association, The Louisiana Catfish Farmers Association, The Louisiana Crawfish Research and Promotion Board, and the Louisiana Catfish Promotion and Research Board. Each of these entities provided input, both solicited and unsolicited, concerning programming needs. All input is considered in the formulation of programming, based on the need to balance perceived needs with available resources while maintaining a focus on providing research-based information to solve problems.

A study of LSU AgCenter web site use in 2002 indicated "crawfish" and "recreational ponds" were the two most often-searched topics by visitors to the AgCenter web pages. Aquaculture programming in Louisiana encompasses a variety of audiences, including commercial producers (including no less than 6 major commodities), pond owners, policy and regulatory professionals, and the general public. Each audience has its own needs and concerns, and there is often little opportunity to develop overlapping programming. Nonetheless, over 10,000 citizens and youth gained knowledge concerning aquaculture through 4-H Mini-Farm and Earth Day activities.

Program Impact

Both ground and surface waters are used for aquaculture production in Louisiana. Over the years both the quantity and quality of these resources have been taken for granted. However, several years of drought have reduced both ground and surface water supplies and made them more susceptible to pollution. The recent implementation of the Total Maximum Daily Load (TMDL) provisions of the Clean Water Act have made producers, operators, and the general public aware

that may of the state's waters are not meeting the required standards for their designated uses. Extension aquaculture programming has focused on the development and dissemination of Best Management Practices, with a particular emphasis on water conservation. Additional emphasis was placed on informing producers and other stakeholders concerning ecological impacts of aquaculture. Over 560 commercial aquaculture producers and other stakeholders were kept abreast of proposed EPA effluent guidelines and proposed changes to migratory bird policy changes. Additionally, industry leaders and stakeholders were advised directly concerning evolving EPA effluent limitation guidelines in commodity board meetings.

Although numbers of catfish producers have declined in line with recent industry-wide trends, numbers of crawfish producers have increased over the past 12-18 months. In a 2001 survey of catfish and crawfish producers, the vast majority (93% and 87%, respectively) in each group reported receiving information from the LCES during the past year in newsletters, over the phone, or in person. Seventy-three percent of crawfish producers indicated their management practices have been greatly influenced by Extension recommendations. Fifty-three percent of catfish producers indicated their management practices were 'greatly' in agreement with Extension recommendations, while 47% indicated their management practices were 'somewhat' in agreement.

These levels of contact, and relevancy, are estimated to have remained unchanged since 2001 or to have increased slightly due to 1) higher levels of adoption among surviving catfish operations, and 2) an increased demand for technical information among new producers entering the crawfish industry. During 2002, almost 400 aquaculture producers were exposed to marketing concepts relating to their specific commodities. Additionally, over 40 commercial aquaculture producers were advised on key financial considerations affecting their profitability and competitive positions.

Levels of impact in these and other areas of aquaculture programming (non-commercial ponds and commodities such as ornamentals, pet turtles, and tilapia) have increased, primarily due to internet access. Additionally, industry leaders and stakeholders requested advice and assistance on numerous occasions concerning classroom aquaculture issues, exotic and invasive aquatic species, and leadership development.

County agents in urban/suburban parishes are swamped with recreational/ornamental pond calls and demands. In response to these demands, two very popular Extension publications on ornamental ponds and recreational fish pond management were revised and posted on the AgCenter’s web pages in 2002. Six recreational pond meetings were held throughout the state. Over 300 attendees received information on managing their ponds and controlling aquatic weeds.

On the international front, LSU AgCenter aquaculture faculty developed a prioritized list of consensus stakeholder recommendations and supporting documents for industry development in Honduras. The successful completion of this exercise will hopefully provide opportunities for similar strategic planning within Louisiana.

Source of Funds

State and Federal (Smith-Lever 3 b, c)

Scope of Impact

Multi-state: While the majority of impact occurs in Louisiana, LCES programming and educational materials are occasionally used by clientele from surrounding states (an estimated 30% of total contacts), more distant states, and foreign countries. Educational materials posted on the web and developed through the Southern Region Aquaculture Center represent multi-state efforts to disseminate research-based information. Crawfish and tilapia production programming, in particular, are utilized by producers and consumers in a number of states. Total estimated FTEs expended in the aquaculture program in the report year were 6.12. It is estimated that 65% of program effort is multi-state (EPA effluent issues, Southern Regional Aquaculture Center, professional meetings, phone/internet consultations with out-of-state counterparts, LCES specialist-agents contact and programming), the dollar equivalent of which is $318,781 (6.12 FTEs x $80,136 per FTE x .65).

Multi-function: Much of the past year's aquaculture programming has involved an integrated approach between research and extension- especially with regard to developing best management practices to minimize water quality impacts. It is estimated that 40% of aquaculture program FTEs can be attributed to integrated research-extension activities, the dollar equivalent of which is $176,192 (6.12 FTEs x $80,136 per FTE x .40).

Federal Goal 1

BEEF

Key Theme: Animal Production Efficiency

Program Description

Meetings with stakeholders were held to introduce and discuss efficient production practices for cattle. Principal topics of discussion included reproduction, health, nutrition, low stress handling, quality assurance, marketing, and breeding and animal selection. The Louisiana Calf to Carcass Program was developed and expanded to provide producers with preconditioning and feedlot performance, and carcass information on their own cattle. Meetings were held to discuss the aforementioned data with the stakeholders. Discussion on the general direction of the industry as it becomes more consumer driven was initiated and producers were encouraged to think of themselves more as beef (meat) producers and not cattle (animal) producers. The Forage-Based Bull Performance Test was initiated and maintained to provide seedstock and commercial producers with growth performance data of bulls while on forage as a means of identifying superior bulls for efficient beef production on grass. Planning sessions for the Beef-Forage Short Course were held to discuss the program in order to continue to provide producers with critical information on efficient production practices as well as the general direction of the

industry from a national perspective. In support of the outreach efforts, numerous parish cattlemen's meetings, research and extension field days, home and office visits, mass media contacts (television, radio, news and trade magazine articles, etc.), and other meetings have been held in order to educate producers. Local and statewide advisory committee meetings were held to seek stakeholder input and to encourage participation.

Problems identified through stakeholder input included: marketing, quality assurance, nutrition, reproductive efficiency, herd health and animal selection were all addressed at numerous levels, including local parish meetings/programs, the statewide Beef-Forage Short Course, the Forage-Based Bull Test Program and the Calf to Carcass Program. For example, through the statewide advisory committee meeting, environmental issues, innovative marketing, and efficient beef production were a few of the items identified as areas of concern to beef producers. These are planned as key themes for the 2003 Beef-Forage Short Course. Nationally recognized personnel will be brought in to discuss these topics with producers.

The program provided producers with education to make them more efficient and profitable and compete at the national level. Major activities included the Calf to Carcass Program, Forage-Based Bull Test Program, Beef-Forage Short Course. Thirty three producers participated n the Calf to Carcass Program (consigning 427 calves) and 16 seedstock producers participated in the Forage-Based Bull Test Program (consigning 104 bulls). Meetings were held with producers and allied industry personnel to plan for the 2003 Louisiana Beef-Forage Short Course. Further, a Beef Best Management Practices (BMP) publication was developed and has been disseminated throughout the state for beef cattle producers in Louisiana to use as a guide for cattle production with environmental sustainability.

The following collaborators were involved in educational programming on many levels, including planning, implementation, financial support, presentation, labor support, and data collection:

Fort Dodge Animal Health
Merial Animal Health
Elanco Animal Health
Louisiana Cattlemen's Association
Louisiana Beef Industry Council
Nutrena Feed Division
Lansco Nutritional Services, Inc.
Pfizer Animal Health
LSU School of Veterinary Medicine
Hitch Feedlot, Inc.
Louisiana Tech University
McNeese State University
LSU-Alexandria Campus
Louisiana Department of Agriculture and Forestry
Prison Enterprises
Dixon Correctional Institution

Program Impact

As a result of the educational programs put forth, producers are providing better health, nutrition and reproductive programs for their cattle. Better animal selection has taken place as indicated by the higher quality of cattle being produced. Alternative marketing methods are being adopted. Quality assurance and low stress handling practices have been adopted by producers thereby improving production efficiency. More long range planning with sustainability seems evident. Agent training through multi-state and multi-functional efforts has improved technical transfer to producers.

Source of Funds

State and Federal (Smith-Lever 3 b, c)

Scope of Impact

The impact of the program has specific components which are both confined to Louisiana and serve a multi-state role. Examples of activities typically confined to Louisiana include local parish and district area meetings, advisory committee meetings, the Forage-Based Bull Test Program, as well as Research Station Field Days. These activities are specifically aimed toward Louisiana producers without a significant multi-state component. Examples of activities that have multi-state implications with collaborative agreements include the Louisiana Calf to Carcass Program and the Louisiana Beef Forage Short Course. These programs involve other states such as Texas, Oklahoma, Kansas, Mississippi, Alabama, and Arkansas. The source of some of the ideas and materials for this program are a result of personal and professional contacts made through these multi-state activities. Examples of multi-functional activities (involves both research and extension) include the Calf to Carcass Program, Research Station Field Days, the Beef-Forage Short Course, agent training, and advisory committees.

Multi-state: Collaborative multi-state work constitutes approximately 40% of the effort. At 13.47 FTEs for adult and youth work in beef the dollar equivalent of multi-state work is $431,772.

Multi-function: Integrated research-extension work constitutes approximately 80% of the effort. At 13.47 FTEs for adult and youth work in beef the dollar equivalent of multi-function work is $863,546.

Federal Goal 1

COMMERCIAL NURSERY AND LANDSCAPE SYSTEMS

Key Theme: Ornamental/Green Agriculture

Program Description

Louisiana's commercial nursery and landscape systems program provides service to clientele engaged in commercial green industry activities, namely wholesale ornamental producers of woody and herbaceous plant material, retail garden centers personnel, landscape architects, and landscape contractors. Arborists are also now included in continuing education classes conducted by the LSU AgCenter. Stakeholder input is obtained quarterly throughout the year at meetings attended by representatives of Louisiana's green industry. Clientele surveys are also conducted to obtain program input. Major problems being addressed at the current time include promotion and marketing of plant material (Get It Growing program, Louisiana Select plant promotion and recommendation program), best management practices for irrigation and fertilization management (primarily for nursery crop producers), pest identification and control, and improving efficiency and profitability by adopting recommended production practices. Nursery and landscape professionals are more aware of educational programs now offered by the Louisiana Cooperative Extension Service.

As a result of these program efforts the following has been accomplished: (1) increased use of county agents and regional horticulturists for problem diagnosis and problem prevention, (2) introduction of new plant material, (3) retailers are providing training opportunities for their employees, (4) increased industry awareness of TMDLs, best management practices, and similar environmental issues, and (5) water quality is being recognized by nursery and landscape professionals as a key part of their production and maintenance programs.

Primary program delivery has been accomplished by educational programs (in-state and collaboratively with Arkansas, Mississippi, Alabama, and Texas), farm visits, e-mail updates, web page development, mass media, and newsletters.

Cooperative and collaborative efforts are maintained and are ongoing with the following: Louisiana Nursery and Landscape Association (newsletters and educational programs), Louisiana Turfgrass Association (newsletters and educational programs), Texas Nursery and Landscape Association (five-state educational program effort), nursery and landscape associations, and the state cooperative extension services in Arkansas, Alabama, and Mississippi (Gulf States Horticultural Expo and Mid-South Greenhouse Growers Conference).

Program Impact

Every licensed nursery and landscape professional receives information from the Louisiana Cooperative Extension Service's commercial nursery and landscape systems program annually.

Approximately 50% participate in some of the educational program efforts on a regular or occasional basis. Many make production changes based on information learned. These changes are primarily in the areas of irrigation and fertilization management and selling new plant material. Landscapers are adopting improved pest management strategies and learning to improve horticultural services provided to their clientele using LSU AgCenter recommendations.

Source of Funds

State and Federal (Smith-Lever 3 b, c)

Scope of Impact

The nursery and ornamentals program impact is multi-state (AL, MS, TX, AR) and multi-function. The Louisiana Cooperative Extension Service allocated 3.0 FTEs for the commercial nursery and landscape systems program for 2002.

Multi-state: Approximately 30% (0.30 x 3.0 x $80,136 = $72,122) of the program in commercial nursery and landscape systems is attributable to multi-state efforts (primarily Gulf States Horticultural Expo, Mid-South Greenhouse Growers Conference, and Nursery/Landscape Expo educational short course).

Multi-function: Approximately 25% of the commercial nursery and landscape systems program is multi-function valued at $60,102 (0.25 x 3.0 x $80,136).

Federal Goal 1

COMMERCIAL VEGETABLES

Key Theme: Agricultural Profitability

Program Description

The Commercial Vegetables Extension program was developed by Horticulture Specialists, Researchers and County Agents to assist vegetable growers in the production of high quality vegetable crops at a profitable level. This task is accomplished by farm visits, phone calls, grower meetings, field days, demonstration plots, field tours and publications.

Stakeholder Input in Program. The program is based on input from parish advisory committees, the members of the Louisiana Vegetable Growers Association, growers and county agents.

Stakeholders identified the following production problems:

- TSWV in tomatoes and bell peppers
- Evaluation of new varieties of vegetable crops
- Weed control in southern peas and butter beans
- TYLC Resistant tomato varieties

Traditional extension methods were employed to address these problems.

- Seed of TSWV resistant tomato and bell peppers varieties were obtained from seed companies and distributed to growers.
- TSWV resistant tomato and bell peppers varieties were evaluated in research plots and demonstration plots.
- Variety plots on cole crops, lettuce and sweet corn were grown
- Post emergence weed control plots were put out in Southern Peas and butter beans
- TYLC resistant tomato varieties were evaluated in research and demonstration plots

The results of all plots were recorded and published in annual vegetable research report. This report is distributed to all county agents and growers. Results obtained from plots were utilized in making recommendations and presented at grower meetings. Results from research plots on stations were used in grower demonstration plots.

Seed companies and chemical companies assisted by furnishing the seed and herbicides for testing. The research stations (Burden Research Plantation, Hammond Research Station, and Citrus Research Station, Port Sulphur, assisted by providing plots for evaluation and producing plants for grower demonstration plots. Several growers assisted by conducting demonstration plots on their farm.

Program Impact

A number of growers are back in the tomato business due to the use of TSWV resistant tomato varieties. This is important since tomatoes make up the majority of sales and assist in the sale of other products. Several growers will expand bell pepper acres due to the use of TSWV resistant bell peppers. Several growers will employ BT sweet corn varieties tested in the demonstration plots to expand their sweet corn acreage.

Source of Funds

State and Federal (Smith-Lever 3 b, c)

Scope of Impact

A total of 6.2 FTEs of professional effort was expended on this program.

Multi-state: The only multi-state effort in this program was the Deep South Fruit and Vegetable Growers Meeting and Trade Show. Extension specialists, growers and researchers from Louisiana, Mississippi, Alabama and Arkansas collaborated on the development and presentation of the program. Only 10% of this program effort was devoted to this multi state effort, equivalent to $55,843 (.1 x 6.2 x $80,136).

Multi-function: Extension specialists, agents and researchers collaborated on the development of the program and getting the information to growers for a 100% multi-functional effort (1.0 x 6.2 x $80,136) equal to $558,430.

Federal Goal 1

COTTON

Key Theme: Agricultural Profitability

Program Description

Advisory groups were used to determine industry problems and direction for cotton extension programs. Results from previously conducted surveys were also used for program guidance.

Problems identified included need for cotton variety, pest management, conservation tillage systems, weed control and herbicide information; ways to improve cotton fiber quality; soil management; defoliation and plant growth regulation; irrigation timing and management.

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, plant growth regulator usage, herbicide selection and weed control, defoliation, and irrigation. The following educational activities were conducted during the year.

- 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 50 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.
- Thirty-nine educational meetings and three 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.
- Specialists and agents were quoted in or wrote news articles pertaining to cotton production throughout the growing season.
- The LSU AgCenter cotton web page was updated weekly and e-mail updates sent weekly to growers and agribusiness personnel.
- The state cotton specialists 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 in the cotton education program included extension 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 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, Clemson University, 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.

Program Impact

- Over 2,000 farmers, consultants, and industry personnel attended the field days and educational meetings.
- Training sessions for LSU AgCenter personnel were attended by extension agents working in cotton production programs.
- Extension agents and specialists made presentations at national meetings.
- Twenty extension agents and/or specialists attended national meetings.
- Extension agents and/or specialists conducted 50 on-farm demonstrations.
- Two joint research/extension farm projects were conducted.
- Five out-of-state speakers were used for educational programs.
- Almost 80% of Louisiana cotton producers follow LSU AgCenter recommendations.

Source of Funds

State Smith-Lever 3 b, c
Cotton Incorporated
Private Industry grants

Scope of Impact

Multi-state: Participation in and information-sharing from Beltwide Cotton Conferences, with a total multi-state effort valued at $166,282 (8.3 FTEs x $80,136 per FTE x 0.25).

Multi-function: Researchers and extension specialists collaborated on preparing publications, development and training of agents, consultants, agribusiness personnel, and farmers for a multi-function effort valued at $665,129 (8.3 FTEs x $80,136 per FTE x 1.0).

Federal Goal 1

DAIRY

Key Theme: Agricultural Profitability

Program Description

In meetings with stakeholders (dairy producers, milk marketing cooperatives field men, veterinarians, feed company personnel, lenders, Department of Agriculture and Forestry personnel, NRCS and FSA personnel, health department sanitarians and other agribusiness personnel) problems with interpreting and utilizing dairy herd records, somatic cell count (SCC), forage quality, nutrition, dry cow and replacement management, cow comfort, financial and risk management, herd health and waste management were identified.

Dairy herd record training for field men and producers has continued.

Field days, seminars, conferences, meetings, farm visits and materials on forage quality, dairy cattle nutrition, dry cow management, replacement heifer management, cow comfort, financial risk management and herd health were held.

A Master Farmer program has been developed and will be implemented to educate producers on environmental and waste management concerns and the planning and development of a Master Dairyman program will be discussed with stakeholders.

Program Impact

As a result of these programs, herds on DHI produce approximately 4,000 pounds more milk annually due to producers making improvements in their management and profitability while staying in business longer. Also, as a result of these programs average milk production per cow for all herds has improved. Forage quality is improving due to the adoption of improved harvesting and storage methods of home grown forages. More producers are purchasing higher quality forages to improve the overall nutrient value of the forages consumed by the milking herd. More producers are adopting heat stress abatement strategies in the summer in order to improve cow comfort. Producers are making greater progress in lowering SCC and improving herd health by implementing new procedures and technologies associated with milk quality and herd health. Producers are making progress in the area of environmental stewardship of the land by taking advantage of programs implemented to improve the waste management systems of their operations.

Source of Funds

State and Federal (Smith-Lever 3 b, c)

Scope of Impact

Ideas and materials for the program are the result of SERA – IEG 15 (Dairy), a memorandum of understanding between Louisiana and Mississippi on joint dairy educational programs, collaboration between LA DHIA and MS DHIA for joint training, Southern Dairy Conference, Mid-South Ruminant Nutrition Conference, Dairy Records Management Systems and professional contacts with other states' dairy professionals.

Multi-state: 80% of the program is a result of these meetings and materials. 4.53 FTEs were devoted to the adult dairy effort. Therefore, the dollar value of the multi-state effort was $290,412 (.8 x 4.53 x $80,136)

Multi-function: Researchers, extension specialists and agents collaborated on the development, education and training of agents and producers for an 85% multi-functional effort. Multi-function work equaled $308,564 (.85 x 4.53 x $80,136).

Federal Goal 1

DIGITAL DIAGNOSTIC PROGRAM

Key Theme: Agricultural Profitability

Program Description

Disease, weed and insect diagnosis has been an important educational and service function of the Louisiana Cooperative Extension service for years. Approximately 5,000 samples are diagnosed annually. Traditionally, samples are received by mail and "drop-in" service. The turnaround time by mail is slow and many times unacceptable for serious commercial problems.

Agricultural agents, through personal communication and feedback from training sessions, have had several streamlining and clarification suggestions that have been implemented by incorporation or changing within the digital distance diagnostic network. These suggestions have come from use of the network and network programmers have responded to those suggestions.

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

Program Impact

A digital distance diagnostic network was developed with the University of Georgia. Named the Louisiana Distance Diagnostic Network (LDDN), approximately 1,300 digital image samples were received and diagnosed during the first three years. The savings to Louisiana clients are being calculated, but preliminary estimates are approximately $750,000. More savings are expected during upcoming years of operation.

Source of Funds

State and Federal (Smith-Lever 3 b, c)

Scope of Impact

Louisiana, Texas, Alabama, Illinois 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. The dollar equivalent of multi-state extension work is $183,507 (73 FTEs x 80,136 per FTE x .03) + ($80,136 per FTE x 0.1 FTE).

Federal Goal 1

FOREST LANDOWNERS NATURAL RESOURCES EDUCATION

Key Theme: Forest Landowner Education.

Program Description

Five area forestry agents work with county agents to develop multi-faceted programming for forest landowners. These education programs are designed to provide landowners with the latest technical and policy-related natural resources information.

Each area agent has his own advisory committee system that seeks input from stakeholder groups on an annual basis. All input received from advisory committees is carefully considered by area forestry agents and implemented in the best practical manner. Stakeholders would like to see more forestry management and harvesting operations in the field, more wildlife management programming, and more emphasis on timber taxation and estate planning.

Program Impact

Regional forestry forums were held in Northwest, Central, and Southeast Louisiana that attracted 442 non-industrial private forest landowners this year. At one of these forums, 237 owners from 6 states, representing over 1.5 million acres attended. They listed over 200 practices that would be applied as a result of the program.

Forest landowner associations around the state held meetings and field trips to enable their members to learn more about forest stewardship and management. In total, over 2,700 forest landowners participated in technical and policy workshops, field days, educational tours, or leadership meetings; further, over 20 of these types of meetings were held this year. As examples of adoption rates, at two major workshops, 80% of participants indicated they are following extension recommendations for natural resources management. At other meetings in southwest Louisiana, participants learned to identify and control insects and diseases and to more effectively manage their forestland. Their estimate of value gained from the workshops was approximately $500 per owner. In another set of forestry association programs, association members estimated the value gained from participating in the association at approximately $75,000 per year.

Source of Funds

Smith-Lever 3d, Renewable Resources Extension Act (RREA)

Scope of Impact

Louisiana

Federal Goal 1

HORSES

Key Theme: Agricultural Profitability

Program Description

A survey of equine producers and the Equine Educational Committee identified key problems in the industry. Problems identified included lack of knowledge of recommended practices in the areas of nutrition, reproduction, selection and development, marketing and equine handling skills. A Master Horseman program was developed which included 8 three hour sessions on production and handling of the equine. Additionally, meetings, tours and farm visits were planned to supplement the training. Research and industry expertise was utilized in the program.

Program Impact

Six Master Horseman programs have been planned and approximately 100 key industry leaders have been trained. These leaders are providing training and support for youth and adult training in their area.

Source of Funds

State and Federal (Smith-Lever 3 b, c)

Scope of Impact

Multi-state: Approximately 10 percent of this program is a result of the Southern Regional Equine Committee planning and programming efforts. The multi-state impact is $35,260 (.1 x 4.4 FTE x $80,136).

Multi-function: The planning and implementation of this program is dependent on research, information and assistance. Fifty percent of the program is multifunctional at a cost of $176,299 (.5 x 4.4 FTE x $80,136).

Federal Goal 1

LOUISIANA RICE RESEARCH VERIFICATION PROGRAM

Key Theme: Agricultural Profitability

Program Description

The Louisiana Rice Research Verification Program (LRRVP) is a program designed to demonstrate the most cost-efficient production of rice, increase confidence of rice growers in extension and research recommendations, increase confidence of county agents and specialists in their recommendations, educate county agents and growers in all aspects of rice production, develop an economic data base for rice production, and relay "real world" conditions to researchers in an effort to enhance scientific studies.

Program Impact

The program has met or is achieving all of its intended goals and has expanded in scope each year of the program. Education of county agents both those directly involved and others through training programs, has been an immediate success. Identifying problems worthy of additional research has resulted in new research projects. Economic data collection exposed the need for detailed records to improve efficiency.

Source of Funds

State Louisiana Rice Research Board

Scope of Impact

Although other states are not specifically involved, this program is similar to one in Arkansas. Information exchange between rice specialists in each state adds to the body of knowledge concerning rice production. The program regularly involves researchers making it a multi-function effort. The greatest percentage of time devoted to the program is provided by extension personnel even though researchers are intimately involved.

Multi-function: Multi-function (integrated extension-research) efforts are estimated at 35% of the total number of FTEs expended in the program. These efforts include research-extension collaboration in agent training, formulation of recommendations, publications and trouble shooting during the growing season. The dollar value of the multi-function effort is $135,189 (4.82 FTEs x $80,136 per FTE x .35).

Federal Goal 1

NEMATODE CONTROL

Key Theme: Agricultural Profitability

Program Description

Both reniform and root-knot nematodes continue to be major pest problems of cotton. Although reniform nematode is estimated to occur in 50% of the fields where cotton is produced, root-knot nematode may be in an additional 10-15% of the acreage. Losses can be severe (>50%) if management strategies are not implemented. An educational effort has been under way to promote awareness and management opportunities to producers to lessen the impact of this pest. During this past year, there were eight training meetings for producers and consultants, one nematode workshop, and eight replicated field trials to evaluate the best management practices for nematodes.

Program Impact

A total of 265 producers and consultants attended presentations on cotton nematodes. There were about 350 people who attended the nematode workshop in Atlanta at the Beltwide Cotton Conference. At least 90% of those in attendance implement some of the management strategies outlined in these education programs. Implementation of any management strategy should increase yield and profits by 10-20%.

Source of Funds

State and Federal (Smith-Lever 3 b, c)

Scope of Impact

Multi-state: Most of the ideas and management practices used in the program are the result of interacting with other scientists at meetings such as the Cotton Disease Council at the Beltwide Cotton Conferences, the Cotton Foundation Nematology Committee, and the Society of Nematologists annual meeting. The nematode workshop was a joint venture with nematologists from all the cotton growing states. Fifty percent of the program is the result of these meetings. The dollar equivalent of multi-state work is $60,102 (1.5 FTEs x $80,136 per FTE x .5).

Multi-function: Researchers and extension specialists collaborated on this program to train agents, producers, and consultants for a 10% multi-function effort. The dollar equivalent of multi-function work is $12,020 (1.5 FTEs x $80,136 per FTE x .10).

Federal Goal 1

ORNAMENTAL/GREEN AGRICULTURE

Key Theme: Ornamental/Green Agriculture

Program Description

There are a number of plant-parasitic nematodes under quarantine restrictions both for import into and export from Louisiana. A joint project by the Extension Specialist and the quarantine section of the State Department of Agriculture and Forestry is under way to survey and monitor all nurseries and retail outlets in the state for the presence of these problem nematodes.

Program Impact

Approximately 100 nurseries and retail outlets are surveyed each year. Reniform nematode is considered a quarantine pest by states such as California, New Mexico, and Arizona and some countries. Although this nematode is a very common pest in agricultural lands throughout the state, it has not been a problem either to the nursery industry directly (pest) or indirectly (quarantine issue). The burrowing nematode present in Florida, Puerto Rico, Hawaii, and central and south American countries poses a great threat to our nursery industry (valued at $157 million dollars) if allowed to enter and become established.

Source of Funds

State and Federal (Smith-Lever 3 b, c)

Scope of Impact

Multi-state: Management and quarantine practices for this project come from scientists in other states such as California, Florida, and Nebraska, attending Society of Nematology and Organization of Nematologists of Tropical America meetings, and both state and federal quarantine and certification sources. Ninety percent of the program effort is the result of these meetings. The dollar equivalent of multi-state work is $36,060 (.5 FTE x $80,136 per FTE x .90)

Multi-function: It is estimated that 10% of the program effort is attributable to integrated research-extension effort. The dollar equivalent of multi-function work is $4,006 (.5 FTE x $80,136 per FTE x .10)

Federal Goal 1

PASTURE, FORAGE, AND SMALL GRAINS

Key Theme: Not applicable

Program Description

Extension agents throughout the state with an interest in livestock and crop production normally have advisory committees comprised of various types of stakeholders. At the advisory committee meetings, stakeholders provide input as to what topics and programs in the forage and small grain areas that they would like to see addressed. This input was collected by the extension agents, and then passed on to various subject matter extension specialists.

Through stakeholder input, the topics of pasture weed control and demonstrations with new forage and wheat varieties were addressed.

Field demonstrations involving pasture weed control were conducted at ten locations throughout the state. Various herbicide treatments were applied during May through July, and then the test plots were visually rated for amount of weed control. Tours of these demonstration plots were held at seven of the test locations. Stakeholders were able to evaluate and compare the effectiveness of various weed control treatments. Ten demonstrations involving forage varieties were conducted. This involved seven ryegrass variety demonstrations and three bermudagrass variety demonstrations. Field tours were held at six of these test locations. Stakeholders were able to observe the variety plots and compare the characteristics of the various forage varieties. Four wheat variety demonstrations were conducted. Field tours were held at two of the test locations. Stakeholders were able to observe the variety plots and compare the characteristics of the wheat varieties. In all of these demonstrations, stakeholders were able to take the results of the information presented and apply it on their own farm or ranch.

University of Louisiana at Lafayette collaborated in the program to provide a test location and some labor to conduct a ryegrass variety demonstration.

Program Impact

Stakeholders used the information from the pasture weed control demonstrations to assist them in selecting the proper means of controlling weeds on their farm or ranch. Control measures discussed included chemical and mechanical treatment options. Stakeholders were also educated on how to read and follow herbicide labels properly. As a result of this program, stakeholders will use more efficient and cost-effective means of controlling weeds in their pastures. Stakeholders used the information from the forage variety demonstrations to assist them in selecting the proper varieties for use in their operation. Stakeholders used the information from the wheat variety demonstrations to assist them in selecting adapted varieties for their locale.

Educating stakeholders on how to select varieties based on yield performance and disease resistance was a vital component of the program.

Source of Funds.

State and Federal (Smith-Lever 3 b, c)

Scope of Impact.

Multi-state: None

Multi-function: It is estimated that 30% of the program effort of resource-extension collaboration for a dollar equivalent of $202,136 (.30 x 8.41 FTEs x $80,136).

Federal Goal 1

PLANT PATHOLOGY

Key Theme: Agricultural Profitability

Program Description

Over the past three growing seasons, disease problems limited production of Leyland Cypress Christmas trees in parts of Mississippi, Louisiana, Alabama and Arkansas. The disease was identified as Cercospora sequoiae and traveled to nursery seedlings from several locations in the mid-south area. Demonstrations were conducted and fungicides tested for control of this blight on Leyland Cypress. Excellent control was achieved with currently labeled fungicides. Results were reported at the Mississippi – Louisiana Annual Christmas Tree Growers meeting in Slidell in 2000, at the Annual Southern Christmas Tree Growers Association held in Cordele, Georgia in 2001 and at the Arkansas Christmas Tree Growers Association meeting in 2002. Growers in most southern states have been made aware of the problem and methods of controlling it.

Program 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

State and Federal (Smith-Lever 3 b, c)

Scope of Impact

Multi-state: Approximately 5% of the extension plant pathology specialist's time (.05 FTE) was devoted to this project. The dollar equivalent of this multi-state effort is $4,007 (.05 FTE x $80,136 per FTE).

Federal Goal 1

SOYBEAN AND GRAIN PRODUCTION

Key Theme: Agricultural Profitability

Program Description

Soybean and grain production has become an extremely difficult task over the last three years due to low commodity prices in addition to natural disasters. Soybean and grain producers have indicated at extension advisory committee meetings, producer meetings, and grower association meetings that profitability is becoming harder to achieve. A pilot program was initiated in 1994 with the objective of increasing profitability if extension recommendations were followed. This is a three-state collaborative effort of Louisiana, Mississippi, and Arkansas and is known in Louisiana as the Louisiana Soybean and Research Verification Program or the LSRVP. The LSRVP involves demonstrating to producers what specific factors may contribute to increasing profitability during the growing season. The LSRVP program was not conducted in 2002 due to position changes but is being proposed for the 2003 growing year. Grant funds from state promotion boards are used to fund recurring expenses such as increased travel, extra technical help in the form of research associates, and equipment repairs. We coordinate the programs with our neighboring states at special planning sessions in the spring, and at regional producer meetings such as the Tri-State Soybean Forum, American Seed Trade Association meeting, in addition to the Southern Weed Science Society meeting and the Commodity Classic. These meetings are also used as a means of comparing and sharing results with interested personnel. In addition to the LSRVP, extension programs also coordinate the efforts for the Feed Grain Grower Demonstrations that are conducted over several locations throughout the state. This program is not intended to replace research and most of the demonstrations are not replicated research trials. The objective of these demonstrations is to give the county agent on a parish level the chance to provide local, unbiased information for that parish to other agents, producers, and agri-business personnel. The demonstrations provide a “hands on” production experience and are widely accepted by the agricultural community.

Program Impact

Since there was no LSRVP program in 2002, results will be from 2001. Producers in the LSRVP produced 49% (16 bushels/acre) more soybeans than the average soybean producer in Louisiana which historically has been 25 bushels per acre. They produced them at a cost of $3.46 per bushel, which compares positively with the price that they are currently receiving of about $5.25

per bushel. Similar trends have been reported in the other collaborating states of Mississippi and Arkansas. We have demonstrated that the most important contributions to producing higher yields are: proper soil pH, use of correct hybrids/varieties and maturity groups, optimum plant populations and row spacing, timely irrigation, crop rotation, weed control and overall solid integrated pest management decisions. The use of border irrigation by Louisiana producers has become more widely accepted and is continuing to increase yearly. Border irrigation not only saves water but labor and equipment costs involved with irrigating feed grains. The Arkansas Irrigation Schedule is being used as the guideline for implementing irrigation schedules. Researchers in at the Northeast Research Station in St. Joseph are also evaluating devising a Louisiana Irrigation Schedule Program. In addition to the LSRVP program the crop demonstration efforts were extremely successful. A total of two wheat, and sixteen corn and soybean demonstrations were conducted across the state. Four field days associated with these demonstrations were conducted and 250 producers were able to obtain new and informative knowledge regarding feed grains. Because of the success of the LSRVP and crop demonstration program, other specialists in cotton, sugar, and hay have now incorporated similar programs in their work efforts.

Source of Funds

State and Federal (Smith-Lever 3 b, c)

Scope of Impact

Most of the work that is conducted in this program is from collaboration with the above-mentioned states and other soybean and grain producing states. Findings are reported to research scientists in the three-state area which helps them devise future research objectives. Collaborations with disciplines including agronomy, plant pathology, entomology, weed science, agricultural economics, and agricultural engineering are utilized to make extension recommendations to producers. In addition to this collaborative effort among research scientists and extension personnel, advisory meetings are held on an annual basis to plan research and extension activities. Technical meetings are conducted to train agents and growers on practices regarding the above stated themes. Some of the meetings are: Louisiana Association of Agronomists, Louisiana Plant Protection Association, Southern Weed Science Society, Tri-State Soybean Forum, Commodity Classic and the American Society of Agronomy.

Multi-state: About 30% of our efforts are multi-state. Meetings, publications, and recommendations derived from these multi-state efforts amount to $156,265 (6.5 FTE X $80,136 per FTE x .30).

Multi-function: Integrated research-extension efforts amount to 35% of our total effort and include agent training, formulation of recommendations, publications, grower meetings and field trouble shooting. These multi-function efforts amount to $182,309 (6.5 FTEs x $80,136 x .35).

Federal Goal 1

WEED SCIENCE EDUCATION PROGRAM

Key Theme: Agricultural Profitability

Program Description

Reduced tillage practices are increasing as input costs such as fuel, labor and equipment purchases and repair tend to increase. By reducing the amount of tillage done to cropland, producers can not only reduce input costs, but increase soil tilth, moisture permeation, and reduce erosion. A key component in reduced tillage is vegetation management prior to crop planting. Herbicide selection and application timing in critical in this system in order to maximize weed control and reduce potential insect pests.

A comprehensive extension education program for crop producers was implemented. The goal of this program was to demonstrate the critical need for proper weed identification and herbicide selection for controlling the specific weeds present. The diverse weed spectrum present in Louisiana makes proper weed identification imperative. The following education activities were conducted:

- Three agent-training sessions were conducted to inform LSU Agricultural Center personnel, working in crop production, of the latest weed control recommendations and new herbicides (14 agents); weed identification and herbicide symptomology; and drift symptomology (16 agents). The state weed specialist in cooperation with parish extension agents and private consultants conducted six on-farm demonstrations specifically targeting various weed spectrums to demonstrate the importance of proper herbicide selection based on the weeds present. Both new and existing herbicide programs were implemented.
- Fifty producers and consultants attended a "Burndown Workshop" that was conducted and included presentations on insect management, herbicide selection, weed identification and nozzle selection. A demonstration of drift-reducing nozzles was also conducted.
- A monthly cotton newsletter was distributed to producers, consultants, and agribusiness personnel throughout the growing season via electronic mail (300 contacts) and printed media (200 copies). 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.
- A new publication "Guidelines for Managing Winter Vegetation in Northeast Louisiana" was developed for Louisiana producers. This publication included color weed identification pictures, weed control rating tables, plant-back intervals, and insect management strategies to implement when using reduced tillage practices. Four thousand copies were printed and distributed.

Program collaborators included 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; Cotton Incorporated.

Program Impact

- Over 2,000 farmers, consultants, and industry personnel attended the field days and educational meetings.
- Training sessions for LSU AgCenter personnel were attended by 95% of the Extension agents working in row crop production programs.
- Extension specialists made six presentations at national meetings.
- 15 extension agents and/or specialists attended national meetings.
- Extension agents and/or specialists conducted six on farm demonstrations.
- Producers gained knowledge of weed identification, herbicide selection, and spray drift-reducing technology.

Source of Funds

State and Federal (Smith-Lever 3 b, c)
Private industry

Scope of Impact

Multi-state: Delta Weed Workers Meeting - 4.5 FTEs with 20% effort were devoted to the program for a total multi-state effort of $72,122 (4.5 FTEs x $80,136 per FTE x .20).

Multi-function: Researchers and extension specialists collaborated on the development of publications, training of agents, consultants, agribusiness personnel, and farmers for a 100% multi-functional effort of $1,568,261 (19.57 FTEs x $80,136 per FTE x 1.0).

GOAL 1
RESEARCH SUMMARIES

ANNUAL REPORT OF ACCOMPLISHMENTS AND RESULTS

Key Theme: Agricultural Competitiveness-Domestic and Trade

Goal 1: An Organized Agricultural System that is Highly Competitive in the Global Economy

P. Lynn Kennedy, Associate Professor, Department of Agricultural Economics and Agribusiness, Louisiana Agricultural Experiment Station

Issue: The international environment in which the U.S. agricultural industry competes has changed dramatically and continues to change as multinational (World Trade Organization) and regional (North American Free Trade Agreement and Free Trade Area of the Americas) trade agreements continue to change through ongoing discussions and negotiations. At the same time, domestic agricultural policies continue to have a significant impact on the competitiveness of U.S. agriculture. Given this, the goal of this project is to determine the economic consequences of trade impacts stemming from changes in domestic agricultural and economic policies and to assess alternative strategies to improve the competitiveness of Southern agriculture. In addition, this project seeks to determine the economic impacts of continued reforms in trade treaties and agreements and to assess alternative strategies to improve the competitiveness of Southern agriculture.

What was done: Several sub-goals designed to achieve the objectives of this project were accomplished during this time period. These include the following:

1. A book entitled "Agricultural Trade Policies in the New Millennium" by P. Lynn Kennedy and Won W. Koo was completed and is currently being distributed by Haworth Press. This book brings together work from various agricultural trade and policy experts from around the world to analyze various agricultural trade issues facing Southern agriculture.
2. Research analyzing the impact of increasing the sugar import quota for Mexico and Cuba was completed and is currently being disseminated. Results provide information to help producers and policy-makers to determine the impacts of various policy options.
3. Research is being conducted in conjunction with Texas A&M University, Texas Tech University, and New Mexico State University under the auspices of the Center for North American Studies to analyze commodity specific competitiveness among countries in the North American Free Trade Agreement. Results provide information to help policy-makers, producers, and researchers determine the feasibility and impacts of various policy options.
4. Research is being conducted in conjunction with the University of Georgia to determine the competitiveness of various peanut producing countries in the Western Hemisphere (Argentina, Brazil, Mexico, and Nicaragua in particular). Results provide information to help policy-makers, producers, and researchers determine the impact of various policy options with these trading partners through a Free Trade Area of the Americas.

Impact: The expected benefits from the outcomes of the S-287 research project will accrue to stakeholders, peers, agribusinesses, policy/decision makers, and government through improved understanding of trade agreements and economic policy impacts on Southern agriculture. This project will provide information on the expected impacts of freer trade and alternative domestic

policy regimes on Southern agriculture. Assessment of strategies will enhance the performance of Southern producers and entities in assessing opportunities for developing competitive advantages as well as developing strategies for improving the competitive advantage for Southern agricultural commodities and products. An important component of this project and end goal of this work is to provide road maps of policy options and consequences.

Sources of Funding: State, Hatch, Multi-State

ANNUAL REPORT OF ACCOMPLISHMENTS AND RESULTS

Key Theme: Proactive Research in Integrated Pest Management

Goal 1: An Organized Agricultural System that is Highly Competitive in the Global Economy

T.E. Reagan, Professor, Department of Entomology, Louisiana Agricultural Experiment Station
M. O. Way, Associate Professor of Entomology, Texas A&M Research and Extension Center - Beaumont

Issue: The Mexican Rice Borer (MRB), *Eoreuma loftini* (Lepidoptera: Crambidae) is a key insect pest which causes up to 50% yield loss in some Texas rice fields and has the potential to cause far greater yield devastation in the current sugarcane cultivated varieties when the insect infests the Louisiana sugarcane industry. During each of the last 3 years, the MRB continued movement has infested one or two new Texas counties. The pest is now within 50 miles of sugarcane produced near Beaumont and transported annually to mills in Louisiana for processing. Research efforts are underway to develop and implement effective IPM management procedures that will help mitigate these potential pest problems for the sugarcane and rice industries of Texas and Louisiana.

What was done: This project involves joint research and extension activities of the LSU AgCenter and Texas A&M, with both programs interacting extensively with sugarcane and rice growers, ag consultants and state departments of agriculture. The northward and westward movement of the Mexican rice borer (MRB), monitored with pheromone traps and field infestations in the Texas rice belt and in western Louisiana, has shown that high populations on the western edge of MRB range now occur in Galveston, Harris, and Austin counties. No MRB have yet been found in the heavily monitored Louisiana parishes (Calcasieu, Jefferson Davis, Iberia, St-Mary), or in the extreme east Texas counties (Orange, Chambers, Liberty, Hardin, Jefferson). In assessment of commercial sugarcane varieties, CP 70-321 was more resistant than LCP 85-384 or HoCP 91-555 by 2.4-fold in reduced damage and 3.5-fold in reduced moth production. Resistant HoCP 85-845 (1.8-fold at Weslaco) with low MRB pressure (irrigated sugarcane) was only 40 % more resistant at Ganado where yield loss of some varieties was over 50 %. The new sugarcane cultivar HoCP 96-540 was also highly susceptible to MRB. A 10-variety MRB rice test at Ganado showed a 32% yield loss (2833 lbs/acre) in Priscilla variety and an average loss among all cultivars of 1246 lbs/acre; XL-7 and XL-8 were the most resistant. Rice insecticide trials were more effective than in sugarcane against MRB. Moth catches were

lower and delayed until panicle initiation in rice as compared to high populations early of 240 in a trap in one week near the drought stressed sugarcane. Field site visits to observe and implement research on MRB management were conducted for county agricultural extension agents and ag consultants from Louisiana and Texas.

Impact: Research indicates that the management of the Mexican rice borer for both sugarcane and rice will best be accomplished with a continued emphasis on developing MRB resistant varieties. Cultural practices to minimize drought and nutrition stress, and enhance production quality will be particularly valuable in sugarcane management. The potential value of insecticides for MRB management is substantially greater in rice production than for sugarcane.

Sources of Funding: USDA-CSREES Special Grants – Aquaculture Program

ANNUAL REPORT OF ACCOMPLISHMENTS AND RESULTS

Key Theme: Behavioral and Productivity Responses in T-Maze Classified Chicks

Goal 1: An Organized Agricultural System that is Highly Competitive in the Global Economy

Dan Satterlee, Department of Animal Sciences, Louisiana Agricultural Experiment Station, LSU AgCenter

Concurrent with the practice of intense selection for performance traits, many behavioral characteristics are known to vary substantially between and within genetic strains of chickens. These include: aggressiveness, mating behavior, fearfulness, feather pecking, and social motivation. Many of these traits can exert profound effects on the welfare and productivity of farmed poultry because they influence the birds' ability to adapt to their social and physical environment. In Argentine studies, success in a new chick behavior test, rapid negotiation of a T-maze in order to regain visual contact with other chicks, was linked to improved production performance, greater sociality, and a reduction in stress. At the LSUAC, the relationship between this behavior and growth was recently re-examined in broilers reared under quasi-intensive, environmentally controlled conditions such as would be typically found in commercial rearing facilities in Louisiana and throughout the Southeastern United States.

The T-maze uses a mirror at the end of a corridor in the maze that stimulates the test chick to leave a start box and move towards its reflection. Upon reaching the mirror it can see other birds and thereby be stimulated to exit the maze (a successful outcome). The speed at which a chick traverses the maze is considered indicative of its subsequent production performance (i.e., fast chicks gain more weight). At LSU, the T-maze performance of 3-day-old broiler chicks was assessed using two measures: 1) chick latency to exit the start box, and 2) chick latency to reach the T-maze mirror. After testing 600 chicks, the fastest (upper 25%) and slowest (lower 25%) birds within a sex and within each T-maze criterion were classified as high performers (HP) and low performers (LP), respectively. Within each of these two T-maze measures and for each sex,

the relationships between performance category (HP or LP) and body weight were examined at 4, 42, and 56 days of age. All HP and LP chicks had similar body weights at 4 days of age, but chicks classified as HP according to both T-maze latency measures were statistically heavier than LP ones at harvest (42 and 56 days of age). These differences were apparent in both sexes.

In conclusion, broiler chicks that were quickest to exit the T-maze start box and reach the T-maze mirror gained more weight by harvest than their slower counterparts. Therefore, the T-maze test may be a particularly valuable and commercially important selection criterion for future breeding programs. Its use would likely lead to improvements in the productivity and well-being of broiler chickens. In addition, the T-maze technique is non-invasive, inexpensive, and simple and easy to apply.

ANNUAL REPORT OF ACCOMPLISHMENTS AND RESULTS

Key Theme: Crawfish Survival and Reproduction in Burrows during Drought

Goal 1: An Organized Agricultural System that is Highly Competitive in the Global Economy

W. Ray McClain, Professor, Rice Research Station, Louisiana Agricultural Experiment Station, LSU AgCenter

Issue: Production of crawfish from aquaculture operations in Louisiana is highly variable among geographical locations and from year to year. Because crawfish aquaculture relies on natural reproduction from resident or supplemented broodstock that reproduce in sub-surface burrows during the summer/fall when ponds are dry, production variability may be largely due to variability in reproductive success within the burrow due to weather patterns, particularly rainfall. Summers in Louisiana vary from prolonged periods of drought to frequent, almost daily precipitation. Anecdotal evidence obtained from historical crawfish aquaculture production statistics in Louisiana indicates that wet summers/autumns are conducive to crawfish production and dry summers/autumns appear to be detrimental. Many have attributed the historically low crawfish production during the 2000 and 2001 harvest seasons to a new, widely used rice pesticide (Icon); however, the state also experienced historically low rainfall totals during that time frame, especially during the critical period of burrow occupation that precedes each production season. Although weather factors have been considered a major dynamic in the recent and past episodes of low crawfish production, the effects of drought on crawfish survival and reproduction in burrows have not been thoroughly studied. Thus, this study was initiated to obtain baseline information on crawfish survival and reproductive success within artificial burrows by simulating drought conditions during summer and early autumn. Simulated precipitation and water table conditions were manipulated as two hydrological factors associated with drought.

What Was Done: The effects of simulated drought on mature female crawfish in burrows were investigated using a system that confined crayfish in self-constructed burrows under controlled

but near normal conditions. Artificial precipitation and sub-surface water levels were manipulated to simulate drought or "rainy" weather patterns during the typical burrow occupation period for crayfish in Louisiana. The study, a 2 x 2 factorial arrangement of treatments (factor 1 = precipitation, factor 2 = declining water table), was conducted over two seasons. Survival of crawfish during the 6-month burrow occupation was highly variable (range 39 - 100%) but was weakly associated with treatment effects. Reproduction occurred in 50% or less of the animals within a treatment group by year and was most affected by the restricted precipitation treatment. Overall, the water table access had little effect on reproduction, but restricted precipitation resulted in a 62% reduction in the number of survivors that spawned. These results support much of the antidotal observations regarding drought and decreased crawfish reproduction (hence reduced production), but further research is needed relative to burrow ecology and drought and its impact on crawfish production.

Impact: These findings have provided corroborative data to support the theory that weather patterns, particularly drought, could possibly impact crawfish production through reduced reproductive success of broodstock. This information is important to crawfish producers and scientists in better understanding some of the cause/affect relationships that can occur in production aquaculture of crawfish as practiced in Louisiana. Furthermore, these findings lends credence to the theory that drought, particularly during the burrow occupation period, may have been a major or contributing factor in the historically low production during 2000 and 2001, which has been attributed by many to the rice pesticide Icon alone.

ANNUAL REPORT OF ACCOMPLISHMENTS AND RESULTS

Key Theme: Development of Wheat and Oat Varieties for the Gulf Coast

Goal 1: An Organized Agricultural System that is Highly Competitive in the Global Economy

Stephen A Harrison, Professor, Agronomy Department, H.J. "Rick" Mascagni and G. Boyd Padgett, Northeast Research Station, Sandy Stewart and Steve Moore, Dean Lee Research Station, Louisiana Agricultural Experiment Station

Issue: Wheat is an important crop in Louisiana and along the Gulf Coast. Louisiana produces about 200,000 acres each year. Wheat for grain is important in crop rotation systems and wheat is used as winter pasture or as a cover crop in conservation tillage production for summer crops. Wheat provides cash flow in the spring for production of other crops. Major constraints to wheat production along the Gulf Coast are a lack of adapted varieties, and diseases and environmental limitations. There are no other breeding programs in Louisiana, Mississippi, or Alabama and there are only two commercial wheat breeding programs in the entire southern US. The LSUAC program was established to meet the demand of Louisiana growers for high-yielding, locally-adapted wheat and oat varieties.

What was done: The LAES continued to develop wheat and oat varieties for this region. There were 176 wheat and 83 new oat crosses made in 2002. Crossing (hybridization) is the first step in the multi-year variety development process. Over 5000 plots of segregating populations and advanced lines, and 45,000 genetically distinct headrows (progeny rows) were grown and evaluated. In additional to developing new varieties, the LAES conducts performance trials at seven locations each year. Data from these trials is the only unbiased source of information available to growers and seedsmen. Since most wheat and oat varieties perform poorly in Louisiana this information is essential to growers when making variety choices. *Fusarium* headblight (FHB) produces a mycotoxin and has become a major wheat disease in the US, particularly in areas where wheat follows corn in a conservation tillage program. The LAES participates in a national effort to protect the food supply by developing wheat varieties that are resistant to FHB.

Impact: LA841 wheat variety was released by this program in 2002 and follows LA422 which is widely grown in Louisiana. LA841 is high-yielding and resistant to major pathogens of wheat in the region, including leaf rust and stripe rust. Genetic resistance to these fungal diseases saves growers production costs, about $15 per acre to apply fungicides, and reduces application of pesticides to the environment. LA841 will be commercially available in 2003. It is licensed to a Louisiana company which had sales of LA422 in excess of 125,000 bags with a net value of over three-quarters of a million dollars for the 2001-2002 growing season.

LA9339 oat was licensed in 2002 to Ragan & Massey Seed, another Louisiana company. This oat variety has excellent grain and forage yield across the southern US. Oats are widely used as high-quality winter pasture. LA9339 will contribute significantly to cattle, dairy and other livestock production across the region by providing a productive, disease resistant winter pasture. LA9339 will provide a source of revenue for a regional seed company and will also be marketed and used as a source of winter forage for deer and other wildlife.

Salt tolerance from a Tajikistan wheat accession has been crossed into the Louisiana breeding populations and these are being evaluated as cover crops and wildlife feed in vulnerable coastal areas. Coastal erosion is of major concern in Louisiana and many coastal areas are being reclaimed though sediment pumping. Pumped coastal sediments are highly saline and are vulnerable to loss from erosion and tropical storms until native vegetation can be established. A salt tolerant wheat would provide an excellent and cost effective method to stabilize reclaimed areas and would be a valuable source of feed for wildlife.

Sources of Funding: State, Hatch, Louisiana Soybean and Grain Research and Promotion Board, CSREES–US Wheat and Barley Scab Initiative

ANNUAL REPORT OF ACCOMPLISHMENTS AND RESULTS

Key Theme: Feeding Cull Cows for Added Income

Goal 1: An Organized Agricultural System that is Highly Competitive in the Global Economy

David W. Sanson, Associate Professor, Rosepine Research Station, LSU AgCenter
Sidney M. DeRouen, Professor, Hill Farm Research Station, LSU AgCenter

Issue: Evaluation of 13 years of reported monthly prices of market cows indicated that the market was approximately $5/cwt lower in the fall (November) than in the spring (March). The low market in the fall is in part due to an oversupply of cows. Most producers sell their cull cows in the fall. The higher market in the spring is due in part to a shortage of cows being marketed and due to increased competition from local producers who purchase cows to graze surplus spring grass. There is also a price differential of approximately $5/cwt between grades of market cows, with the thinner or lower grading cows being less valuable. This price difference is directly related to lean meat yield.

What was done: Projects were conducted at the Rosepine and Hill Farm Research Stations for two years. Cows were purchased in the fall from sale barns within 100 miles of each station. These cows were transported to the stations and evaluated in feeding trials. Cows were fed for 100 to 120 days then sold at local sale barns. Some of the data collected included weight gain, purchase price, sell price, and feed cost.

Impact: The average increase from the purchase price in the fall and the sell price in the spring of cows varied from $9.97/cwt to $14.97/cwt depending on year and station. This price difference is similar to the range observed in the13-year monthly market price report. The average increase in value of the cows ranged from $133 to $201. Feed cost ranged from $50 to $91 per cow depending on feedstuffs fed. Additional costs varied from $37 to $45 per cow. This resulted in an average income over expenses ranging from $33 to $66 per cow. Approximately 20% of these cows had health problems that resulted in either death or extremely poor performance. When the data was evaluated separately by health status of cows, income over expenses averaged $-30 per cow for the cows with health problems compared to $82 per cow for cows that were not affected by health problems. Approximately 40,000 market cows were sold in Louisiana last year. Assuming that 25% of these cows were sold in thin condition in the fall, an additional $50 per cow (average of $33 and $66) would result in added value to the Louisiana beef industry of $500,000 if producers retained these cows to spring.

Source of Funding: State

ANNUAL REPORT OF ACCOMPLISHMENTS AND RESULTS

Key theme: Impact of habitat manipulation on wildlife ecology

Goal 1: An Organized Agricultural System that is Highly Competitive in the Global Economy

Michael J. Chamberlain, Assistant Professor, School of Renewable Natural Resources, Louisiana Agricultural Experiment Station, LSU AgCenter

Issue: Wildlife resources generate considerable interest and economic return for Louisiana. Specifically, sport hunting is a primary use of wildlife in Louisiana, and generates billions of dollars annually. As societal demands continue to place increasing pressure on wildlife species through urbanization, habitat destruction, and habitat insularization, wildlife managers face increasingly difficult decisions regarding management of habitats to benefit wildlife. Currently, managers are being asked to produce stable to increasing wildlife populations on increasingly smaller parcels of land, requiring innovative approaches to produce and maintain high quality habitat for a variety of species. Notably, forest management strategies continue to evolve throughout the southeastern United States as intensive management for wood fiber increases. Likewise, management of bottomland hardwood systems is dynamic, suggesting that wildlife species must continually adapt to landscape-level changes in habitat structure to successfully exploit resources within habitats they inhabit. Research is needed quantifying effects of different forest management strategies on wildlife populations. Furthermore, it is necessary to use empirical data to develop sound habitat management strategies, balancing societal needs for wood fiber and forest products with wildlife.

What was done: Four individual research projects were established to examine relationships of a variety of wildlife species with habitat conditions and to examine effects of forest management on select wildlife communities. A wild turkey research project was initiated within a publicly owned bottomland hardwood forest of the Atchafalaya Basin. The goal of the turkey research is to examine response of female wild turkeys to habitat conditions created through multiple forest management strategies (group selection and individual tree harvest). A secondary objective is to describe habitat selection of female turkeys at multiple scales and to determine ecological consequences of observed selection patterns. Two bobwhite quail projects are ongoing, one is being conducted on 2 sections of property owned and managed by the U.S. Forest Service. This project is quantifying effects of different forest management at the landscape-level on northern bobwhite abundance and distribution. Specifically, bobwhite populations are being monitored on multiple pine-dominated sites being managed with varying burning frequencies, as well as on sites with little to no prescribed fire. The goal is to determine large-scale affects of forest management within pine-dominated landscapes on bobwhite populations. A secondary objective is to quantify effects of growing vs dormant season prescribed fire on bobwhite abundance on landscapes managed intensively for red-cockaded woodpeckers. The remaining project centered on northern bobwhite is being conducted on properties owned by Weyerhaueser Company and is examining effects of using selective herbicides to manage habitats for bobwhite at multiple

spatial scales. This project is using a variety of field techniques, such as call surveys, radio-telemetry, and human imprinted bobwhite chicks to determine how herbicide application is affecting quality of habitats for quail at different resolutions, thereby improving the inferential nature of the data collected. Lastly, a project examining effects of red-imported fire ants on faunal communities is entering its second year following a full year of pre-treatment data collection. This experiment involves controlling fire ant populations on 5 acre parcels of pine forests and examining population response of native insects and other species on treated and paired non-treated sites of equal size. The objective is to determine whether fire ants are negatively impacting native faunal communities, specifically insects, which are vital to reproduction in wild turkeys, northern bobwhite, and many other ground-nesting birds.

Impact: Each of the abovementioned projects has considerable relevance to stakeholders and citizens interested in wildlife resources. The wild turkey is a vitally important game species to Louisiana, and effects of forest management on turkey reproduction are unknown in bottomland hardwood forest systems. Therefore, the wild turkey project will provide information needed to effectively manage turkey populations for the improved benefit of society. The fire ant research project has important implications to management of many wildlife species, as effects of fire ants on numerous wildlife communities are unknown. Both projects examining effects of land management on northern bobwhite have potential to improve bobwhite populations, which have declined steadily for the past 10 years. Bobwhite populations on managed public lands are positively related to increasing prescribed burning frequency, indicating that increases in prescribed fire would benefit quail. In the absence of fire, selective herbicides do improve quality of habitats for bobwhite and these habitats are used by quail. However, the greatest net effect of herbicide application appears to only be realized after a renovating prescribed fire.

Sources of Funding: State, United States Department of Agriculture, Louisiana Department of Wildlife and Fisheries, Weyerhaueser Company

ANNUAL REPORT OF ACCOMPLISHMENTS AND RESULTS

Key theme: Integrated Pest Management

Goal 1: An Organized Agricultural System that is Highly Competitive in the Global Economy

Michael Stout, Associate Professor, Department of Entomology, Louisiana Agricultural Experiment Station, LSU AgCenter

Issue: The most destructive insect pest of rice in southwest Louisiana is the rice water weevil, *Lissorhoptrus oryzophilus*. Yield losses attributable to this pest regularly exceed 20% in experimental plots in southwest Louisiana. The current management program for this pest relies almost exclusively on applications of insecticides. Efforts (funded by other sources) are under way to increase the effectiveness of insecticide applications against this pest by refining current economic thresholds and developing improved methods of monitoring for this pest. However,

reduced reliance on insecticides and increased reliance on alternative strategies are needed to reduce the environmental impacts and increase the affordability and sustainability of the management program for the rice water weevil. The goal of this project is the diversification of the management program for this insect via the integration of several cultural practices into the program. The cultural practices investigated during 2002 were delayed flooding, early planting, draining of fields, fertilization, and shallow flooding of rice fields.

What was done: The relationships between density of weevil larvae and rice yields were investigated in plots flooded 20 days after planting (3 leaf stage) and in plots flooded 34 days after planting. The two-week delay in flooding resulted in rice plants that were much more tolerant of feeding by weevil larvae than rice plants flooded earlier. In addition, a separate experiment showed that rice plants in the early stages of tillering were more susceptible to larval infestation than were plants in later stages of tillering and were also more susceptible than were plants in the 4-leaf stage. These results, coupled with prior research showing that weevil females do not lay eggs until fields are flooded, suggests that delays in flooding, when feasible, can aid in management of the rice water weevil by effectively increasing the tolerance of rice to damage by this insect.

The influence of date of planting on severity of rice water weevil infestations was investigated in collaboration with Dr. S. Linscombe (LSU Rice Research Station). Contrary to expectations, and contrary to results of previous experiments, plots of rice planted in late February and early March did not escape damaging infestations of weevil larvae. In a separate study, however, populations of adults in recently-flooded fields arrived earlier reached their maximum densities more quickly in late-planted fields than in early-planted fields. These data suggest that early planting may affect timing of infestation even if the severity of infestation is unaffected.

Flight activity of weevils in early season rice was monitored in an effort to develop a degree-day model to predict emergence of weevils from overwintering. The development of such a model will be instrumental in implementing the practice of early planting for management of the rice water weevil. Two light traps, one with an incandescent light source and the second with an ultraviolet light source, were placed near experimental plots in Crowley, LA. Weevils were first caught in the UV trap on 2 April; weevils were first caught in the incandescent trap on 14 April. Two major periods of flight activity were detected in spring, the first beginning in late April (overwintering adults) and the second in early June (first generation adults). These data, and flight data from previous years, will be used to develop a degree-day model to predict emergence of weevils from overwintering. This model will be tested in 2003 by placing traps in at least 4 locations in 3 states.

Depth of flooding did not influence densities of rice water weevil larvae in two field experiments.

The practice of draining fields for management of rice water weevil larvae is the only remedial strategy available to producers in cases of insecticide failures. In a preliminary study of draining as a management strategy, draining of plots did not effectively reduce populations of larvae.

Increases in the rate of N fertilization were associated with increases in densities of weevil larvae in another experiment. Higher rates of fertilization, however, did not ameliorate yield losses from the weevil. Results of fertilization experiments in Texas and Arkansas were similar.

Impact: Future integration of cultural practices into the weevil management program in Louisiana should result in a reduction in amount of insecticide applied to Louisiana rice and should also increase the cost-effectiveness of management programs. The use of new technologies for weed control will facilitate adoption of some of these cultural practices. The cultural practices investigated will have the most direct impact on rice production in south Louisiana. However, aspects of this research will be applicable in all areas where the rice water weevil is an economic problem (Arkansas, Texas, Mississippi, California, and Missouri).

Sources of funding: Federal funds (USDA-NRICGP, Biologically-Based Pest Management Program)

ANNUAL REPORT OF ACCOMPLISHMENTS AND RESULTS

Key Theme: Profitable New Weed Control Options for Louisiana Rice Production

Goal 1: An Organized Agricultural System that is Highly Competitive in the Global Economy

Eric P. Webster, Associate Professor, Department of Agronomy, Steve Linscombe, Professor, Rice Research Station, Richard Dunand, Professor, Rice Research Station, LSU AgCenter

Issue: Red rice infesting commercial rice can be difficult to control due to similarities in phenology and morphology. Red rice suppression can be obtained by applying preplant incorporated herbicides prior to water-seeding rice. However, this practice is inconsistent and must be coupled with a precisely timed flood. Rice producers often rotate to soybean for a minimum of 2 years to reduce heavy infestations of red rice. Preplant incorporated and preemergence herbicides applied at high rates and a postemergence herbicide is often needed to obtain total control of red rice in soybean production. Several changes have occurred in rice variety development over the past 20 to 30 years; however, in the next few years the first herbicide resistant/tolerant-rice lines will become commercially available that will allow rice producers to control red rice and other difficult to control weeds in a commercial rice crop.

What was Done: In cooperation with other scientist at the Rice Research Station near Crowley, La research was established to evaluate herbicide resistant/tolerant rice lines. Clearfield rice, tolerant to the imidazolinone family of herbicides, was developed at the Rice Research Station and is being evaluated for potential in an overall weed control program. NewPath is a selective herbicide targeted for use in the tolerant rice, and previously it has been used in soybean for control of broadleaf weeds and grasses and is sold under the trade name of Pursuit. Research was established to determine best application timings, rates and water-management strategy for NewPath use in drill-seeded-rice Clearfield rice.

Impact: Clearfield rice will revolutionize weed control strategies in rice production. Research indicates that NewPath can control red rice and other difficult to control weeds in a rice production system. The Clearfield technology has a full registration in 2003. For the first time producers will have the ability to control red rice preemergence and/or postemergence in commercial rice with no adverse effects to the crop. This technology will affect all aspects of pest management. Certain cultural practices will no longer be used or limited because red rice control measures will change. The possibility to reduce water use, reduce off-site movement of soil, fertilizers, and other pesticides because producers can drill-seed rice and possibly delay permanent flood establishment. Rice producers will have more flexibility to integrate more productive, economical, and environmentally positive practices into their production systems. Weed control cost will decrease drastically. The number of herbicide applications will be reduced. The amount of active ingredient will be reduced from pounds to ounces per acre, and cost of hand removal of red rice plants from commercial rice fields will be minimized thus reducing overall production cost. Extra cleaning for removal of red rice seed from harvested rice will not be necessary, because the red rice will be controlled prior to harvest. Rice harvest will be conducted at the appropriate time increasing rice yield, milling, and quality. This technology being developed at Louisiana State University will directly affect the income of rice producers and directly affect all facets of the rice industry in Louisiana. It will also have a major impact on all of the rice producers in the United States and the world.

Funding Sources: Louisiana Rice Research Board

ANNUAL REPORT OF ACCOMPLISHMENTS AND RESULTS

Key Theme: Rice Breeding and Variety Development Program

Goal 1: An Organized Agricultural System that is Highly Competitive in the Global Economy

Steve Linscombe, Professor, Rice Research Station, Louisiana Agricultural Experiment Station, LSU AgCenter

Issue: Rice is an important crop in Louisiana, as well as other states in the Gulf South region. Currently, all pureline rice varieties grown in this region are the result of research conducted in public rice breeding programs in the region. The industry is continuously in need of new superior varieties to remain competitive. Major areas of importance in varietal development include yield, grain appearance and milling quality, disease resistance, earliness, lodging resistance, and resistance to the physiological disorder straighthead. A new variety with improvements in any of these characteristics has a tremendous economic impact to the rice industry in the region.

What was done: The Rice Research Station has recently released two new rice varieties to Louisiana producers. 'Cheniere' is a high yielding, semidwarf (lodging resistant), superior quality long grain. It has comparable yield and better grain quality than 'Cocodrie' (another

Louisiana released variety that is currently the most widely grown in the U.S.). Cheniere also has much higher levels of resistance to the physiological disorder straighthead than does Cocodrie. 'Pirogue' is a high yielding disease resistant short-grain variety. Short grains have not been grown in Louisiana, and this variety was released to address a market that has recently developed.

Impact: These two new varieties should be widely used by Louisiana and other southern rice producers once seed is readily available. This should have positive economic impacts to rice producers, as well as processors.

Sources of Funding: State, Louisiana Rice Research Board

ANNUAL REPORT OF ACCOMPLISHMENTS AND RESULTS

Key Theme: Sugarcane varieties keep Louisiana in the sugar business

Goal 1: An Organized Agricultural System that is Highly Competitive in the Global Economy

Kenneth Gravois, Sugar Research Station, Louisiana Agricultural Experiment Station, LSU AgCenter

Issue: The development of improved sugarcane varieties has been a major factor in sustaining a competitive sugarcane industry in Louisiana. With stagnant 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 LSU AgCenter's 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 LSU AgCenter and the USDA-ARS sugarcane breeding programs since the late 1920s. Recently released varieties that were developed by the LSU AgCenter were LCP82-89, LHo 83-153, LCP 85-384 and LCP 86-454. LSU AgCenter 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 LSU AgCenter sugarcane varieties dominated the state's sugarcane acreage.

What was done: Beginning in 1981, steps were taken to reorganize the LSU AgCenter 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. The seedling greenhouse was expanded in 2000 to handle over 100,000 seedlings. Successful variety development programs also require the cooperation of other disciplines, such as plant pathology, entomology, and genetics. With the proper team in place, sugarcane breeding efforts were undertaken with the goal of having LSU AgCenter sugarcane varieties significantly impact the Louisiana sugarcane industry.

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. Sugar processors have benefited by the increased utilization of mills due to higher sugarcane yields. Sugarcane growers have quickly expanded their acreage of LCP 85-384, which was grown on 81 percent of the state's 2002 acreage. Acreage in LCP 85-384 may continue to increase. In fact, 86 percent of the state's plant cane crop harvested in 2002 was LCP 85-384. It is estimated that the economic impact of LCP 85-384 in 2002 will be about $250 million. The LSU AgCenter sugarcane breeding program has had, and will continue to have, a positive impact on keeping Louisiana in the sugar business.

Sources of Funding: State, Hatch, American Sugar Cane League

ANNUAL REPORT OF ACCOMPLISHMENTS AND RESULTS

Key Theme: Transgenic Insect Resistant Cotton Cultivars Improve IPM Strategies

Goal 1: An Organized Agricultural System that is Highly Competitive in the Global Economy

B. Rogers Leonard, Professor, Northeast Research Station/Department of Entomology; E. Burris, Professor Northeast Research Station; and S. Micinski, Red River Research Station, Louisiana Agricultural Experiment Station, LSU AgCenter

Issue: Louisiana's subtropical environment is conducive for multiple arthropod pest problems throughout the entire cotton production season. Direct yield losses associated with crop damage from insect pests exceeded five percent of the total crop for an estimated value of $15.5 million during 2002. Indirect losses from cotton insect pests such as deductions in lint quality, harvest efficiency reductions, and delayed crop maturity are difficult to quantify, but can be extensive in some years. Furthermore, the costs of insect pest management represent one of the highest variable production inputs for cotton. Continuing research, development, and implementation of novel cotton insect pest management strategies are necessary due to increasing production costs and lower profit margins.

Transgenic cotton cultivars (Bollgard) expressing insecticidal activity have been commercially planted on over 60% of Louisiana's cotton acreage since 1998. LSU AgCenter research entomologists participated in the initial tests generating data to support the commercialization of this technology. Bollgard cotton cultivars provide exceptional control of two primary pests, tobacco budworm and pink bollworm. This technology is rapidly improving and includes novel insecticidal transgenes, as well as, multiple transgenes in a cultivar. In addition, unique approaches to insect resistance management (IRM) have been implemented to optimize the

longevity of plant based bio-insecticides such as Bollgard. The novel nature of transgenic technology and regulatory restrictions imposed by agrochemical industries and the U.S. EPA have limited opportunities to characterize the efficacy of these products and define cost-effective and sustainable roles in cotton pest management.

What was done: The consistent cotton insect pest problems in Louisiana coupled with the experience of LSU AgCenter entomologists with the Bollgard technology has provided considerable opportunities for evaluating novel insecticidal transgenes and the development of strategies to extend the sustainability of these technologies. Experimental transgenes in advanced cotton lines have been screened for efficacy against a broad spectrum of lepidopteran pests. The current experimental transgenes incorporated into cotton germplasm have demonstrated satisfactory control of all primary lepidopteran pests, but not the Hemipteran (true bug) pests. In addition, optimal insecticide use strategies are being developed for the pest complex not managed with transgenes. The performance of target-specific foliar insecticides is being characterized for compatibility with insecticidal transgenes in plants. The effects of non-Bollgard cotton and alternative host refuges as a component of IRM strategies are also being studied. Research efforts in Louisiana have focused on several areas including: 1) spatial arrangement of refuges on cotton farms, 2) impact of refuges on overall farm-wide yield components, and 3) substitution of alternate non-cotton hosts as refuges. The results of these experiments will support the concept of refuges as reservoirs of susceptible insects in IRM plans.

Impact: The next generation of transgenic cotton cultivars expressing resistance to Lepidopteran pests is significantly more efficacious than Bollgard and will further decrease the frequency of insecticide applications needed to control these pests in Louisiana. Developing IRM strategies for transgenes in cotton will enhance the sustainability of cotton IPM and reduce the total insecticide load in the environment. Public awareness of agricultural pest control dictates that environmentally safer means of crop protection must be used in cotton production strategies. Transgenic cotton cultivars provide control of many lepidopteran pests while substantially reducing the use of conventional insecticides toxic to beneficial insects, birds, fish, and humans. Establishing and supporting IRM plans that preserve the effectiveness of these technologies will provide a sustainable cotton IPM strategy.

Sources of Funding: State, Hatch, Cotton Incorporated, National Cotton Council

ANNUAL REPORT OF ACCOMPLISHMENTS AND RESULTS

Key Theme: Understanding and Alleviating Heat Stress in Dairy Cattle

Goal 1: An Organized Agricultural Economy that is Highly Competitive in the Global Economy

Jerry Ward, Associate Professor, Southeast Research Station, Louisiana Agricultural Experiment Station., LSU AgCenter

Issue: The hot humid summers in Louisiana depress cow productivity. The hot weather depresses intake which leads to many of the problems but there are also direct effects of heat. Milk production and reproduction are both adversely affected by heat stress. This puts Louisiana, as well as producers from all across the Southeast, at an economic disadvantage during summer. Income is lowered not only because milk production is lowered but the lowered production occurs during a season when milk prices are typically above the average for the year. Problems with reproduction increase days to first service, services per conception, and calving interval. These directly and indirectly decrease profitability of dairy producers. Overcoming these disadvantages either through nutritional or housing management would improve the profitability of dairy farms in Louisiana.

What was done: Nutritional strategies were investigated to determine the effect of a feed additive on production. Many feed additives such as cationic salts have been shown to be beneficial in herds fed total mixed rations. However, many products have not been tested in herds that are component fed. Part of our previous research has shown that palatability problems can offset any potential gains when feeding cationic salts in component fed herds. Yeast culture has been shown to be both palatable and beneficial in improving dairy cow performance during a period of hot humid weather when fed in the grain component. Feeding this product increased both dry matter intake as well as milk production. It is important to know which products are beneficial and which ones are not. That way nutritional strategies that work for component fed herds, TMR fed herds or both can be designed. These strategies can then be applied to the different types of feeding systems found in Louisiana to make all producers more profitable.

Impact: Our dairy industry is one of the most profitable during the fall and winter months but we are severely hampered by the hot humid summers. This research has shown a strategy which increases production and profitability during a period of the year when cow performance typically falters. Increasing milk production during the late summer and early fall would increase dairy income by increasing milk sold and allowing producers to take advantage of seasonal milk prices. Also by alleviating depressions in reproductive performance costs can be lowered and profitability increased. All of this together could help to make Louisiana dairy producers more profitable year round and also help make their income more stable on a yearly basis.

Sources of Funding: State

GOAL 2

LSU AgCenter Goal 2 is to provide a safe and secure food and fiber system which specifically will improve food safety and eliminate food-borne risks.

Research Reports

Aflatoxin is a natural toxin produced by fungi that frequently parasitizes grain crops in Louisiana. Infections result in large financial losses for producers who have to either destroy their crops or sell them at significantly reduced prices. Research on ozonation has revealed that it is more suited to farm use, will not leave any harmful solvent wastes, and is more economical than ammoniation, which is the most widely used method of decontamination. If ozone is proven to be effective and does not cause harm to feed grains, its adoption will result in safer food and less harm to the environment. In addition, farmers will receive higher return for their grain crops. U.S. regulatory policy presently allows for only voluntary labeling of "GMO" free products. LSU Ag Center scientists participated in a multi-state project study that found consumers overwhelmingly support mandatory labeling of biotech foods, although their policy would have significant effects in how biotech crops and livestock products are distributed. Research continued on bovine mastitis, the most costly disease currently affecting dairy cattle. Previous findings revealed that dairy heifers are at risk for developing mastitis prior to their first calving and lactation. Prepartum antibiotic treatment of dairy heifers has been shown to be highly effective for eliminating new mastitis infections before serious damage has been done to the mammary gland and before a herd is exposed to new infection. Studies to determine how acceptable compulsory country of origin labeling laws for fresh meat would be among fresh beef handlers and consumers indicated that these provisions were acceptable to Louisiana firms and consumers but gained ire from groups that encounter live cattle imported from Canada and Mexico.

Extension Reports

Examples of accomplishments for Extension programs include:

Over 125 New Orleans Jazz and Heritage Festival (2001) food service personnel who participated in a special food handlers training program had the fewest violations ever in the history of this important annual event that attracts over one million people. Participant evaluations following food safety presentations across the state showed that over 75% gained knowledge of food safety practices and intended to follow those practices.

A total of 135 attendees from seafood processing plants received training in hazardous analysis of critical control points (HACCP) and Sanitation Control Procedures (SCP). As a result, seafood processors better understand and can comply with state and federal regulations and prepare HACCP plans and records.

Total extension FTEs on Goal 2 programs were 5.11 for a total expenditure of $409,494. Of this amount, total multi-state expenditure was estimated at $163,477, and multi-function expenditure at $122,608.

A total of 173,643 educational contacts were made in Goal 2 programs.

GOAL 2
EXTENSION SUMMARIES

Federal Goal 2

FOOD SAFETY

Key Theme: Food Safety

Program Description

Research shows that proper food handling and preparation can prevent 90 to 95 percent of foodborne illnesses. LSU AgCenter Extension agents and specialists have provided food safety information to Louisiana citizens, childcare providers and food handlers. Food safety information has been provided to Louisiana residents by one FCS nutrition specialist and 38 Extension agents who completed the National Restaurant Association SERVSAFE safe food handler program and have been registered as food safety instructors with the Louisiana Department of Health and Hospitals, Office of Public Health and the National Restaurant Association.

Stakeholder Input: FCS nutrition specialization agents provided input from parish clientele in determining food safety needs. Data and information from research institutions, including the LSU School of Human Ecology, Office of Public Health, and Louisiana Restaurant Association were utilized.

Actions: Parish clientele were queried individually and in group settings to collect input for program development. Agency personnel and clientele are members of the local advisory councils. Three videos on oyster food safety were developed by a team of nutrition and food science specialists for dissemination to Louisiana radio and television stations.

Process: Individuals, groups and organizations were identified through parish mailing lists, organization lists and referrals. Parish and state advisory committees cited the need for continued food safety education for consumers and food handlers. A Family Nutrition Program lesson plan, fact sheet and exhibit was developed by a nutrition specialist and used to educate Family Nutrition Program clientele and child care providers. Scripts for oyster food safety public service announcements (3, 30-second PSAs) were developed by nutrition and food science specialists and reviewed by appropriate agencies, including the Office of Public Health, Louisiana Seafood Promotion Board and Oyster Task Force.

Consideration: Program suggestions were incorporated into the educational plan. Consumer evaluation statements were included to monitor the effectiveness of the program. Program suggestions were incorporated into the oyster food safety PSAs.

Problem(s) Identified: In proper food handling and preparation leading to food-borne illnesses.

Collaboration: Office of Public Health, Louisiana Restaurant Association, Louisiana Seafood Promotion Board, Louisiana Oyster Task Force

Program Impact

In FY 02, Louisiana consumers and food handlers gained knowledge about recommended food handling practices from attendance at community and state food safety educational presentations; through mass media efforts, including news articles, radio & TV, and circular letters; and through the "Safe Food Handler" training program presented to food handlers at fairs, festivals, delis, schools, day care, nursing homes and other food service establishments.

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 2001 festival than in the history of this annual event.

Three oyster food safety public service announcements were developed by nutrition and food science specialists. These were disseminated to 79 radio stations and 17 television stations in the state.

Clientele evaluations conducted throughout the year provided evidence of behavior changes. Workshop participants learning food safety practices.

Food safety practice	No. of respondents	% learning practice	% who already knew
Wash cutting boards, utensils, counters to prevent cross-contamination	1129	83	15
Use a food thermometer	1272	81	19
Defrost food only in the refrigerator, under cold water or in microwave	843	72	25
Wash hands with hot soapy water before handling food	1283	74	22

Workshop participants intending to change food safety practices.

Food safety practice	No. of respondents	% intending to change	% already practicing
Use a food thermometer	249	72	17
Defrost food only in the refrigerator, under cold water or in microwave	772	77	21
Wash hands with hot soapy water before handling food	1052	73	26
Wash cutting boards, utensils, counters to prevent cross-contamination	1129	83	15

Source of Funds

Smith-Lever 3 b, c; Family Nutrition Program - funded by USDA, FNS, through the Louisiana Dept. of Social Services, Food Stamp Program; USDA CSREES Restricted Fund S/L

Scope of Impact

Multi-state: In FY 2002, an estimated 5.1 FTEs were spent on food safety education. Of this effort, 40% is involved in the acquisition of sharing of resources and information through multi-state efforts, valued at $163,477 (5.1 FTEs x $80,136 per FTE x .40).

Multi-function: Contributions from research counterparts included assistance in determining program needs through focus groups, meetings, development of food safety education materials, agent training and presentations for clientele. It is estimated that 30% of FTE allocations to this program is attributable to multi-function work. The dollar equivalent of multi-function work is $122,608 (5.1 FTEs x $80,136 per FTE x .30).

Federal Goal 2

HACCP – FOOD SAFETY

Key Theme: HACCP

Program Description

HACCP training has been focused on seafood, utilizing the AFDO (American Food & Drug Officials) standardized training programs for SCP (Sanitation Control Procedures) and HACCP to meet FDA requirements for the seafood industry. In 2002, four AgCenter personnel were also

certified as instructors to train industry personnel to meet USDA HACCP guidelines for red meat and poultry.

All seafood processors are required to attend HACCP training. The AFDO HACCP course includes certification of training for the participants. The SCP course is not required by the FDA, but forms the foundation of food safety control and helps increase the understanding of HACCP. Training was conducted in Baton Rouge, which provides a central location to the industry. In 2002, two HACCP and two SCP training programs were completed. In the two HACCP workshops, there were a total of 81 attendees. For the SCP, there were a total of 54 attendees. The HACCP training duration is three days, while the SCP training is one day. As part of these trainings, all stakeholders provide evaluations of the course. The major problem is the length required of the HACCP training. In response to the course evaluations, the future trainings will be held in the LSU AgCenter's Food Processing and Technology Pilot Plant to allow for value-added demonstrations and hands-on activities. There were several groups that cooperated in providing the training. The LA Department of Health and Hospitals provided speakers and the US Food and Drug Administration also provided speakers at all training sessions.

Program Impact

As a result of the HACCP and SCP training, seafood processors better understand the requirements of the HACCP regulations and food safety in general. They learned to prepare HACCP plans and record keeping systems for HACCP and sanitation. Including representatives from state and federal regulatory agencies helps to ensure that these processors are prepared to comply with complex state and federal regulations. Food processors are in an improved position to ensure safely processed seafood products and understand the food safety principles involved.

Source of Funds

Federal (Smith-Lever 3 b, c)

Scope of Impact

State

GOAL 2
RESEARCH SUMMARIES

ANNUAL REPORT OF ACCOMPLISHMENTS AND RESULTS

Key Theme: Analysis of Food Labeling Formats for Agricultural Biotechnology

Goal 2: A Safe and Secure Food and Fiber System

R. Wes Harrison, Department of Agricultural Economics and Agricultural Business, Louisiana Experiment Station, LSU AgCenter

Issue: Present U.S. policy provides for voluntary labeling of food products that contain no biotech ingredients, given that a disclaimer is added noting the government's judgment about any differences between foods that use or do not use GMOs. This policy is based on the rational that the consumer's "right to know" should be mitigated by the fact that scientific testing shows biotech foods are nutritionally the same as their traditional counterparts. Therefore, they pose no greater health risks than any other food. If biotech foods are determined to be nutritionally different from their traditional counterparts, then mandatory labeling is required.

What was done: The objective of the study was to measure consumer preferences for alternate labeling formats for biotech foods. Conjoint analysis was used to measure consumer preferences. A national survey was administered to collect the conjoint data, and an ordered probit model was used to estimate part-worth values for selected biotech labeling attributes.

Impact: The study showed that consumers overwhelmingly support mandatory labeling of biotech foods. A label format that contains a biotech disclosure as part of the ingredients list in combination with a biotech logo was found to be the most preferred label. Consumers also expressed a desire to have text disclosure that includes a statement regarding the benefits of biotechnology to health and society. Mandatory labeling of biotech foods is currently law in the European Community. The U.S. regulatory policy presently allows for only voluntary labeling of "GMO Free" products. Although preferred by consumers in the present study, a mandatory policy would have significant effects on how biotech crops and livestock products are distributed in the U.S.

Source of Funds: Regional Project NE-165: Private Strategies, Public Policies, And Food System Performance

ANNUAL REPORT OF ACCOMPLISHMENTS AND RESULTS

Key Theme: Consumer and Meat Handler Attitudes Toward Compulsory Country of Origin Labeling of Fresh Meats

Goal 2: A Safe and Secure Food and Fiber System

Alvin Schupp, Professor, Department of Agricultural Economics and Agribusiness, Louisiana Agricultural Experiment Station, LSU AgCenter

Issue: There has been great interest in both voluntary and compulsory forms of country-of-origin labeling of fresh meats in both Louisiana and at the national level. This is evidenced by the enactment of labeling legislation in Louisiana and recently at the federal level as part of the 2002 farm bill. We wanted to determine how acceptable compulsory labeling laws would be among both fresh beef handlers and consumers in Louisiana. Hence, we chose to interview handlers and survey consumers prior to the effective date of either pieces of legislation.

What was done: Firms handling fresh beef in Louisiana (such as processors, grocery retailers and restaurants) were interviewed by telephone concerning their acceptance of mandatory country of origin labeling of fresh beef. While 82 percent of these firms approved of the label, firms with experience in handling imported beef, restaurants, members of franchises or chains, or firms with a preference for minimum government involvement in business were less likely to be favorable toward the mandatory label. Over one half of the respondents believed that they could recover from buyers the costs of the labeling program. Only 25 percent of the firms believed that imported and domestic beef were essentially equal in quality and value. A mail survey of 2,000 Louisiana households indicated that 90.2 percent supported the mandatory country of origin labeling of beef in grocery stores and restaurants. Males were consistently less supportive of the label than females. Respondents who regularly purchased domestically produced durable goods were more likely to favor the mandatory label. Domestic beef was rated superior to imported beef by 86 percent of the responding households. These results indicate a strong preference for domestic beef among Louisiana beef handlers and consumers. The high level of support among handling firms may reflect the fact that only 7.5 percent of the firms had any previous experience with handling imported beef and that most responding firms represented either small operations or were units integrated with large out of state firms.

Impact: Results of this research tend to agree with research of other agencies which are unaffiliated with the beef industry or the USDA. The results tend to justify why the Louisiana legislature enacted its fresh meat labeling law in 1999, which required all fresh meat sold in grocery stores instate to be labeled as either American, Imported or Mixed. After some negotiation, the Louisiana law took affect on a voluntary basis in mid 2002. At approximately the same time, the US Congress passed a country of origin fresh meat labeling law which was to become mandatory after a two year voluntary period. The mandatory tracking provisions for live cattle included in the federal legislation have garnered the ire of many, especially those groups

which encounter live cattle imports from Canada or Mexico. That is not likely to be a problem for Louisiana, however.

Source of Funding: Hatch Funds

ANNUAL REPORT OF ACCOMPLISHMENTS AND RESULTS

Key Theme: Edible Film Coating and Quality Evaluation of Fresh-Cut Fruit

Goal 2: A Safe and Secure Food and Fiber System

Witoon Prinyawiwatkul, Associate Professor, Department of Food Science, Louisiana Agricultural Experiment Station, LSU AgCenter

Issue: Fresh-cut produce sales are estimated at $10 billion, which is 10% of the total produce sales. Today's consumers are demanding for foods that require minimal process. Minimal processed fruits and vegetables are highly nutritious, but highly perishable. Removing the skin from the surface or altering the size leads to leakage of nutrients, accelerated enzymatic reactions, rapid microbial growth, color and texture change, and weight loss, resulting in deteriorated quality of the product. Many techniques, including edible coating, have been studied to overcome these problems and extend the shelf life of fresh produces. Maintaining the quality and safety of fresh-cut produce is still a major challenge for the food industry. Crawfish chitosan may be utilized to produce edible film similar to those conventionally produced from polysaccharide-based or protein-based materials and other crustacean shell wastes.

What was done: Filmogenic properties of crawfish chitosan film intended for use as edible coating for vegetables and fruits were investigated. The effects of degree of deacetylation (DD) and molecular weight of chitosan and % plasticizer (glycerin) on film properties were investigated. Chitosan with Mw of 46,000 KD and 92% DD yielded a transparent and flexible film that closely resembled plastic films. Chitosans with lower DD values failed to form film or formed opaque films with higher tensile strength (TS). Films with higher glycerin content exhibited higher moisture content indicating greater hydrophilicity, lower TS and greater elongation. No significant difference in color was observed in chitosan films with different glycerin content. Compared with films made from shrimp chitosan, the film made from 92% DD crawfish chitosan showed more hygroscopic nature and was very transparent and almost colorless. Plasticized whey protein coatings have been shown to extend the shelf life of fresh produce. We determined consumer acceptance and perception of fresh-cut fruits and vegetables (FCFV) and edible coatings (EC) and investigated the effects of plasticized whey protein coatings on quality of fresh-cut apples. Two studies were conducted. In the first study, a questionnaire on FCFV and EC was prepared and completed by 611 consumers. In the second study, physical and microbial quality of fresh-cut (FC) apples coated with three whey proteins (30% glycerol added) each at 5% and/or 10% concentrations and water (as control) were determined during 13-day storage at 2C. Consumers (30%) preferred commercially available FCFV to whole FV due to less preparation time and serving portions. Females were more likely

to consume/use FCFV than males. Hispanic/Spanish consumers were less likely to consume/use FCFV compared to Caucasians. As an income level decreased the probability of eating/using FCFV decreased and preference for canned FV to FCFV increased. Compared to Caucasians, Asians were more and Hispanic/Spanish were less aware of EC. Some consumers would not buy coated FCFV if coating materials were of animal origins. A 7% increase in purchase intent was observed after advantages of EC had been described to consumers. The 10% WPC (whey protein concentrate) coating was most effective in minimizing weight loss. There were no changes in color lightness of apples coated with whey protein concentrate/isolate, whereas significantly decreased lightness was observed for control and PHWPC (partially hydrolyzed whey protein concentrate) coated samples by the fourth day of storage. Firmness of coated samples did not change after 13-day storage compared to that of the control, which was undesirably soft. Overall, the total plate count ranged from 0-0.54 log CFU/g for 10-days storage and no E.coli/Coliforms were detected. This study demonstrated potential of WPC as an EC for FC apples and helped the food industry meet consumer and market demand regarding FCFV.

Impact: Consumer demand for ready-to-consumer fresh-cut fruits and vegetables has been recently increased. The combined minimal processing used to prepare fresh-cut fruits and vegetables causes quality deterioration at a faster rate than normally observed in whole raw/unprocessed fruits and vegetables. Post-harvest microbial growth and decay of fresh-cut fruits and vegetables can be controlled or reduced. The crawfish chitosan edible coating with added microbiocides is anticipated to extend shelf life and assure desirable quality of fresh-cut produces. The information from the consumer survey will help the food industry meet the consumer and market demand on fresh-cut fruits and vegetables.

Sources of Funding: State and Hatch

ANNUAL REPORT OF ACCOMPLISHMENTS AND RESULTS

Key Theme: Mastitis Resistance to Enhance Dairy Food Safety

Goal 2: A Safe and Secure Food and Fiber System

William E. Owens, Professor, Hill Farm Research Station, Louisiana Experiment Station, LSU AgCenter

Issue: Bovine mastitis is the most costly disease currently affecting dairy cattle. The dairy industry in Louisiana contributes between 150 -200 million dollars annually to the economy. It is estimated that mastitis cost Louisiana dairy farmers between 10 and 12 million dollars annually. Nationally this disease cost the nations dairy farmers approximately $2 billion per year. New and innovative methods of control and treatment are needed to combat this costly disease.

What was done: It is now known based on previous work at the Hill Farm that dairy heifers are at risk for developing mastitis prior to their first calving and lactation. These prepartum infections serve as a continuing source of new infections for the herd. Control of mastitis in heifers is critical to controlling mastitis. In a national cooperative study with the NE-1009 multi state research project, dairy heifers were evaluated and treated 10 to 14 days prepartum with a lactating cow antibiotic preparation containing cephapirin. The incidence of mastitis in heifers was determined and the success of prepartum treatment determined. Results show that prepartum antibiotic therapy is highly effective for eliminating new mastitis infections in heifers before serious damage is done to the mammary gland and before widespread exposure of herd mates to new infection.

Impact: By detecting and treating mastitis cases in heifers we can increase cure rates and eliminate infections before serious damage to mammary tissue occurs. In addition, treatment prior to calving eliminates the need to discard milk and reduces the risk of antibiotic contamination of milk, and improving the safety of the milk supply for the consumer. Collaboration on the nation wide study with NE 1009 will provide valuable information to the nation's dairy industry.

Sources of Funding: Hatch

ANNUAL REPORT OF ACCOMPLISHMENTS AND RESULTS

Key Theme: Use of Ozonation to Degrade Certain Chemicals in Food and Animal Feeds

Goal 2: A Safe and Secure Food and Fiber System

Joan M. King, Assistant Professor, Department of Food Science, Louisiana Agricultural Experiment Station, LSU Ag Center

Issue: Aflatoxin is a natural toxin produced by *Aspergillus flavus* and *parasiticus* molds. Grains have been frequently contaminated with aflatoxin, especially in climates with high temperature and humidity such as Louisiana. A drought in Louisiana caused a major outbreak of aflatoxin in corn, where as high as 80% of corn and 10% of cottonseed was contaminated with aflatoxin. These infections resulted in a large financial loss to Louisiana farmers who had to either destroy their crops or sell them at a significantly reduced price after hard work and major investment. If a viable alternative had existed for treating the infected crops to eliminate the aflatoxin, the farmers could have received a larger return for their investment. Research emphasis has focused on both pre-harvest prevention and post-harvest removal of aflatoxin from grains. The continuing challenge of aflatoxin control necessitates the need for improved post-harvest techniques to detoxify valuable grain supplies that would otherwise end up as a hazardous waste material. Many detoxification techniques have been applied with some success; however, great potential for ozonation exists because of potential economic benefits and effectiveness of treatment. It is important that the process be proven to be effective in destroying toxic compounds without producing new ones, as well as not causing harm to the grain nutrients.

What was done: Ozonation reduced aflatoxin levels by 92% and no reversion to the parent compound was observed. Ozonation had a minimal effect on fatty acids of uncontaminated corn, but had significant effect on fatty acids of contaminated corn. Crude extracts showed no mutagenic potential in the Ames assay. Purification using hexane or Mycosep columns increased mutagenic potential. Hexane extracts from ozone-treated contaminated corn had lower inhibitory effects. This suggested that a fat-soluble mutagen was being formed or natural inhibitors of mutagenicity were being destroyed. Formation of aflatoxin/ozone reaction products, which may be new mutagens, were solvent extracted from the corn samples through a series of isolation and separation procedures. These fractions were examined in the Ames test for inhibitory properties against aflatoxin mutagenicity. Again there were results indicating the possible formation of new mutagenic compounds and the presence of anti-mutagenic or inhibitory compounds depending on the solvent. Further investigation into the products being formed and the inhibitory compounds being destroyed is underway.

Impact: Chemical inactivation by ammoniation has wide spread use and acceptance, however, the cost is approximately $20 per ton. Compared to ammoniation treatment, decontamination with ozonation is estimated to cost only about $4 per ton. Processing with ozonation will not leave any harmful solvent wastes that ammoniation does and is much more suited to on the farm use. Farmers will benefit economically due to the lower costs and better feasibility and will obtain a higher return on their grain instead of having to sell it as animal feed or just throw it away. If ozone is proven to be effective and does not cause harm to the grains, its use will result in a safer food and less harm to the environment.

Sources of Funding: State, Hatch, LA Soybean and Grain Research and Promotion Board, Board of Regents - Research Competitive Subprogram

GOAL 3

LSU AgCenter Goal 3 is to achieve a healthier, more well-nourished population by improving dietary quality, food quality, and food choices of Louisiana citizens.

Research Reports

Studies using a rat model investigated factors that may affect two initial health issues for post-menopausal women, skeletal mass and obesity. These studies demonstrated that post-menopausal women need to carefully follow directions when using dietary supplements marketed for weight loss. Data on osteoporsis research revealed that exercise and soy protein can play important roles in reducing bone loss and weight gain after menopause. Adding value to the products of agricultural production is now recognized as a necessary component to economic development in Louisiana, and LSU Food Science faculty are exploring ways to extract, purify, assess, and utilize functional components from byproducts of agronomic crops for more healthful diets. Thermal stabilities of the functional "antioxidant" components of rice bran oil were determined to obtain maximum stability. Gamma-oryzanol, found in rice oil, has been shown to be similar in chemical structure to Benecol, a margarine product which contains a cholesterol-lowering compound derived from pine trees. Oryzanol appears to be highly stable to heating and would be primarily responsible for the oxidation stability of rice oil and foods cooked in rice oil. Interviews of welfare reliant, formerly welfare reliant, and working poor women were conducted to determine eating and food spending patterns. The objectives of the research were to describe factors that influence consumer food preferences and dietary products and to identify behavioral obstacles to healthful foods. Nutrition-related chronic diseases such as coronary artery disease, hypertension, and type 2 diabetes were found to disproportionally affect low income women and that obesity was a causal condition in these women. Excessive consumption of and spending on fast food meals contributed to a diet high in fat, saturated fat, and sodium and low in fruit, vegetables, and low-fat dairy products, while depleting meager food resources. Also evident was the fact that there was a clear lack of knowledge of or use of nutrition education programs by the women from families exiting welfare programs.

Extension Reports

Examples of accomplishments for Extension programs include:

EFNEP food recall data show that 2,198 enrolled families made positive dietary changes.. Significant increases were made from program enrolment to graduation in the recommended daily consumption of servings of milk and milk products (8.3% to 16%), fruits (16.3% to 36,7%), and vegetables (27.8% to 39.2%). Homemakers were also managing their food dollars better, the proportions of families comparison shopping increased from 22-41%, grocery list shopping from 10 to 22%, and meals planning from 9% to 20%. The program also reached 7,083 youth and involved 639 registered volunteers.

In 29 FNP parishes (counties), 48,728 families, including 3,469 food stamp applicants and recipients, were provided information on nutrition and food buying. Comprehensive evaluations of the program in selected parishes using the computer-based home economics education assessment system revealed that 75% of FNP clientele intended to comparison shop and consume a diet lower in salt and sodium, and 70% planned to eat more whole grains and bread.

The Portions Healthy Weight Program (Portions), emphasizing healthy lifestyles, addresses the growing obesity problem in Louisiana, with a high national obesity ranking, and accounting for one-half of the state's heath care budget due to obesity-related diseases. Evaluations of the program showed 95% of the participants made at least one lifestyle change, such as learning the importance of moderate exercise most days of the week and beginning a regular walking or other exercise program. The average weight loss experienced by participants during the nine-week statewide program was 4-8 pounds. More important, over 90% of people on pre-post program assessments improved their cholesterol, blood sugar, blood pressure.

Total Extension expenditure on Goal 3 programs was $6,027,028. Of this amount, total multi-state expenditure was estimated at $1,164,952 and multi-function $2,054,225.

A total of 75.21 FTEs were devoted and 1,160,981 educational contacts were made in the program.

GOAL 3
EXTENSION SUMMARIES

Federal Goal 3

FOOD AND NUTRITION PROGRAM (FNP)

Key Theme: Human Nutrition

Program Description

Both food stamp users and non-users were overweight, with poor diet quality a likely contributor to overweight status. Nutrition education, personal behavior, nutrition-related diseases, and lack of health care coverage all will be factors in whether those affected by the legislation will be able to support their families in a secure financial manner.

Extension Family and Consumer Science agents covering 29 parishes and 15 nutrition assistants in targeted parishes conduct Family Nutrition Programs (FNP) to assist food stamp recipients and potential food stamp recipients improve their diets and budget their food dollar. All FNP 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 commodity distribution sites and Food Stamp Offices.

FNP participants play a significant role in the planning and development of nutrition education outreach. Food Stamp recipients are surveyed regarding selected demographics, age of members in the family, and areas of interest for nutrition education. Providing program delivery in the local Food Stamp office allowed the eligibility caseworkers and office staff to have ongoing input on the objectives and goals of the program. Low-income families were members of program advisory councils and curricula review teams to assure the needs of the target audience were met.

A program enrollment form was developed and used to survey the needs of all enrolled participants, encouraging direct client impact on the subsequent delivery of nutrition education topics.

FNP program faculty received a list of parish Food Stamp recipients. The 29 FNP parishes provided direct contact with selected Food Stamp recipients with telephone numbers and current address to offer access to the program and to collect input. The Office of Family Support provided ongoing monitoring and input regarding the needs of the Food Stamp recipients.

Enrollment forms and phone consultations indicated the most popular and requested nutrition education topics as suggested by the stakeholders and additional teaching resources and training was provided field faculty to deliver these identified programs. Additional programs were conducted to meet the increased demand for selected topics.

FNP enrollment data in 2001-2002 included gender, race, education, number of children, health conditions identified by the client, participation in assistance programs, and lessons received. Program planning incorporated this information to meet the identified needs of the target audience. From October 1, 2001 through June 2002, 1171 clients were enrolled.

Differences in health condition by selected characteristics were as follows:

Gender: The incidence of high blood pressure was significantly higher in males than females and the incidence of anemia was significantly higher in females.

Race: Obesity and heart conditions were significantly lower in whites than in African Americans. Anemia was significantly higher in Hispanics compared to other races. There were no significant differences in the incidence of high blood pressure and diabetes by race.

Education: Heart conditions, arthritis, and high blood pressure were significantly higher in those with least education (8^{th} grade or less). Incidence of anemia was highest in those who had completed vocational or technical training (women finished medical or secretarial training?).

Marital status: Heart conditions were significantly higher in those who were widowed or divorced compared with those who were single or separated.

A problem identified was that the Dept. of Social Services limited outreach to Food Stamp offices and Commodity Food Distribution sites. This decision constrained the outreach efforts of the field faculty familiar with the needs in their communities.

State agencies that worked closely with the FNP program to enhance programs and improve community impact were the Governor's Office of Elderly Affairs, the Department of Education, the Department of Public Health, the Department of Health and Hospitals, the US Dept of Agriculture, the Association of Independent Grocers, and the Southeastern Dairy Association.

The LSU School of Human Ecology collaborated with FNP and EFNEP to develop evaluation protocols, a nutrition research teaching nutrition lab, and preceptor supervision for dietetic interns.

The EFNEP and FSNEP Coordinators from 1860 and 1890 Extension Services in LA, TX, MS, AR, OK, TN, KY, VA, NC, SC, GA, FL, AL, and Puerto Rico collaborated on program design, implementation, and evaluation.

The Texas Agricultural Extension Service worked closely with FNP to guide the EATSMART Nutrition Assistant Certification program.

Program Impact

Extension agents in 29 parishes and the 15 FNP nutrition assistants in targeted parishes reached over 48,738 people with information on nutrition, diets and health, and food buying through the FNP program (7,040 direct contacts and 41,698 indirect contacts). Results from field reports showed that 3,469 food stamp recipients and applicants were enrolled in the program during this period. In addition, information about the FNP program was delivered to 18,348 people through different outreach activities conducted by FCS Extension Agents and Nutrition Educators. LSU AgCenter FNP Extension Agents reported that 10,321 people were reached through nutrition education (1,061 direct and 9,260 indirect contacts). FNP Nutrition Educators reported 38,417 people were reached through nutrition education (5,979 direct and 32,438 indirect contacts).

Main topics covered through nutrition education activities included nutrition/diet/health, food safety, and food buying/budgeting. The most frequently reported sites for outreach and nutrition education in the parishes include Office of Family Support and Commodity Food Distribution sites.

Impact statement data from parishes showed that 75% of clientele reported they would do comparison-shopping to get more for their food money. 70% of clientele reported they would eat more whole grain breads and cereals. Another 75% of clientele reported they would consume a diet lower in salt and sodium. Over 70% of the clientele said they would comparison-shop, eat more grains and cereals, and consume a diet lower in sodium.

Source of Funds

State and Federal (Smith-Lever 3 b, c, d)

Family Nutrition Program (FNP), Food Stamp Nutrition Education Program funded by USDA, Food Nutrition Services (FNS), through the Louisiana Department of Social Services, Office of Family Support, Food Stamp Program

Scope of Impact

Multi-state: The Family Nutrition Program (FNP) is part of the National Food Stamp Nutrition Education Program sponsored by USDA, Food and Nutrition Service. The EFNEP and FSNEP Coordinators from 1860 and 1890 Extension Services of the Southern Region of CSREES meet at several annual meetings and monthly via conference calls to plan and coordinate the southern region's nutrition education outreach for low-income families. An electronic list-serv provides an excellent medium for daily communications regarding curricula selections, staff training and supervision, and reporting and evaluations between the 14 Southern Region CSREES states: LA, TX, MS, AR, OK, TN, KY, VA, NC, SC, GA, FL, AL, and Puerto Rico.

Louisiana EFNEP and FNP faculty contributed to a web based paraprofessional training curriculum, Eat Smart. The web based training curriculum includes more than 25 nutrition

education modules that are available though Internet access to Louisiana and other states. The training program incorporates pre and post-test components and provides the basis of the Nutrition Assistant Civil Service Certification program. In addition to the Internet curriculum, a workbook developed by the Texas Agricultural Extension Service serves as an additional tool to assist the nutrition assistants in the certification process. The information in the manual complements the Internet curriculum and is used as a supplement to enhance learning.

In FY 2002, an estimated 13 FTEs were spent on Food Stamp Nutrition education, resulting in 48,738 Contacts. Based on an FTE cost of $80,136, the total cost of the program was $1,041,568. Of this effort, 30% is involved in the acquisition of sharing of resources and information through multi-state efforts, valued at $312,470. (13 FTEs x $80,136 per FTE x .30).

Multi-function: State agencies that work closely with the FNP program are the Governor's Office of Elderly Affairs, the Department of Education, the Department of Public Health, the Department of Health and Hospitals, the US Dept of Agriculture, the Association of Independent Grocers, and the Southeastern Dairy Association. These agencies work closely with FNP to enhance our programs and improve out community impact.

The LSU School of Human Ecology has collaborated with FNP and EFNEP to develop evaluation protocols, a nutrition research-teaching lab, and preceptor supervision for dietetic interns.

Contributions from research counterparts included assistance in determining program needs through focus groups, meetings, development of nutrition education materials, agent training and presentations for clientele. It is estimated that 30% of FTE allocations to this program is attributable to multi-function work. The dollar equivalent of multi-function work is $312,470 (13 FTEs x $80,136 per FTE x .30).

Federal Goal 3

EXPANDED FOOD AND NUTRITION EDUCATION PROGRAM

Key Theme: Human Nutrition – EFNEP

Program Description

Fifteen Louisiana parishes participated in the Expanded Food and Nutrition Education Program(EFNEP). EFNEP worked cooperatively with other food assistance programs such as food stamp, WIC and commodity foods. Fifty eight EFNEP nutrition assistants conducted a special nutrition education program for low-income families with young children. Through EFNEP, families learned about healthy eating, how to make more nutritious choices for foods, and how to extend their limited resources better when shopping for food. A planned curriculum of 12 lessons was taught to enrolled participants and their children in small groups. To graduate

from the program, participants completed a minimum of 10 of the 12 lessons. Eighty-eight percent of the enrollees completed the program.

Actions were taken to seek stakeholder input. The EFNEP staffs in the parishes sought input from stakeholders in face-to-face meetings and in advisory committees of various local organizations and agencies, people who live in the community, attend church, use their facility or service, local government and business officials, schools, churches, and community agencies. Recruitment was done as follows: 1. New member orientation class for young homemakers. 2. Recruiting through pastors, client referrals, homeless shelters, Head Start, teachers, Social Services, 3. Media.

Stakeholders were identified through networking, referrals, targeting services that provided outreach to the clientele specific to the EFNEP guidelines. Nutrition educators also identified stakeholders in their assigned area. Individuals with leadership ability were invited to participate in an advisory committee.

Collected input was considered based on clientele needs. Several comments and suggestions were made. Comments included adding variety of field trips to the youth to identify how produce is grown and the varieties of produce available locally.

The problems identified by the stakeholders were; method of recruiting--door to door; some younger homemakers are not receptive to the program; people with income above the guidelines are interested in the program; enrollment of youth under the age of 9 years; and clients wanting to meet at convenient times. Stakeholders requested information and programs relative to: Recommended Dietary Guidelines; reduced fat, sugar & salt; foods for young children; nutrition related to health issues such as diabetes, high blood pressure, high cholesterol and other health related problems; food safety; and weight reduction; how to make healthier meal selections, select healthier snacks for children, the importance of exercise and physical activity in daily routine; how to make healthy lifestyle changes to prevent chronic diseases and obesity. Parishes conducted their education programs through networking, referrals from other participating agencies, and recruiting organizations that provide outreach to clientele specific to the EFNEP.

Mass media (The Advocate, West Side Journal [weekly newspaper] and numerous church bulletins) was used for recruiting purposes and to disseminate program information.

Individual home visits were conducted for monthly nutrition education and to distribute EFNEP fact sheets and other Extension literature.

Nutritional displays were set up at health fairs with nutritional literature on Recommended Dietary Guidelines and reduced fat, sugar and salt.

Food safety display and educational literature on the safe handling of food was set up at various agencies.

Health Fairs were used as a recruiting technique for potential clientele and organizations and to disseminate information about the EFNEP program. Health fairs and expos participated in were as follows:

100 Black Men of Greater Baton Rouge Back to School Drive; 100 Black Men of Greater Baton Rouge Dow Westside Back-to-School Drive; Greater King David Baptist Church; CADAV, Inc. Juneteenth Celebration; Eden Park Health Fair/Community Forum; North Baton Rouge Community Center Meet Your Neighbor Day; Leo Butler Community Center; Gardere Family Festival; Leo Butler Community Center's Children's Health Fair; HIPPY's Week of the Young Child Expo; North Street Community Fair; East Baton Rouge Fire Department's Health Fair; and Georgia Gulf Health Fair.

Extension literature was distributed, and food demonstrations were conducted in the following agencies: Parish Office of Family Support; Parish Police Jury; pre-schools through first grade students; Parish Health Units; School parent meetings; teen moms; LSU Hospital Social Services, Project Independence, School System's HIPPY Program; UpLIFTD; DHCI Vocational School; Baby Fresh Start; Mental Health Rehabilitation (MHR); Alliance House; New Horizon Head Start; YWCA's Even Start Program; Capitol High School (FCS classes); St. Mary's Nursing Home (food service workers); Reality House; St. James Place (food service workers); Charity Christian Preschool; East Baton Rouge Head Start Grandparents Program; Istrouma Early Start Head Start (teen parenting program); Istrouma High (FCS classes); Southern University's Violence Prevention Program; Baranco Clark YMCA; Louis Jetson Center; Audubon Council Girl Scouts; Office of Family Support ALPHA Youth Program (summer day camp); Even Start Program; commodity recipients in the parish; Head Start families and monthly parent meetings; Louisiana Technical College (nursing assistants, medical assistants, and GED classes); OPAC summer day camp; Project IMPACT summer program; All-A-Board Daycare Center; Plymouth Rock Baptist Church Daycare; Assumption High School (FCS classes); Brusly Middle School; St. Phillip Methodist Church; Love Missionary (summer day camp); USDA-ARS Mississippi Extension Service; Orleans Parish Schools Parent Involvement Program; and Total Community Action Head start Program. EFNEP nutrition educators meet with targeted youth group, parent groups, and teen moms.

Collaborating agencies and groups included: Health Units; Parish School Board; Police Jury; Yo! Workforce Development Center; Margaret Surles Vocational Technical Training Center; Hospitals; Council on Aging; Community Action; Sheriff's Department; Office of Family Services; Head Start; Day Care Centers; Louisiana Technical College; COPAC; Office of Family Support; Project IMPACT/Iberville Parish School System; High Schools/Parish School System; Police Jury; HIPPY Program; UpLIFTD; DHCI; Baby Fresh Start; Mental Health Rehabilitation; Alliance House; YWCA Even Start Program; New Horizon Head Start; Capitol High School; St. Mary's Nursing Home; Reality House; St. James Place; Charity Christian Preschool; EBR Head Start Grandparent's Program; Istrouma Early Head Start (teen parents); Baranco-Clark YMCA; Louis Jetson Center; Audubon Council Girl Scouts; Southern University's Violence Prevention Program; Istrouma High School; Alpha Youth Program; Love Missionary.

Program Impact

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 91.7% of the EFNEP homemakers made positive dietary changes. The percentage of homemakers consuming the recommended 2 or more servings of milk daily went up from 8.3% to 16%. At the beginning of the program only 16.3% consumed two or more fruits a day compared to 36.7% at the end. Only 27.8% had 3+ servings of vegetables a day at the beginning of the program versus 39.2% at the end. In addition to a better diet, homemakers were managing their food dollars better. Comparing prices during shopping increased from 22 to 41%, use of grocery lists increased from 10 to 22%, planning meals increased from 9 to 20% at the end.

Source of Funds

State and Federal (Smith-Lever 3 b, c, d)

Scope of Impact

In FY 2002, 58 EFNEP nutrition assistants in 14 parishes reached 2,182 enrolled program families, 7083 youth. The program registered 539 volunteers equaling 5.1 FTEs. An estimated 54 FTEs was spent on the EFNEP Program for about $4,327,344.

Multi-state: The EFNEP Coordinator and Technology Support Associate participated in monthly conference calls with southern region EFNEP coordinators from Texas, Arkansas, Mississippi, Alabama, Florida, South Carolina, North Carolina, Oklahoma, Kentucky, Georgia, Tennessee, Virginia and Puerto Rico. They attended regional, and national EFNEP coordinators meetings on planning the program, sharing educational materials, presentation of curricula and evaluation of impact of the program. The Texas Agricultural Service and other southern region Extension services participate in EATSMART curriculum, a certification program for EFNEP paraprofessionals. Approximately $261,079 was attributed to multi-state efforts.

Multi-function: The LSU School of Human Ecology has collaborated with EFNEP to develop evaluation protocols, a nutrition research teaching nutrition lab, and preceptor supervision for dietetic interns. Contributions from research counterparts included assistance in determining program needs through focus groups, meetings, development of nutrition education materials, agent training and presentations for clientele. It is estimated that 30% of FTEs allocated to this program is attributable to multi-function work. The dollar equivalent of multi-function work is $1,298,203 (13 FTEs x $80,136 per FTE x .30).

Federal Goal 3

PORTIONS AND HEALTH

Key Theme: Human Health

Program Description

Louisiana ranks as one of the most obese states in the nation and nearly one-third of Louisiana adults are obese (BMI > 29.9). Almost one in three Louisiana school-aged children is overweight (BMI > 85%). Obesity leads to increased risk of many medical conditions including heart disease, type 2 diabetes, stroke, hypertension, gall bladder problems, sleep apnea, osteoarthritis, infertility (women) and high blood cholesterol levels, as well as breast, prostate and colon cancer. Obese individuals are 90% more likely to have type 2 diabetes and 50% more likely to have high blood pressure than those who are not obese. In children, obesity leads to high blood cholesterol levels, high blood pressure, type 2 diabetes, asthma and early maturation. Obesity-related diseases account for nearly half of Louisiana's healthcare budget.

The Portions Healthy Weight curriculum, emphasizing healthy lifestyles, was developed to address Louisiana's growing obesity problem by a team of FCS nutrition specialization agents and a nutrition specialist.

FCS nutrition specialization agents provided input from parish clientele in developing the Portions Program, including assessment of needs and program format. Data and information from research institutions, including the LSU School of Human Ecology, and health and nutrition organizations were collected for program development.

Parish clientele were queried individually and in group settings to collect input for program development. The program was pilot-tested in one parish and changes incorporated. Program participants were informed of the program through the media, newsletters, phone calls, health fairs, exhibits, displays and individual visits. Local Family and Community Education (FLE) volunteers assisted FCS agents with session preparations and members also publicized the program in their communities.

Individuals, groups and organizations were identified through parish mailing lists, organization lists and referrals. In statewide strategic planning forums, people from all walks of life were asked to come together in each parish and discuss the issues most affecting the quality of life for Louisiana's residents. Issues identified by participants included health problems caused by both adult and child obesity and inactivity and need for comprehensive nutrition education. FCS advisory committees held over the state cited obesity and its related illnesses as the primary area for Extension's nutrition programming.

Program suggestions were incorporated into the educational plan. Evaluation instruments were included to monitor the value of the program.

The Portions Healthy Weight Program, a nine-lesson curriculum emphasizing healthy lifestyles, was developed to address Louisiana's growing obesity problem by a team of FCS nutrition specialization agents and a nutrition specialist and launched in late Fall 2001. The Portions Plan provides current, research-based information and recommendations to help Louisiana citizens achieve and maintain a healthy weight by setting realistic goals for better health and learning to balance the food they eat with appropriate physical activity.

Portions workshops have been conducted in 18 parishes, both urban and rural, for more than 700 people.

Collaborators include personnel and facilities of local libraries, rural medical centers, rural and urban hospitals, clinics, churches; Family and Community Educators; Office of Public Health; parish and community school boards

Program Impact

Ninety-seven percent of Portions Program participants indicated that they had made at least one recommended lifestyle change. Most reported learning the importance of moderate exercise most days of the week, but many cited "finding time" as an obstacle to regular exercise. Many participants reported starting a walking or other exercise program. Some groups formed walking clubs or asked for a fitness class.

Although the number of pounds lost was not emphasized, a healthy weight loss of an average of 4-8 pounds was experienced by participants during the 9-week program statewide. But more importantly, over 90% of the participants (where beginning and ending health assessment were taken) improved their cholesterol, blood pressure or blood glucose levels Comments from participants about what they learned included: "My portion sizes of food have been much too large; "I've been eating too much saturated fat; "I've been skipping meals to lose weight." FCS agents reported a change in the participants' attitudes and sense of well-being after the nine weeks with comments like "I feel so much better." Participants reported that the program helped them break habits that had led to overeating and not being physically active. The discussion on fad diets revealed that participants had tried numerous fad diets. Observations by FCS agents showed knowledge gained by participants and a resolve never to go on an unhealthy fad diet again.

The Portions Healthy Weight curriculum was featured as one of the "hot topics" at the LSU AgCenter's 2001 Legislative Day. "Portions" team members discussed the importance of portion size in achieving and maintaining a healthy weight with legislators.

Clientele evaluations conducted throughout the year provided evidence of behavior changes. Workshop participants learning health practices.

Health practice	No. of respondents	% learning practice	% who already knew
Complete 30 days of moderate exercise most days of the week.	1094	65	27
Include fruits and vegetables in diets.	1272	73	25
Choose a diet moderate in sugar.	843	72	25
Consume 2-3 servings of low fat dairy products a day	763	74	22
Consume a diet lower in sodium and salt.	567	54	42
Eat less fat and saturated fat.	548	83	11
Read nutrition labels to make healthy food choices.	786	74	25

Workshop participants intending to change personal health behaviors.

Personal health behavior	No. of respondents	% intending to change	% already practicing
Begin a program of regular physical activity	445	50	34
Consume no more than 30% of calories from fat and less than 10% (of total calories) from saturated fat.	772	73	21
Choose a diet moderate in sugar	906	77	19
Consume a diet lower in salt and sodium	562	72	22
Choose a diet with plenty of fiber from grains, fruits and vegetables	872	73	22

Source of Funds

Smith-Lever 3 b, c; Family Nutrition Program - funded by USDA, FNS, through the Louisiana Dept. of Social Services, Food Stamp Program
Scope of Impact

Multi-state: In FY 2002, an estimated 18.45 FTEs were spent on nutrition and health education. Of this effort, 40% is involved in the acquisition of sharing of resources and information through multi-state efforts, valued at $591,403 (18.45 FTEs x $80,136 per FTE x .40).

Multi-function: Contributions from research counterparts included assistance in determining program needs through focus groups, meetings, development of nutrition education materials, agent training and presentations for clientele. It is estimated that 30% of FTE allocations to this program is attributable to multi-function work. The dollar equivalent of multi-function work is $443,552 (18.45 FTEs x $80,136 per FTE x .30).

GOAL 3
RESEARCH SUMMARIES

ANNUAL REPORT OF ACCOMPLISHMENTS AND RESULTS

Key Theme: Bone Health and Obesity After Menopause

Goal 3: A Healthy, Well-Nourished Population

Michael Keenan, Associate Professor, School of Human Ecology, Louisiana Agricultural Experiment Station, LSU AgCenter

Issue: The general objective of this project is to use the rat model to investigate factors that may affect two vital health issues for post-menopausal women, loss of skeletal mass and obesity. Our research team has studied the effects of exercise, functional foods and supplements on bone density and body weight in adult ovariectomized (ovaries removed) rats. To further enhance this research, methodological protocols have been developed or improved for measurement of body fat, bone density or breaking strength of bone. Research findings are presented annually at the Experimental Biology Conference (attendance ranges from 6,000 to 10,000) in American Society for Nutritional Sciences presentation sessions; and published in peer-review journals.

What was done: We conducted several research studies in 2002. Our research group discovered serendipitously that supplemental L-carnitine in adult female ovariectomized rats may ($p=0.09$) increase energy efficiency with conditions of positive energy balance and a high carbohydrate, low fat diet. We expected to observe a decrease in energy efficiency, because this has been observed in younger animals and L-carnitine is marketed as a weight loss supplement for humans. Recovery from travel and increased consumption of the "novel" experimental diet with free access to food often puts our adult rats into positive energy balance for the beginning of our studies. Our results with L-carnitine agree with our earlier study in which ovariectomized rats supplemented with chromium picolinate demonstrated a greater energy efficiency ($p<0.05$). We conducted two studies investigating bone methodology. Our results demonstrated that rat femurs stored frozen in saline for extended periods of time do not require hydration before density measurement according to the Archimedean Principle (wt submerged in water versus wt out of water). Femurs stored dry require hydration. However, freezing of femurs in saline and hydration under vacuum can alter femoral neck biomechanical behavior (Breaking strength: Young's Modulus, plastic strain, yield strain). This was determined using an Instron 4301 testing machine to break the femoral neck. In a series of studies, our research group demonstrated reduced abdominal fat and increased gastrointestinal (GI) mass with inclusion of resistant starch (RS) in rat diets ($p<0.05$). However, the effect on abdominal fat occurred when the RS was added to the diet as 32% of the weight of the diet. Effects on the GI tract also occurred with lower levels of RS. Rats fed RS consumed more food. The experiment to determine actual metabolizable energy of diets containing RS is in progress.

Impact: Our results in ovariectomized rats may indicate that post-menopausal women need to carefully follow directions when using dietary supplements marketed for weight loss. We assume that such supplements may be effective under conditions of negative energy balance. However, those studies have not yet been performed by our research group. Supplemental L-

carnitine and chromium picolinate may be a beneficial treatment for anorectic or underweight people in conjunction with either consumption of a higher energy diet or tube or parenteral (infused into a vein) feeding. Our results with resistant starch add further support to the concept of "eat more, weigh less" that is advocated by several nutritionists. The meaning is that people can actually eat more food and not feel hungry if they consume recommended amounts of whole grains, fruits and vegetables. These foods contain high amounts of fiber and water that when consumed reduce the energy density of the diet, but add weight and volume to the diet. Future research is recommended by the DRI subcommittee on energy macronutrients (2002) because results from human studies on weight loss with high fiber diets are equivocal.

Sources of Funding: State, Hatch, Louisiana Board of Regents, Lonza, Inc.

ANNUAL REPORT OF ACCOMPLISHMENTS AND RESULTS

Key Theme: Effects of protein and exercise on reducing osteoporosis risk

Goal 3: A Healthy, Well-nourished population

Maren Hegsted, Professor, School of Human Ecology, Louisiana Agricultural Experiment Station, LSU AgCenter

Issue: Osteoporosis is a debilitating disease characterized by loss of bone mineral mass which leads to increased risk of bone fracture. Adults typically start losing bone calcium in their mid-thirties at a very slow rate which can lead to senile osteoporosis in both elderly men and women. After menopause, this rate of bone loss is greatly accelerated in women leading to a much higher incidence of osteoporosis in postmenopausal women. With the aging of America, osteoporosis is growing rapidly with an estimated 24 million Americans currently affected by this chronic disease. Osteoporosis related hip fractures are medically costly and frequently lead to serious limitations in mobility. In the year following a hip fracture the mortality rate goes up 12-20%, primarily in women who do not regain their mobility after the fracture. Hormone replacement therapy can prevent this bone loss but recent data showing increased heart disease and cancer risks in women taking estrogen has dramatically reduced the number of people taking estrogen. Prevention of bone loss in postmenopausal women is the focus of this research project.

What was done: Soy protein and exercise were both shown to reduce bone loss in ovariectomized retired breeder rats, a model for postmenopausal women.

A dose-response study showed that 10% soy protein in the diet was needed to reduce vertebral bone mineral loss. In addition, both swimming and running reduced bone mineral loss in this same rat model and reduced post ovariectomy weight gain. Exercise reduced bone mineral loss of both the spine and the long bones of the legs and arms. In addition, swim exercise for 1 hour a day, 5 days a week increased bone strength in the femoral neck of the rats, the site where human hip fractures occur. Preliminary data working with a rice bran oil concentrate indicates that the oryzanol or tocotrienols in the concentrate can also reduce bone loss in the long bones.

This is particularly exciting because the soy protein only affects the vertebra so a combination of both soy and rice bran oil concentrate could reduce bone loss in both the spine and the long bones.

Impact: As the number of elderly in the Louisiana population increases there will also be an increase in the number of hip fractures due to osteoporosis. This data suggests that exercise can play an important role in reducing bone loss and weight gain after menopause. More importantly, the inclusion of soy protein and maybe rice bran oil concentrate into food products that consumers will eat could decrease the incidence of osteoporosis and hip fractures. This functional food approach to reducing osteoporosis offers benefits to all, to the consumers with decreased risk of fractures, to the farmers with higher value product to sell, and the food manufacturers with another product to market. This could be particularly of benefit to Louisiana if we can confirm the bone-protective effect of rice bran oil concentrate since currently rice bran is very low value commodity in the state.

Sources of Funding: Hatch and Louisiana Soybean and Grain Research and Promotion Board.

ANNUAL REPORT OF ACCOMPLISHMENTS AND RESULTS

Key Theme: Functional Foods Development and Evaluation

Goal 3: A Healthy, Well-Nourished Population

J. Samuel Godber, Professor, Food Science Department, Louisiana Agricultural Experiment Station, LSU AgCenter

Issue: Louisiana agriculture is at a crossroad. With dwindling price supports, it has become essential to obtain maximum utility from agricultural commodities and products. Adding value to the products of agricultural production is now recognized as a necessary component to economic development in Louisiana. Functional foods are the fastest growing segment of the value-added food industry. Functional foods incorporate nutraceutical components into traditional food products for the purpose of increasing health benefits that may be derived from that food. A current example is the margarine product called Benecol, which includes a cholesterol-lowering component derived from pine trees. The essence of this project is to incorporate components from various sources such as rice oil and soy flour into food products with a similar rationale to that of Benecol. For example, a compound found in rice oil called gamma-oryzanol oil has a chemical structure similar to that of the pine tree derivative in Benecol and has been shown to lower serum cholesterol. Also, because it would be considered a component that occurs naturally in food it would not face the regulatory scrutiny directed at Benecol. Overall, this project focuses on the extraction, concentration/purification, functional assessment and utilization of functional components from byproducts of agronomic crops important to Louisiana and the world. The ultimate benefit will be the improved utilization of valuable natural resources in support of more healthful diets.

What was done: Thermal stabilities of the functional "antioxidant" components of rice bran oil were determined. When rice bran oil was heated to 130 C and held for 55 minutes, there was a 62% reduction in alpha-tocopherol and a 55% reduction in alpha-tocotrienol, whereas the gamma homologues of each remained stable. When the oil was heated to 190 C, alpha homologues were reduced to less than 5% and gamma homologues were reduced to 20% of their original concentrations after 40 minutes. The oryzanol component of the oil remained unchanged under these heating conditions. In another aspect of the study, the in vivo digestibility of oryzanol in the rat was evaluated. Oryzanol from rice bran oil appeared to be digested more readily (72%) than crystalline oryzanol (51%) added to the diet as a dry ingredient. Oryzanol, regardless of its form, had no effect on serum or liver cholesterol. An *in vitro* study of oryzanol digestibility revealed that 65% of oryzanol was lost when incubated with a bile and pancreatic enzyme mixture. Further clarification with individual enzymes indicated that the primary enzyme responsible for oryzanol degradation was cholesterol esterase. Products of the digestion included free ferulic acid and phytosterols.

Impact: Rice bran oil has been suggested as an ideal frying oil because of its antioxidant components. This research has clarified that high temperatures will significantly degrade the tocopherol and tocotrienol components, although the gamma homologues of each tolerated intermediate temperatures. Oryzanol appears to be highly stable to heating and could be primarily responsible for the oxidative stability of rice oil and foods cooked in rice oil. Potential *in vivo* benefits of oryzanol would be dependent on its digestibility. This research indicates that oryzanol appears to be degraded in the intestine, perhaps by cholesterol esterase, which may have relevance in the mechanism by which oryzanol influences cholesterol metabolism.

Sources of Funding: This is a Hatch and State Funded project with additional support from USDA-NRI, USDA-IFAFS, Louisiana Soybean and Grain Board and Dairy Management, Inc. grants.

ANNUAL REPORT OF ACCOMPLISHMENTS AND RESULTS

Key Theme: Impact on a Healthy, Well-Nourished Population

Goal 3: A Healthy, Well-Nourished Population

Carol O'Neil, Associate Professor, School of Human Ecology, Louisiana Agricultural Experiment Station, LSU AgCenter

Issue: The general objective for this project is to describe factors that influence consumer food preferences and dietary practices and to identify behavioral obstacles to healthful foods. With funding from the USDA Economic Research Service, researchers focused particularly on food security of families exiting welfare programs. The protocol used in this study will be useful in related studies. Findings have been shared with key administrators and policy makers, and researchers will continue to explore eating patterns, especially fast food and the reasons for high level of consumption of fast food, in this vulnerable population.

What was done: Researchers interviewed welfare reliant, formerly welfare reliant, and working poor women to evaluate eating and food spending patterns and correlate those with anthropometry and diet quality. Nearly two thirds of the women received food stamps and a small, but identifiable proportion were food insecure. Twenty four hour dietary recalls were completed at the beginning and end of the women's monthly resource cycle. Food intake was analyzed and compared with national dietary guidelines. Food prices were obtained from the stores in which the women shopped, from an average of three separate stores, or from local restaurants. Diet quality was poor, as adjudged by comparison with dietary guidelines and standards, and generally deteriorated over the monthly resource cycle. A high proportion of women consumed fast food meals. The percentage of the food dollar spent on these meals was greater than 50% early in the month, and approaching 50% at the end of the month. Women spend less money on food at the end of the month than at the beginning and, at the end of the month, food insecure women spent barely above the amount allotted for the thrifty food plan. Data suggested that fast food meals was a significant contributor to dietary sodium. In general, obesity was positively correlated with food insecurity, possibly as a result of resource cycling or poor food choices. Research findings have been presented at many conferences, including the National Council on Family Relations, the Federation of American Societies for Experimental Biology, and the Annual Meeting of the American Dietetic Association.

Impact: Implications for the women in our study, particularly as related to their long-term health include: 1) Nutrition-related chronic disease, including coronary artery disease, hypertension, and type 2 diabetes mellitus disproportionally effect low income women. Obesity is usually a co-morbid condition or a causal condition in these women. Poor diet quality, as exhibited by women in this population, increases disease risk. 2) Excessive consumption of and spending on fast food meals rapidly depletes meager food resources and contributes to a diet high in fat, saturated fat, and sodium, and low in fruit, vegetables, and low-fat dairy. This increases the risk for developing chronic disease. This eating behavior further erodes dietary quality. 3) There is a clear lack of knowledge of or use of nutrition education programs by these women.

Sources of Funding: State, Hatch, Multi-State

GOAL 4

LSU AgCenter Goal 4 is to achieve greater harmony between agriculture and the environment. The integrity of Louisiana's diverse ecosystem must be ensured by developing, transferring, and promoting the adoption of sustainable agriculture, forestry, and related resource conservation policies, programs, technologies, and practices.

Research Reports

Application of swine and poultry wastes to land can lead to the accumulation of phosphorus (P) in soils and potential runoff, which can result in eutrofication of water sources. The addition of the dietary enzyme, phytase, to swine and poultry diets reduces the need for inorganic P fortification. Also, in areas where P levels in the soils are an important consideration for the land application of animal wastes, the use of phytase will increase the amount of wastes that can be applied to the land without exceeding the P standard. These diets also may be more economical because of the reduction in calcium, phosphorus, amino acid, and energy supplementation that is required. Presently, vast acreages of ecologically important forested wetlands in southern Louisiana have been decimated or exist in varying states of decline due to the interaction of several anthropogenic and biological processes. An important component of freshwater wetlands restoration and preservation is river diversions that re-introduce sediment and nutrients from the Mississippi River to slow or reverse land subsidence, increase soil fertility and flush salt encroachment lethal to baldcypress and tupelo, keystone forest species. Preliminary studies have shown that insect defoliation of young wetland trees may act in concert with a low-nutrient environment to reduce growth. Reducing inorganic N is a major focus of river diversions, and these tree-insect complexes appear to be sinks for these compounds. Further integration of cultural practices into the rice water weevil management program in Louisiana should reduce the amount of insecticide applied to this crop. Management practices such as delayed flooding, early planting, draining of fields, fertilization, and shallow flooding of fields were examined in 2002. New technologies for weed control should facilitate adoption of some of these cultured practices and increase the cost-effectiveness of management programs, along with improving the environment of the rice agroecosystem.

Extension Reports

Selected accomplishments in Extension programs include:

- Prescribed burn management certification training has been provided to 1,405 sugarcane growers (or their representatives) since the year 2000. In addition, over 2,000 growers (or their representatives) attended additional training in summer of 2002. Complaints of burning have been declining, and the sugarcane industry has received positive feedback from communities on these attempts to improve air quality.

- A total of 400 individuals participated in eight animal damage control workshops statewide, for a reported dollar value of $1,500 per participant or a total of $600,000.

- Four hundred fifteen natural resource Louisiana professionals, loggers, and landowners participating in eight Continuing Education in Natural Resources (CENR) workshops statewide estimated the personal value of this program in forest management, growth, and yield modeling, and forest management for wetlands and water quality at approximately $913,000.

- In the 3-year long USDA-funded Formosan subterranean termite control program in New Orleans and Shreveport all original properties and 65% of the properties in 16 new blocks have been treated. This has resulted in reduction in termites and the cost of treatment and repair of affected properties.

- The Master Farmer Program, a multi-agency effort spearheaded by Extension to help agricultural producers voluntarily address environmental concerns and regulations in production agriculture, as well as enhance agricultural production and farm management/marketing skills for continued viability of Louisiana agriculture, has developed curricula for implementing the environmental stewardship phase of the program. The program which began in November 2001 is being implemented in six watersheds of the state. So far, the program has been implemented in two watersheds with 268 producers enrolled, representing 250,000 acres. Another 350 producers are pre-enrolled in the program from four water basins. It is expected that the program will cover all six basins in 2003.

- The Master Tree Farmer 2002 Program reached people via eight regional satellite broadcast facilities. Fifty-five individuals responding to an evaluation of the program said they expected to save approximately $19,947 per person or a total of $1,097,100, and earn an additional $42,827 per person or a total of $2,227,000 by applying the knowledge gained in their operations (90% said they would apply what they had learned).

- Natural resource and environmental education camps for youth showed an average increase of 12% in knowledge gained, with students reporting significant increases in science and math school scores, career changes contemplated, and greater environmental awareness.
- Poultry producers have improved their waste management and dead bird disposal practices, awareness of EPA regulations, TMDLs, and BMPs. They are also preparing comprehensive nutrient management and bio-security plans for their farms.

- Watershed Education (WE) programs during the year focused on environmental protecting and restoring aquatic ecosystems and protecting human health. WE educators worked closely with the environmental stewardship phase of Louisiana's Master Farmer Program described above; involved 200 dairy producers, 12 beef producers, 64 foresters, and 15 marinas in the Lake Pontchartrain Basin in nonpoint source (NPS) pollution education; organized environmental camps, weekend sessions, special events, and club meetings for 7,500 youth; involved 250 homeowners in Home*A*Syst instruction in one watershed of the state; and made presentations on and discussed water issues with several municipal and parish governments.

- Water resources development programs focused on assisting producers develop a better understanding of and adopt optimal water systems in their operations. As a result of these programs in targeted areas of the state, crop yields have increased and the risk of crop losses from drought has decreased; more surface water is available for recreation, public water supply, business and industry; surface water quality and habitat in summer months has improved; and marsh in coastal areas has received proper nourishment.

- A Coastal Enhancement Team of 11 state, area, and parish level educators formed in 2001 has increased the visibility of the wetlands and coastal resources program using the internet and electronic dissemination techniques by making a number of extension education materials more visible and accessible to various stakeholders. The team also involved youth in the Marsh Maneuvers environmental program, and worked with local, state, and federal agencies, NGOs, and individual citizens on a variety of projects.

- A total of 700 landowners and natural resource professionals participated in eight wildlife management programs on habitat improvement and potential economic value of wildlife acreage. At a self-reported average value of $1,500 per participant, the total value of these programs was $1,050,000.

Total extension expenditure on Goal 4 programs was $2,177,295. Of this amount, total multi-state expenditure is estimated at $1,113,728 and multi-function expenditure at $2,172,048.

Total extension FTEs on Goal 4 programs were 28.25 and 932,973 educational contacts were made.

GOAL 4
EXTENSION SUMMARIES

Federal Goal 4

AIR QUALITY

Key Theme: Air Quality

Program Description

Recently, agricultural burning policy recommendations were prepared by the U.S. Department of Agriculture (USDA) Agricultural Air Quality Task Force to help farmers implement provisions of the Clean Air Act while retaining the valid use of fire as a management tool. Task force members included representation from agricultural producers, air quality researchers, agricultural industry representatives, medical researchers and state air quality and USDA staff. The policy addresses two goals: 1) to allow the use of fire as an accepted management practice, consistent with good science, to maintain agricultural production on agricultural land; and 2) to protect public health and welfare by mitigating the effects of air pollution emissions on air quality and visibility. The industry has been proactive in its efforts to improve air quality by developing the Certified Prescribed Burn Manager Program, which is administered by the Louisiana Department of Agriculture and Forestry (LDAF). The LDAF, the American Sugar Cane League (ASCL) (sugarcane commodity group based at Thibodaux, LA) and the LSU Agricultural Center developed a training curriculum titled, "Louisiana Smoke Management Guidelines for Sugarcane Harvesting." Although the training was voluntary, over 1,400 sugarcane growers and their employees have attended training sessions since 2000, representing approximately 99% of the sugarcane farming entities in the state. Further, the LSU Agricultural Center along with the ASCL provided additional educational materials regarding sugarcane burning for distribution to the general public through the printed media as well as TV and radio. Extension agents received additional training from specialists and in turn conducted training at field days in the sugarcane growing parishes hosted by the Louisiana Cooperative Extension Service. The LSU Agricultural Center, in cooperation with the ASCL and the USDA's Agricultural Research Service, has been proactive in developing economically feasible alternatives to agricultural burning to include developing sugarcane varieties that shed their leaves and promoting value added products from the cane crop's residue resulting from green cane harvesting. An effective trash management program that reduces nutrient runoff could also have a positive impact on water quality as well as air quality since there would be no need to burn the residue before or after harvest. Other research initiatives have shown that the residue left on the field following green cane harvesting may help suppress weeds and offer some freeze protection during the winter months although research has also shown a reduction in yield in the subsequent stubble (ratoon) crop if the residue is not removed. Other research has tested biological agents that could be used to speed up decomposition of the residue further reducing the need to burn. Other collaborators included the Florida Sugar Cane League, the Rio Grande Valley Sugar Growers, Inc., the USDA Forest Service and the National Weather Service.

Program Impact

Louisiana is not the only state, nor is sugar production the only industry, facing the challenges posed by burning as an agricultural management tool. Every industry that uses burning recognizes that a cost-effective mechanism for reducing or eliminating open field burning is a high priority research topic. A total of 1,405 growers and/or their representatives attended the Certified Prescribed Burn Manager Program training sessions since 2000. Further, over 2,000 growers and/or their representatives have attended the field day presentations during the summer of 2002 where additional training on smoke management was given. It appears that the overall training programs have continued to work exceptionally well with the number of complaints by the general public steadily declining in recent years. The LDAF and ASCL continued to follow up all complaints with a letter to the growers cited for improper activities with regards to their burning practices. As a result of this program the Louisiana sugarcane industry has received excellent feedback from the communities on their attempt to improve air quality for all its citizens.

Source of Funds

Federal Funds (Smith -Lever 3 b, c)

Scope of Impact

State only

Multi-function: It is estimated that 2.5 FTEs were allocated to Air Quality work. Of this, 15% is attributable to research-extension integrated activities. Multi-function work accounts for $30,005 (2.5 FTEs x $80,136 per FTE x 0.15).

Federal Goal 4

ANIMAL DAMAGE CONTROL WORKSHOPS

Key Theme: Continuing education to professional and private individuals.

Program Description

The program was initiated in 1997 and continues to be presented on a regular basis as user groups are identified who might benefit from the information. Workshops were conducted throughout the state to educate landowners and homeowners on the control techniques for nuisance wildlife species.

Phone contacts with stakeholders indicated the types of nuisance wildlife problems throughout the state that homeowners and landowners are experiencing. From these contacts, programs were designed to address the problems that are of the greatest concern to clientele groups.

A host of wildlife species was found to cause widespread damage in many areas of home and farm living. Many traditional game species were among the species of greatest concern when their presence in certain urban and agricultural settings conflicted with goals of landowners and homeowners. Commensal rodent species were one of the biggest non-game animals that caused widespread damage.

Program Impact

In fiscal year 2002, eight animal damage control workshops were presented throughout the state. Four hundred individuals participated in these programs and the average dollar value of these workshops to participants was given as $1,500, for a total value of $600,000.

Source of Funds

Smith-Lever 3 d, Renewable Resources Extension Act (RREA)

Scope of Impact

Louisiana

Federal Goal 4

CONTINUING EDUCATION IN NATURAL RESOURCES

Key Theme: Professional Resource Manager Continuing Education.

Program Description

Since 1997, the LSU AgCenter has offered the Continuing Education in Natural Resources (CENR) program for natural resource managers in Louisiana. We provide them with the latest resource management information gleaned from research conducted throughout the country. Topics typically include forest management and economics, timber taxation, forestry best management practices implementation and impact, prescribed fire use, leadership development, and media relations.

Each year we send out a survey to natural resource managers in the state to solicit information from them regarding what topics and courses they would like to attend in the next year. Also, we have an advisory committee formed of leaders from industry and government to assist us in determining what topics, times, and locations should be used. All of this input is analyzed and our programs are developed from this input.

Some of the issues identified by natural resource management professionals were: leadership development, the use of prescribed fire, forest economics and management, and timber taxation.

Program Impact

In FY 2002, the CENR program held 9 workshops throughout the state. In eight workshops there were 415 participants. Survey respondents valued these programs on average at $2,200 per person per workshop, or a total value of $913,000. In the ninth workshop, approximately 50 forest industry employees gained knowledge about the Tree Farm program in northwest Louisiana.

Source of Funds

Smith-Lever 3d, Renewable Resources Extension Act (RREA)

Scope of Impact

Louisiana

Federal Goal 4

ENDANGERED SPECIES MANAGEMENT

Key Theme: Protection of endangered species/landowner education

Program Description

Endangered species management seminars were taught in conjunction with "Best Management Practices" workshops conducted on four occasions during the reporting period.

The program was designed to educate landowners concerning the federally mandated requirements in regard to managing habitats for federally endangered species. Economic concerns were a major consideration in balancing land management considerations with specific guidelines for managing endangered species.

Continuing education advisory committees designed the program format.

Problems identified included (a) How to manage for endangered species while continuing to profit from other land use practices; (b) How to provide the habitat needs of species with a very narrow window of available habitats.

Responses from attendees indicated that most landowners gained useful information on how to identify the presence of endangered species on their lands and also how to avoid any possible land use practices that could lead to a violation of the Endangered Species Act. Similar programs will be initiated in the upcoming reporting period with an expanded emphasis on other game and non-game species.

Program Impact

One hundred and thirty five individuals attended the programs from Louisiana, Mississippi, Texas, and Arkansas. The information gained will allow for a better understanding of the mandated habitat management requirements for endangered species.

Source of Funds

Continuing education funds as provided through the Sustainable Forestry Initiative.

Scope of Impact

Multi-state

Federal Goal 4

FORMOSAN SUBTERRANEAN TERMITE

Key Theme: Integrated Pest Management

Program Description

The Formosan subterranean termite continues to be a serious problem in Louisiana. Properties are being treated for this insect as a pilot test and an education program. An additional 16 blocks were added to the program. About 65% of the properties in the new area have been treated. Other properties will be included in the program as requirements are met. Meetings describing the program and educational meetings were held with property owners. Continuous contact was also maintained with pest management professionals (PMPs). Several meetings were held with PMPs. New properties were approved, treated, and inspected. Treatments were maintained on properties already in the program. ARS and the New Orleans Mosquito and Termite Control Board are helping in the program. PMPs continue treatments of properties. Independent monitoring of the progress of the program was continued.

Program Impact

Virtually one hundred percent of the properties have been treated in the original treatment area. About 65% of the properties in the new area have been treated. Treatments out of the treatment area have increased to about 50 percent. Property owners are adopting the technology. The numbers of termites are being reduced. This will save money. There will be less repairs and less insecticide used.

Source of Funds

Federal funds

Scope of Impact

Multi-state: Collaboration with professionals from Texas, Hawaii, Florida, and Mississippi. Information from the National Technical Committee meeting was used to develop 20 % of the program. The dollar equivalent of multi-state work is $56,095 (3.5 FTEs x $80,136 per FTE x .20)

Multi-function: Multi-function efforts (integrated extension-research) are estimated at 20% of the number of FTEs. The dollar equivalent of multi-function work is $56,095 (3.5 FTEs x $80,136 per FTE x .20).

Federal Goal 4

LOUISIANA FOREST STEWARDSHIP NEWSLETTER

Key Theme: Care and protection of forest ecosystems

Program Description

“Louisiana Forest Stewardship: Resource News", a quarterly newsletter, is produced by a three - person team of representatives from LCES, Louisiana Department of Agriculture and Forestry, and Louisiana Department of Wildlife and Fisheries.

Program Impact

Four newsletters were produced in FY 2002. Each newsletter had a different theme: general ecosystem type (longleaf pine forests), an activity (hunting), and short articles, including an article highlighting a stewardship landowner and that person’s property and management approach. One thousand copies of each newsletter were produced and distributed to stewardship forest owners, professionals and other interested people across the state. The readership is estimated to be slightly over 1,000 among whom slightly more than half are women. Through the newsletter readers learn the variety of activities landowners are doing with their properties and the variety of options they have for multiple resource management. Practical information is also provided to landowners to increase enjoyment and other benefits from their properties – all in an ecologically responsible manner.

Source of Funds

Louisiana Department of Agriculture and Forestry grant.

Scope of Impact

Statewide

Federal Goal 4

LOUISIANA MASTER FARMER PROGRAM

Key Theme: Natural Resources Management

Program Description

Over the last decade the quality of water has become the focus of concern among issue groups in Louisiana. Based on current data, the Louisiana Department of Environmental Quality (DEQ) has listed 285 water bodies in Louisiana as being impaired (not meeting established standards for oxygen, fecal coliform, metals, etc.) for one or more reasons. Only 91 of our 476 designated waterbodies are currently considered fully meeting standards. Agricultural production has been targeted as a major contributor to these impairments.

Much of the water entering Louisiana waterbodies comes from rainfall runoff. As this runoff travels across the soil surface, it carries with it soil particles, organic matter, and nutrients such as nitrogen and phosphorus as well as other pollutants. When this runoff enters streams, rivers, and bayous in Louisiana, it is transported downstream and eventually enters marshes and estuaries along the Gulf coast where it could be detrimental to the fragile ecosystems. Activities on agricultural lands contribute to the amount of these materials entering streams, lakes, and estuaries.

Sediment is the largest pollutant by volume of surface water in the nation. Sediment comes from agricultural sources, construction sites and other soil-disturbing activities in urban settings that leaves the soil exposed to rainfall. Sediment increases the turbidity of water, thereby reducing light penetration, impairing photosynthesis, altering oxygen relationships and may reduce the available food supply for certain aquatic organisms. It can adversely impact fish populations in areas where sediment deposits cover spawning beds.

Nutrient over-enrichment is a major source of water pollution in Louisiana, and the United States. Nutrient loading (primarily N and P) of aquatic ecosystems is increasing as a result of human activities such as fertilizer application, human and animal waste disposal and fossil fuel combustion. As these nutrients enter Louisiana streams, they are transported downstream and eventually enter coastal marshes and estuaries.

Recently, NOAA conducted a National Estuarine Eutrophication Assessment and concluded that 44 of 139 U.S. coastal sites included in the study exhibited serious over-enrichment conditions. The report concluded that more than half of the Nation's estuaries are likely to develop worsening over-enrichment conditions during the next 20 years.

Implementation of Best Management Practices (BMPs) by agricultural producers would be a means of reducing agriculture's contribution to these water quality problems. Because soil

erosion and runoff are the two major ways nonpoint source pollutants move into surface waters, practices that reduce erosion or control runoff are considered BMPs.

Best Management Practices

In an effort to develop and implement voluntary BMPs in Louisiana, the LSU AgCenter conducted commodity specific BMP reviews over the past 6-8 years. These reviews were conducted through committees comprised of research and extension scientists, representatives from partnering agencies such as the Natural Resources Conservation Service (NRCS), Department of Environmental Quality (DEQ), Louisiana Department of Agriculture and Forestry (LDAF) and Louisiana Department of Natural Resources (LDNR), and producers representing Farm Bureau and other commodity organizations. Reviews have been completed and BMP publications developed for rice, sugarcane, cotton, corn, soybeans, and sweet potatoes. The AgCenter has also worked with the Louisiana Forestry Association in the development of an excellent forestry BMP manual. Animal commodities that have completed BMP reviews and have BMP publications developed include poultry, dairy, and swine. Additionally, beef cattle and aquaculture BMP publications were completed this year.

BMPs are used by agricultural producers to control the generation and delivery of pollutants from agricultural activities to water resources of the state, thereby reducing the amount of agricultural pollutants entering surface and ground waters. Agricultural BMPs focus on four main areas: nutrient management, pesticide management, soil and water management, and general farm practices. Each BMP is a culmination of years of research and demonstrations conducted by agricultural research scientists and soil engineers. BMPs and accompanying standards and specifications are published by the NRCS in its *Field Office Technical Guide.*

Louisiana Master Farmer Program

In an effort to address agriculture's contribution to water quality impairments through the adoption and implementation of BMPs, the LSU AgCenter, Natural Resources Conservation Service (NRCS), Louisiana Farm Bureau Federation (LFBF), Department of Environmental Quality (DEQ), Department of Natural Resources (DNR), Louisiana Cattlemen's Association (LCA), Louisiana Association of Conservation Districts (LACD) and Louisiana Department of Agriculture and Forestry (LDAF) are implementing a Master Farmer Program for Louisiana. Due to the increased pressure for regulatory control of production agriculture, the initial focus of the program is the Environmental Stewardship component. The Environmental Stewardship component has three Phases. Phase I focuses on environmental issues specific to production agriculture and commodity specific BMPs and their implementation. Phase II includes in-the-field viewing of implemented BMPs on "Model Farms." Farmers will be able to see farms that demonstrate BMP effectiveness in reducing agriculture's contribution to water quality impairments. Phase III involves working with NRCS in the development and implementation of farm-specific conservation plans by the Master Farmer participants. This plan will include the selection and voluntary implementation of recommended farm-specific BMPs on the whole farm operation.

Upon completion of the Master Farmer-Environmental Stewardship component, producers will be certified in environmental stewardship. They will also have the opportunity to continue the program by enrolling in commodity-specific tracks of the program. The tracks being developed include: Master Farmer (primarily row crop agriculture), Master Cattleman, Master Poultry Grower, and Master Dairyman. Such tracks will require additional time and commitment from producers to complete a comprehensive program with further integration of conservation-based production and resource management components that are directly linked to environmental stewardship.

As Total Maximum Daily Loads (TMDLs) are being developed for Louisiana watersheds, Louisiana's agricultural producers will face the environmental challenge of compliance with mandatory reductions of nonpoint pollutants, such as nutrients, pathogens, organic material/dissolved oxygen, sediment, and metals. Voluntary implementation of incentive-based, economically achievable and effective BMPs, through the Master Farmer Program, would be a means of addressing these environmental challenges.

Program Impact

The Master Farmer Program will be implemented on a watershed basis. The schedule for implementation of the program in Louisiana watersheds is outlined below.

2001: Mermentau/Teche/Vermilion	2002: Calcasieu/Ouachita
2003: Barataria/Terrebonne	2004: Red/Sabine
2005: Pontchartrain	2006: Mississippi/Atchafalaya/Pearl

The Master Farmer Program began in November 2001 in the Mermentau and Teche/Vermilion River basins. To date there are 268 agricultural producers enrolled in the program, representing approximately 250,000 acres of agricultural land. The program will again be offered in these two basins in 2002 and will be expanded to the Ouachita and Calcasieu basins as well. Currently there are more than 350 agricultural producers pre-enrolled to begin the program over the next four months. Due to the response from the agricultural community, the possibility of offering the program statewide later in 2003 is being considered.

Source of Funds

Grant from the Louisiana Department of Natural Resources, Coastal Management Division Federal Funds (Smith-Lever 3 b,c)

Scope of Impact

Multi-state: Significant multi-state collaborative activities initiated in the Master Farmer Program include the Lower Mississippi Valley Initiative (LMVI) and the Delta Conservation Demonstration Center (DCDC). The LMVI was developed to address agricultural profitability and environmental stewardship in the Lower Mississippi Valley region. The LMVI consists of a

task force led by agricultural leaders from eight states in the lower Mississippi River Valley. These states are Louisiana, Mississippi, Arkansas, Tennessee, Missouri, Kentucky, Oklahoma and Texas. The primary goal of the LMVI is to develop a multi-state plan outlining the voluntary, incentive-based programs to ensure agricultural profitability and environmental stewardship.

The LMVI serves as a mechanism to address agricultural profitability and environmental stewardship. State agricultural leaders in the LMVI have held forums in the Lower Mississippi River Valley to work toward increasing support for agriculture and develop policy initiatives that assure profitability and enhance rural environmental sustainability.

The DCDC is a 300-acre site located in the Mississippi River Delta in Washington County, Mississippi. This site will be used to conduct research and demonstrations on Best Management Practices (BMPs) designed to reduce agriculture's contribution to water quality impairments in the Delta area. It is representative of the Mississippi River Delta land found in all participating states. Since all of the partnering states share the same Mississippi River Delta, research data developed at the DCDC site will be relevant to all the states involved.

Once the site is developed, it will be used not only for research, but also to conduct field days and demonstrations. The field days will be used to promote adoption of BMPs by agricultural producers in the Mississippi River Delta. Work is continuing in developing the site.

It is estimated that 2.5 FTEs were allocated to these multi-state activities, valued at $200,340 (2.5 FTEs x $80,136 per FTE).

Multi-function: Integrated research-extension activities include the development and production of commodity-specific Best Management Practices (BMP) publications, a Master Farmer web site established by the LSU AgCenter, joint research and extension efforts in the development and implementation of the Model Farm component of the Master Farmer Program, joint research-extension projects to develop new conservation-based production practices, joint research-extension appointments, and the reorganization of the technical departments of the LSU AgCenter whereby extension specialists and research faculty are administratively integrated. It is estimated that a total of 21.25 FTEs of research and extension faculty time is expended in these collaborative activities, the dollar equivalent of which is $1,702,890 (21.25 FTEs x $80,136 per FTE).

Federal Goal 4

MASTER TREE FARMER 2

Key Theme: Forest Landowner Education.

Program Description

Master Tree Farmer 2 was a seven-week short course program broadcast via satellite to sites across the southeastern United States. The broadcast originated from Clemson University. The goal of the program is to provide forest landowners with basic and advanced information and education regarding forest management, record keeping, environmental impact minimization, wildlife management, and economic opportunities. The Master Tree Farmer 2 program was a continuation of the original Master Tree Farmer series held in FY 2001.

Because this is a regional program, advisory committees were established both at the regional level and at the local level within each state. During the original Master Tree Farmer program, evaluation instruments were completed by participants. These evaluation instruments not only queried participants about the value of the current program but also asked them what they would like to see in follow up programs. Based on their input, the Master Tree Farmer 2 program was developed with topic areas designed from stakeholder input.

Some of the problems identified by participants in Master Tree Farmer were: more education on timber sale contracts, forestry best management practices, timber taxation, timber theft, and managing for wildlife on their lands. Master Tree Farmer 2 addressed each of these topics.

The following groups collaborated in producing the Master Tree Farmer 2 workshop series: Louisiana Department of Agriculture and Forestry, Louisiana Department of Wildlife and Fisheries, Natural Resources Conservation Service, Louisiana Forestry Association, Society of American Foresters, Feliciana Forestry Association, Red Stick Forestry Association, Natchitoches Parish Forestry Association, Northeast Louisiana Forestry Association, Mississippi State University, Texas A&M University, University of Arkansas, Oklahoma State University, Auburn University, University of Tennessee, University of Georgia, University of Florida, Clemson University, University of Kentucky, Virginia Tech University.

Program Impact

The program was initiated in February 2002 and completed in March 2003. In Louisiana, eight sites carried the program. Sites included Shreveport, Many, Monroe, Natchitoches, Alexandria, Oakdale, Jackson, and Baton Rouge. Because it was a seven-week program, meeting on Tuesday nights during that period, there were a total of 56 meetings. Mass media was used to advertise the program and the programs was delivered through the use of satellite technology. Of the evaluations received, 95.7% of respondents felt the presented information would help them save and earn more money from their timberlands. Fifty-five respondents stated they

expected to save approximately $19,947 per person or approximately $1,097,100 total. They also stated they expected to earn an additional $42,827 per respondent, or a total of $2,227,000 for 52 respondents from the knowledge gained by attending Master Tree Farmer 2. Ninety percent of respondents said they expected to make changes in their forestland management practices based on what they learned from the workshops.

Source of Funds

Smith-Lever 3d, Renewable Resources Extension Act (RREA)

Scope of Impact

Multi-state: States involved in planning, participation, preparation, and sharing of educational materials were Texas, Oklahoma, Louisiana, Arkansas, Mississippi, Tennessee, Kentucky, Alabama, Georgia, Florida, South Carolina, North Carolina, Virginia. Estimated participation and information sharing for the program was 75 percent. A total of 2 FTEs were devoted to the program in Louisiana. Hence, the dollar value of the multi-state effort was $120,204 (.75 x 2 x $80,136).

Federal Goal 4

NATURAL RESOURCES AND ENVIRONMENTAL EDUCATION (4-H YOUTH)

Key Theme: Environmental Education

Program Description

The 4-H Wild Woods Wanderings Environmental Program was developed to expose 4-H teens to the characteristics of bottomland hardwood forested wetland ecosystems and the challenges related to their management within an agriculture based economy. The curriculum for the camp was developed by an Advisory Committee of professionals from agencies and associations involved with funding, managing, and conducting the camps: the LSU AgCenter; U.S. Fish & Wildlife; NRCS/Northeast Delta R.C.&D.; Louisiana Department of Parks, Recreation and Tourism and the Tensas River Refuge Association. The camps, which draw 4-H members and volunteers from throughout Louisiana, were initiated in 1995.

Two sessions of this camp were held in the summer of 2002, reaching 20 4-H teens and 4 volunteers. The camp is held at the Poverty Point State Commemorative Area near Epps, Louisiana, which is one of the most important archaeological sites in the United States, and on the Tensas River National Wildlife Refuge. At the beginning of the six-day camping session, participants take a pre-test and are also given a real-life public policy issue to solve: "The reduction of flooding of agriculture lands from the Tensas River in Madison Parish." Throughout the camping session, participants study: how man has utilized the lands in what is now northeast Louisiana from as far back as 4000 years, water quality, soil science, wildlife and hardwood

forest management, row crop agriculture and the environment; stream monitoring and management. These lessons are taught by extension specialists and researchers of the LSU AgCenter, U.S. Fish & Wildlife, Louisiana Department of Environmental Quality, Poverty Point State Commemorative Area, LSU interns, and 4-H volunteers from both Louisiana and Mississippi. Peer teaching of 4-H members is also used as groups of member participants prepare a lesson to teach the rest of the participants. Each lesson is designed to build upon the previous one, and much hands-on participation is encouraged. The lessons, as well as newsletters received by campers each day of the camp are also designed to give participants the information/knowledge needed to solve a public policy issue. Each group of campers presents their "plan" at a mock meeting of the Madison Parish governing body (Police Jury). The next morning these plans are critiqued and campers learn how the Tensas River Basin Commission is actually addressing this issue. Campers take a post-test and complete an evaluation of the camp before leaving for home.

Program Impact

Campers in 2002 showed an average 12% increase in knowledge gained during the camp. On a scale of 1-5, all activities were rated 3.0 or above with an average score of 4.2. Throughout the years of conducting this camp 4-H agents, volunteers, and campers have reported a significant increase in science and math scores of students in school after attending Wild Woods Wanderings, career changes, and greater environmental awareness.

Source of Funds

EPA 319 funds channeled through the Louisiana Department of Environmental Quality and Northeast Delta R.C. & D. as well as Smith/Lever funds.

Scope of Impact

Multi-state: One specialist and one 4-H agent for both camps full-time as well as four 4-H agents who attended for one week each. In addition, another 4-H agent utilized about three days preparing and delivering the daily newsletters. Two Wildlife and Forestry Professors from the LSU AgCenter and the LSU School of Natural Resources participated for a half-day each. A U.S. Fish & Wildlife agent participated in both camps. Four LDEQ scientists participated for a half-day each, a NRCS Soil scientist for a half-day, and two professionals from Poverty Point for a day each. Two 4-H Volunteers from Mississippi and Louisiana attended both camps full-time. The Advisory Committee met three times during 2002. Planning and preparation time for the two 4-H professionals and U.S. Fish & Wildlife was 10 days each. Planning time for other agency personnel averaged 8 hours each. 30% of one state FTE, 15% of 2 parish FTEs and 10% of 20 parish FTEs of programming in this area are a direct result of collaborative efforts between Louisiana 4-H national, and multi-state cooperative efforts. The dollar equivalent of multi-state work is $208,353 (1 FTE x $80,136 per FTE x .30) plus (2FTEs x $80,136 per FTE x .15) plus (20 FTE x $80,136 x .10).

Federal Goal 4

NATURAL RESOURCE EDUCATION (YOUTH)

Key Theme: Youth education

Program Description

All extension natural resources outreach work involves youth education activities designed to increase awareness of the interactions between humans and the environment.

Local in-state advisory committees are used in the 4-H Outdoor Skills Shooting Sports program to provide for program direction. National advisory committees are used to provide for program input in the Wildlife Habitat Evaluation Project (WHEP)

Problems identified included: (a) A desire for young people to acquire life skills by mastering the many phases of the Outdoor Skills Shooting sports program; (b) A desire for young people to understand the habitat needs of wildlife species in order that they may become overall better stewards of all our natural resources is the driving force behind the WHEP program.

Program Impact

Five thousand junior and senior 4-H members participated in the 4-H shooting sports program on a statewide basis during the reporting period. Twenty four individuals participated in the WHEP short course contest during the reporting period. Top winners in the state contest competed for national honors in Wooster, Ohio. All participants gained a greater understanding of our natural resource base here in Louisiana and will have the opportunity to become better stewards of these natural resources.

Source of Funds

Smith-Lever 3d, Renewable Resources Extension Act (RREA)

Scope of Impact

Louisiana

Federal Goal 4

PESTICIDE APPLICATOR TRAINING

Key Theme: Pesticide Application

Program Description

Meetings, conferences, and workshops were held throughout the state for both commercial and private pesticide applicators to allow them to become certified or to maintain their certification.

Program Impact

This program has been conducted since about 1975 and serves all pesticide users in Louisiana. Approximately 4,000 pesticide applicators received this educational program during the year.

Source of Funds

EPA Pass-Through

Scope of Impact

Multi-state: Forty to fifty percent of the educational materials used in this program are in part or in full, from other states but were developed in previous years and are reprinted or revised as needed. It is estimated that 15 to 20% of ideas about how to conduct this program have come from attending various meetings on the regional or national level. Two multi-state meetings were conducted (with Arkansas & Mississippi) involving approximately 100 Louisiana residents. These three states are working together to develop an Ornamental and Turf Pest Control Study Guide. Oklahoma is also working with us on the Ornamental and Turf manual. Approximately 15% of 3.6 FTE was devoted to this multi-state effort for a dollar equivalent of $43,273 (15% x 3.6 x $80,136).

Federal Goal 4

POULTRY

Key theme: Agricultural Waste Management

Program Description

In meetings with poultry stakeholders, problems with broiler litter management, EPA regulations, and general management practices were identified. Also, various problems in the processing portion of the industry have been identified during meetings with complex managers. Relations with the state regulatory agencies and integrators have been developed. Meetings and

farm visits with producers were conducted to familiarize producers with Poultry Best Management Practices (BMPs), Comprehensive Nutrient Management Plans, EPA proposed regulations and Total Maximum Daily Loads (TMDL), and the Phosphorus Index. The Louisiana Department of Environmental Quality, Natural Resources Conservation Service, Louisiana Department of Agriculture and Forestry, Louisiana Farm Bureau Federation, and the LSU AgCenter were involved as speakers and supporters of these producer meetings.

Additionally, in light of the acts of terrorism towards the United States and the outbreak of Avian Influenza in the northeastern United States, the need for poultry farm biosecurity education was identified by the LSU AgCenter and poultry stakeholders. Thus, meetings with poultry producers and poultry integrators were conducted to familiarize poultry producers with biosecurity practices and biosecurity plans. The Louisiana Department of Agriculture and Forestry, the USDA, and the LSU AgCenter were involved as speakers and supporters of these producer meetings.

On-farm demonstrations of in-house broiler litter pasteurization have been initiated and are continuing to be conducted. Methods of pasteurizing broiler litter for reuse, within broiler houses, are being developed. The required litter moisture and temperature necessary for optimum pathogen reduction is being evaluated. ConAgra Poultry Company, House of Raeford, and the LSU AgCenter are involved in these demonstrations.

Program Impact

Producers are improving their waste management and dead bird disposal practices. Producers are improving their awareness of EPA regulations, TMDLs, and poultry BMPs. Producers are obtaining analyses of soil and litter samples in preparation for writing Comprehensive Nutrient Management Plans. The NRCS is receiving increased inquiries for nutrient management plans by producers. Producers are improving overall management practices.

Producers are aware of biosecurity practices and are beginning to ensure that biosecurity programs are implemented on their farms.

Source of Funds

State and Federal (Smith-Lever 3 b, c)

Scope of Impact

Some of the ideas and material for these programs are the result of attendance at the International Poultry Exposition held in Atlanta, GA; the International Symposium on Animal Production and Environment held in Raleigh, NC; the Livestock and Poultry Environmental Stewardship Curriculum workshop held in Dallas, TX; and the Annual Meeting of the Poultry Science Association at Newark, DE.

Multi-state: Forty percent of the poultry program is a result of these meetings and materials, the dollar equivalent is $80,777. (2.52 FTEs x $80,136 per FTE x .40).

Researchers and extension specialists collaborated on the development and training of agents and producers for a 100% multi-functional effort. The dollar equivalent of multi-function work is $201,942 (2.52 FTEs x $80,136 per FTE x 1.0).

Federal Goal 4

SOLID WASTE MANAGEMENT

Key Theme: Waste Management

Program Description

This initiative focuses on saving critical landfill space, improving water quality and soil health, and promoting environmental stewardship. The public, municipalities and producers can reduce and properly manage wastes by recycling household waste, properly disposing of hazardous waste, and reusing the byproducts of agricultural production and processing.

Program Impact

In Jackson Parish 25 teachers participated in a parish wide "Waste in Place" training and began applying environmental education in classroom activities for elementary and junior high students. Also, 60 beef and poultry producers gained knowledge and skills in developing farm waste management plans by participating in an Extension sponsored program.

In East Baton Rouge Parish, 87 people attended three public recycling and composting events that were conducted to teach and demonstrate the value of composting and recycling and to divert solid waste from sanitary landfills.

In Livingston Parish, 200 students gained knowledge on waste management by participating in two programs conducted at local elementary schools on recycling.

Source of Funds

State and Federal (Smith-Lever 3 b, c)

Scope of Impact

State-wide

Federal Goal 4

SOLID WASTE MANAGEMENT

Key Theme: Cost Effective Solid Waste Management

Program Description

W.A. Callegari Environmental Center hosted a municipal solid waste conference, "Cost Effective Solid Waste Management: A Local Decision Makers Conference" on January 23 & 24, 2002 at the Callegari Environmental Center. Included with the conference was a bus tour of Natural Resources Recovery, Inc., an organic recycling site and BFI's Baton Rouge Recyclery, a large scale recycling facility.

Program Impact

There were 60 participants from Louisiana's mayors, police jurymen, public works directors, city/parish officials, council members, solid waste managers, recycling coordinators and Louisiana Municipal Association members and AgCenter faculty.
The intent was to give Louisiana's local decision makers the tools to make cost-effective and environmentally sound decision when it comes to solid waste management.
Main topics were: Solid Waste Issues/Solutions; Innovative Solutions/Alternatives; Municipal Solid Waste Management Costs: National, State and Local Perspectives; Connecting Environmental Education with Local Decision Makers.

Source of Funds

State and Federal (Smith-Lever 3 b, c)

Scope of Impact

This was a state-wide program, with a multi-function involvement.

Federal Goal 4

URBAN/COMMUNITY TREE CARE: CLIENT CALLS

Key Theme: Care and protection of urban/community trees

Program Description

This area of service consists of no formal programming; rather it is one-on-one work with the public, mainly client calls with specific problems. Callers' situations may range from a mayor of a small municipality looking to preserve an historic tree to a homeowner who believes his or her

tree is being poisoned by the neighbor. The variety of individual issues precludes formal programming for the direct clients but lends itself to programming for area agents to handle the calls better.

The entire process of handling calls from the public and from the public via parish agents is stakeholder input. These calls can generate programming topics when themes among the calls are identified. For example, one of the most common comments received from clients regarding tree care is that they do not trust arborists, despite the fact that arborists are the most important – and the only professional – community of tree care workers. There are various reasons for this lack of trust, and comments like these lead to programming efforts such as (1) educating consumers – tree owners – about when it is necessary to call in an arborist and how to select the right arborist, and (2) educating arborists on more professional conduct, safety, etc.

Program Impact

The main impact of this activity is that this contact with the public generates programming topics. Approximately 200 calls were received during FY 2002. Most calls were handled by telephone, but in six cases home visits were required. The impact was direct service to these clients, but also education about tree health care, tree selection and benefits of using an arborist.

Source of Funds

State

Scope of Impact

Normally restricted to urban and sub-urban areas of Louisiana.

Federal Goal 4

URBAN/COMMUNITY TREE CARE: WORKSHOP

Key Theme: Care and protection of urban/community trees.

Program Description

The first of three programs in FY 2002 addressing urban and community tree care was a Community Tree Care Workshop presented to parish agents, Louisiana Master Gardeners and other interested individuals across the state. Over 36 Louisiana Cooperative Extension (LCES) agents and as many Master Gardeners and others participated in the workshop. This day-long training was broadcast from Baton Rouge and was delivered to distance learning sites. The goal of the program was to provide county agents with basic biological and management information needed for working with clients caring for community and urban trees.

Actions taken to seek stakeholder input include a steering committee formed at the state level. Participants included two urban foresters from Louisiana Department of Agriculture and Forestry and five regional extension foresters. Each member of the committee had extensive experience fielding inquiries about trees and tree problems from the general public and from county agents. The committee set the agenda for training and aided in speaker selection.

During the workshop, evaluation instruments were completed by participants. These evaluation instruments queried participants about the value of the program and asked them to assess the value of the materials provided – particularly in terms of how the training and materials enhance their level of knowledge and competence in dealing with clients on the subject matter of community trees.

The main problem identified by committee members was the need for agents to address common, simple tree questions from citizens and provide education on basic tree care (mulching, fertilizing, irrigation and pruning). Another problem was the need for agents (and Master Gardeners) to have access to up-to-date, accurate information about community trees. The issues identified were drawn from the cumulative experience of committee members with tree-related inquiries from the general public and county agents.

Collaborators included Louisiana Department of Agriculture and Forestry; LSU Facility Services, Landscape Division; East Baton Rouge Department of Public Works, Office of Landscape and Forestry; and LSU AgCenter Area Foresters.

Program Impact

In Louisiana, nine sites carried the program. Sites included Baton Rouge, Acadia, Calcasieu, Jefferson, Red River Rosepine, St. Tammany, Terrebonne, and West Carroll Parish Distance Education facilities. Circular letters and e-mails to extension offices were used to advertise the program, and the program was delivered through distance education technology. Of the evaluations on the program (n = 32), 75% of respondents scored the usefulness of the materials presented at least "3" on a scale where "0" = completely untrue and "4" = completely true. The average ranking of the overall usefulness of the program was 3.25. In terms of materials presented, respondents indicated they felt most comfortable with their knowledge of basic tree biology and other tree specific information (e.g., common tree diseases and insects, correct selection and installation, tree requirements) and indicated the least amount of change in their level of knowledge and competence in those areas gleaned from the workshop presentations. Conversely, respondents indicated the least comfort in their knowledge of and competence to work with clients on matters related to professional tree care workers – arborists – including what services arborists provide, how to hire an arborist and knowing when the client requires the aid of a professional (as opposed to relying solely on the agent). They also indicated they gained knowledge in these areas because of the materials presented at the workshop. The program better prepared parish agents to handle client calls concerning community and shade trees, especially in terms of increasing their knowledge and comfort level recommending arborists services to clients.

Source of Funds

2001 Urban and Community Forestry Grant Program as administered through the Louisiana Department of Agriculture and Forestry, Office of Forestry.

Scope of Impact

Statewide

Federal Goal 4

URBAN/COMMUNITY TREE CARE: URBAN FORESTRY SATELLITE BROADCAST

Key Theme: Care and protection of urban/community trees

Program Description

This satellite program beamed to Southeastern Region (USDA Forest Service Region 8) addressed urban and community tree care. It was broadcast from four satellite downlink sites in Louisiana: Hammond, Lafayette, Monroe, and Houma on three Tuesdays in October. Forest managers, urban foresters, LCES extension agents, Louisiana Master Gardeners, Louisiana Nursery Association Members, city officials (mayors) and other interested individuals across the state attended. Over 30 professionals and volunteers also participated. The goal of the program was to provide participants with information regarding the benefits of urban forestry and urban forestry planning and to walk them through use of an on-line document "The Urban Forestry Field Manual" developed by USDA FS Region 8.

Actions taken to seek stakeholder input include a steering committee at the state level. Participants included two urban foresters from Louisiana Department of Agriculture and Forestry and five regional extension foresters. The committee selected the sites for the broadcast and determined which audience groups to target. Louisiana participated in this broadcast at the request of the USDA Forest Service Region 8 urban forestry and extension programs.

Louisiana's involvement in the program was from June 2001 to October 2002.

Collaborators included the Louisiana Department of Agriculture and Forestry; LSU AgCenter Area Foresters, Clemson University, USDA Forest Service Region 8, University of Louisiana at Lafayette, University of Louisiana at Monroe Nursing School, Louisiana Technical College, and the Terrebonne Parish Health Unit.

Program Impact

In Louisiana, four sites carried the program. Circular notices to targeted audience and e-mail messages to extension offices were used to advertise the program. There were 33 attendees across four sites. They were exposed to general ideas and theories regarding the benefits of urban forests and promoting urban forest enhancement, and they were given a tour of the on-line publication "Urban Forestry Field Manual", a resource they will find helpful when working with community leaders on urban forest issues.

Source of Funds

This program was delivered on cooperative and volunteer basis.

Scope of Impact

Multi-state: Outside Louisiana, Texas, Oklahoma, Arkansas, Mississippi, Alabama, Kentucky, Tennessee, Georgia, South Carolina, Florida and North Carolina.

Federal Goal 4

URBAN FORESTRY: OTHER PRESENTATIONS

Key Theme: Care and protection of urban/community trees

Program Description

Presentations were made on request from colleagues for Urban Forestry/Community Shade Tree Care Presentations to small groups across the state. One presentation on tree care was given to a group of Louisiana Master Gardeners in Washington Parish (11 in audience). Another, on need for and benefits of urban forestry, was given to municipal leaders in New Iberia Parish (15 in audience).

Program Impact

The attendees at the Washington Parish site learned basic tree biology, common tree problems and basic tree care so they, in turn, will be competent in working with the public on community tree issues. The people attending the presentation at the New Iberia site learned about ecological and economic benefits of urban forest cover and were exposed to software (City Green) that can be used to model and demonstrate energy savings, financial savings, storm water runoff savings and other tangible benefits of increasing tree canopy in urban areas.

Source of Funds

Smith-Lever 3d
RREA

Scope of Impact

Washington Parish and New Iberia City.

Federal Goal 4

WASTE MANAGEMENT/COMPOSTING

Key Theme: Yard Waste/Composting

Program Description

The LSU AgCenter's W. A. Callegari Environmental Center conducted its 16th Compost Facility Operator Training Program.

The program included classroom as well as field training with window and aerated static pile composting systems.

The course is designed to train participants who manage and operate compost facilities.

Program Impact

As a result of the training sessions, 16 participants from four states completed the four day course on large-scale composting. This course should prepare participants for their state certification if required.

Source of Funds

State and Federal (Smith-Lever 3 b, c)

Scope of Impact

This is a national program, with a multi-function involvement.

Federal Goal 4

WATER QUALITY

Key Theme: Watershed Education

Program Description

Louisiana's Watershed Education (WE) program is one of several state strategies for effectively protecting and restoring aquatic ecosystems and protecting human health. The basic premise is that many water quality and ecosystem problems are best solved at the watershed level, rather than with individual waterbodies or dischargers. This approach relies on targeting priority problems, promoting a high level of key stakeholder involvement, integrating solutions that make use of the expertise and authority of government agencies, and eventually measuring success through monitoring and other data gathering.

Louisiana's WE program was organized during FY 2001 and implemented during FY 2002. The first steps involved identifying priority audiences, the most significant problems, and developing programming with coastal agents funded by the Sea Grant College Program. Watershed educators operate within six significant watersheds in the state: Upper Sabine and Upper Red River, Vermilion-Teche and Southeast Red River, Calcasieu and Lower Sabine, Ouachita and Upper Mississippi, Mermentau, and Lake Pontchartrain. Following a careful review of the literature and extensive discussions with local and regional leaders, the priority nonpoint source pollution contributors within each watershed were identified and categorized. The most significant ones can be categorized under agriculture, urban runoff, forestry, and recreational boating-related services and activities.

The initial educational campaigns targeted several audiences, notably agricultural and aquacultural producers, marinas and recreational boaters, municipal and parish officials and planners, business and industry, rural and urban residents, and youth. Delivery formats included group meetings using PowerPoint and videos presentations, educational training sessions, 4-H and other youth camps, producer meetings, local and state trade conferences, trade show presentations, and state and regional fairs. Print and broadcast media (cable television, news broadcasts, morning shows, radio) were used throughout the year, and special tools such as the Enviroscape-Watershed Model were used with youth and general audiences at special events. Booths were assembled for interaction with attendees at trade shows and a video was produced to work with recreational boating audiences.

Program Impact

As noted above, WE is a new program and it will be difficult to gauge its overall impact for a number of years. Nevertheless, the six watershed educators work on a number of projects. WE works closely with the Louisiana Master Farmer Certification Program (M-F) efforts, and during the first year, three watershed educators assisted the M-F Leader and his support faculty in the

conduct of Phase 1 activities which primarily entailed classroom-style training related to environmental stewardship. Some 268 growers in the Mermentau and Teche-Vermilion watersheds received two, four-hour blocks of training. The first block consisted of an overview of the environmental regulatory climate and the benefits of environmental stewardship to the agricultural community and society at large. The second block is more specific and designed to outline specific BMPs that are more appropriate for the participant's industry. Also in this second block, participants are given information on incentives for compliance such as federal funding programs.

Approximately 350 agricultural producers are pre-enrolled for this training in the next two watersheds. The program is conducted in conjunction with the USDA-NRCS, Louisiana's departments of Environmental Quality, Natural Resources, and Agriculture and Forestry, the Louisiana Association of Conservation Districts, the Louisiana Farm Bureau Federation, and the Louisiana Cattlemen's Association.

Producers who complete the first phase will receive additional training during a second phase. When originally designed, Phase 2 of the M-F Certification Program consisted of a visit to and training at a commodity specific Model Farm where on-the-ground environmental BMPs coupled with runoff quality monitoring will be demonstrated. Funding delays, however, have unfortunately slowed down the implementation of the Model Farm concept. As an interim measure, and until such time as the model farms are on-line, the M-F program will be producing several "virtual" commodity specific models. The "virtual" farms will be videos of BMP implementation and details on suitable BMPs not previously covered in Phase 1 of the certification program.

The M-F final phase will be the development of farm-specific comprehensive management plans that will be prepared by the individual producer in conjunction with the local NRCS conservationist. Once the producer is duly certified, he will be required to participate in a number of committee-planned, continuing education programs every three years.

The topic of nonpoint source (NPS) pollution is of major concern to agricultural producers, foresters, boaters, and nongovernmental organizations (NGO) in the Lake Pontchartrain Basin. Dairy industry BMPs were discussed with nearly 200 dairy industry leaders; 12 beef producers in the Basin attended discussions regarding a beef model farm; 64 foresters attended talks regarding NPS reduction strategies, and 15 marinas are considering participation in a Clean Marina Program. Presentations were made concerning all of the above advances at the "Basics of the Basin" conference that was sponsored by the Lake Pontchartrain Basin Foundation (LPBF), a regional NGO. The conference was attended by 245 persons. The Basin's watershed educator will serve as a co-investigator in a two-year study of NPS reduction opportunities for the dairy industry and is an active participant in the LPBF's St. Tammany Parish Water Quality Task Force.

Three watershed educators also focused on youth education during FY 2002. Over 7,500 youth received water education at 4-H and environmental camps, weekend sessions, special events, and

club meetings. Special summer programs such as "Wild Woods Wandering" (40 high school students), "Marsh Maneuvers" (64 high school students), and "4-H Summer Camp" provided in-depth education to selected youth from throughout the state. The students attending "Wild Woods Wandering" in the Tensas Basin were taught water quality, stream monitoring, and critical thinking. Those attending "Marsh Maneuvers" on Grand Terre barrier island learned about coastal and marine environments. At the 4-H summer camping program, 3,879 youth from ages nine through twelve, gathered data and determined the quality of Big Creek in the lower Red River watershed. The watershed educators also participated in awareness-building programs such as Earth Day, State Fair, environmental threat resolution, and other educational sessions where water education is conducted using the groundwater model and Enviroscape. For example, 500 members of the Louisiana Rural Water Association and 47 teachers affiliated with the Louisiana Vocational Agriculture Teachers Association were exposed to the Enviroscape and groundwater models. In addition, two professors at LSU-Eunice will be using the groundwater model in their introductory courses.

Water well protection and testing programs continue to provide information to private well owners and homeowners/householders through Farm*A*Syst and Home*A*Syst.
Some 235 homeowners, for instance, received Home *A*Syst instruction through garden clubs and civic club meetings in the upper Red River watershed. Erosion control along the Cane River in the same watershed was demonstrated at NRCS field day to several hundred attendees.

Municipal and parish governments are also a key audience for WE. GIS technology is being used in the southwestern part of the state to advise local governments regarding agricultural and aquacultural land use practices and efforts to minimize pollutant inputs. Along with mapping and analysis projects for use in establishing BMPs for sugarcane and crawfish farms, GIS mapping was also used to interact with urban leaders in Lafayette Parish. The technology helped identify locations of home waste treatment systems and served as the basis for discussions on strategies for dealing with the resulting problems in the Bayou Vermilion District. Also, local officials, notably land use and natural resources decision-makers, in the lower portion of the Calcasieu River Watershed in Cameron Parish, are being educated about the way land use affects water quality. Two watershed educators are implementing the Nonpoint Education for Municipal Officials program (NEMO) that was established at the University of Connecticut in 1991.

We also discussed water issues and the function and values of wetlands with 220 local officials representing seven police juries, school boards, and city councils/board of aldermen in the upper Red River Watershed. Several presentations were also made to government entities in the Lake Pontchartrain basin concerning the AgCenter's proposed project to build web sites that target homeowners to instruct on the proper disposal of home sewage.

Marinas and recreational boating are increasingly popular uses of Louisiana's coastal areas and major inland lakes. Nearly 150 marinas of various sizes are located throughout the state, and WE has targeted those located in the Lake Pontchartrain and lower Calcasieu basins for educational programming. WE participated in the writing and publication of "Louisiana's Waters: Our Responsibility" (3500 copies distributed) and an accompanying training video with the same title

(100 copies). The booklet and video target recreational boaters. In addition, WE participated in the compilation of a directory of Louisiana marinas (250 copies), and in researching and writing a publication entitled, "Good Environmental Management Practices in Louisiana's Coastal Marinas". It will be completed shortly and distributed to the marina industry in early 2003.

Source of Funds

Funds were obtained from Smith-Lever, USDA-CREES 406, state sources, EPA section 319, NOAA 6217, and NOAA-Sea Grant.

Scope of Impact

Multi-state: Multi-state efforts are 40% of one FTE on the Regional 496 USDA-CREES grant in addition to .5 FTE of other activities and education programs supported by the grant. One hundred and twenty five percent of an FTE are supported by the EPA Section 319 grant. This grant is multi-state and multi-function, i.e., a research-extension project. The dollar amount of multi-state work is $172,292 based on 2.15 FTEs at $80,136, and the value of the multi-function work is $100, 170 based on 1.25 FTEs at $80,136.

Federal Goal 4

WATER RESOURCES DEVELOPMENT

Key Theme: Natural Resources Management

Program Description

The 2002 crop year was the second consecutive year of above-normal rainfall at harvest time. Agronomic crop farmers are continuing to go out of business and their land is being accumulated into larger tracts. Many are trying to find new sources of irrigation water and learn how to use it more efficiently. Irrigation research is being conducted at five stations around the state. Community leaders are trying to develop recreation and home-building sites near lakes and reservoirs as an economic development tool. Surface water is being increasingly valued for its ability to restore and slow down the loss of coastal wetlands. An increased surface water flow rate in bayous and streams is seen as a means to improve water quality and fish habitat. The Water Resources Development program provides assistance in learning which agencies can provide assistance with large water resource development projects and making the contacts needed to get projects stated.

County agents, farmers, consultants, agri-business and bankers in row-crop parishes have expressed their views through individual contacts, parish meetings, and communications with the LSU AgCenter administration that irrigation is necessary for sustainability. Community leaders in many parts of the state have asked for help in developing surface water projects. State and federal agency representatives have been eager to present information to stakeholder groups.

Problems identified include availability of water of suitable quality; contacts with state and federal agencies; permits and regulations; engineering and hydrologic expertise; financing; returns to investment in irrigation systems; applicability of available irrigation systems to specific farm operations; and timing of irrigation were identified by stakeholders.

County agents in most of the row-crop parishes in Northeast and Northwest Louisiana and in several Southwest Louisiana rice parishes have included drainage and irrigation on the agenda as part of their annual parish programs. Presentations include new technology as well as proven practices appropriate to farmers, consultants, agents and agency staff, and to the crops, topography, soils, and land tenure predominant in the parishes. Types and costs of irrigation systems, expected returns from irrigation, maintenance and operation requirements, and applicability to various soil types were discussed. Several dozen growers have been introduced to irrigation scheduling. Research on micro and furrow irrigation of sweet potatoes using various scheduling techniques is continuing at the Chase Research Station. Research on furrow irrigation of cotton and soybeans is continuing at the Winnsboro and St Joseph Research Stations. Research comparing sub-surface drip and furrow irrigation is continuing at the Red River Research Station. Research on water use for rice is continuing in Southwest and Northeast Louisiana. Southwest Louisiana rice growers are increasing use of rice varieties and land leveling techniques which may allow reduced water use. A number of presentations and demonstrations of irrigation technology have been provided to Master Gardener and landscape contractor classes. Availability and quality of ground and surface water has been a part of presentations in many parishes. Numerous meetings have been held with farmers, USDA NRCS, the Caddo Soil and Water Conservation District, the Soil and Water Conservation Commission, the Red River Waterway Commission and the Red River Valley Association to pursue a demonstration project designed to introduce Red River water into Red Bayou so that farmers could use it to irrigate about 14,000 acres. The project has Congressional support and has been proposed as a watershed project for funding by USDA. If approved, USDA would provide about $2 million and the land owners about $3 million. This project was begun in 1997 and may be completed by 2005. A 2001 request for Congressional assistance has resulted in $300,000 being authorized for an 18 month recon study of water resources in parts or all of 12 parishes. Potential results could include increased surface water for the land between the Ouachita and Mississippi Rivers. A request has been made to a Congressman for $100,000 to fund a recon study for Central and Southwest Louisiana Water Resources. Results of that request are unknown at this time. Preliminary work has been done in planning for a series of 12 lakes in Claiborne Parish and for a large impoundment in Madison Parish. Legislation has been passed for a lake in Allen Parish. Several other projects are being discussed. The Ground Water Management Commission and Task Force have discussed increased reliance on surface water to reduce pumping from aquifers. Extension resources from Arkansas, Georgia, Mississippi and Texas have assisted with this effort. The Mississippi River diversion project at Davis Pond has been completed and one for Lake Maurepas has moved through several stages of review and planning.

The Irrigation Association has made training and publications available for use in Louisiana. Extension engineers from Arkansas, Mississippi, and Missouri, with additional assistance from

Alabama, Arizona, California, Georgia, Tennessee, and Texas irrigation engineers have provided practical and useful information and assistance with training. LSU AgCenter research and extension faculty have participated in irrigation education programs and reported on their research and experience in irrigation. USDA NRCS engineers, soil scientists, resource and district conservationists and administrators have provided expertise and support. The US Geological Survey has provided data on ground and surface water quality and availability and has worked with county agents and farmers to conduct ground water level and salinity research in Northwest and Southwest Louisiana. The US Army Corps of Engineers, Vicksburg District and New Orleans District, have provided data and recommendations as part of several programs. The Louisiana Departments of Agriculture and Forestry, Environmental Quality, and Transportation and Development have provided data, help in understanding the rules and regulations, and assistance in developing water management districts. The Red River Waterway Commission, the Red River Valley Association, the Sabine River Authority, the Louisiana Association of Levee Boards, the Soil and Water Conservation Districts, and the Capitol Area and the Sparta Ground Water Conservation Commissions have provided assistance with education programs. Crop consultants, irrigation equipment suppliers, and farmers have helped with adoption of new technologies.

Program Impact

Farmers in many parishes have a better understanding of the amount of water available from existing systems and how to best utilize the water resulting in increased crop yields and more efficient irrigation. A dozen soybean farmers have adopted and continue to use border irrigation for drilled fields and a dozen rice farmers have adopted and continue to use side-inlet irrigation. A few rice farmers have adopted zero-grade and are learning how to use it. USDA NRCS has participated in a one-day program on zero-grade irrigation. Rice farmers are beginning to understand how much water they are using and what it costs. Some have installed tail water recovery systems. County agents have provided irrigation scheduling for two dozen farmers resulting in yield increases, but none have adopted the technique for their own use. Growers continue to learn how important it is to determine salt content of the ground water before using it on a crop. The Caddo Soil and Water Conservation District has formed an irrigation district and a proposal for funds to support a surface water irrigation demonstration watershed project through USDA has been requested by a Member of Congress. A Member of Congress has provided funds for the Corps of Engineers to begin a recon study for a larger surface water supply project in Northeast Louisiana and another has asked for funding for a similar project for 16 parishes in Central and Southwest Louisiana. A dozen land owners have learned how to work with the Corps, NRCS and DOTD to develop water resources. The results of these programs include: enhancement of crop yields; insurance against crop losses due to drought; decreased dependence on ground water; increased surface water availability for recreation, public water supply, business and industry; improved surface water quality and habitat during summer months; and nourishment of marsh in coastal parishes. Legislation is being prepared to enact improved water management for the state. Legislators and Task Force members have increased their understanding of water science as well as of the legal, social and political aspects of water resource development.

Source of Funds

State and Federal (Smith-Lever 3 b, c)

Scope of Impact

The irrigation and drainage education programs were dependent on assistance from other states, especially Alabama, Arkansas, Mississippi, Missouri and Texas. Research and extension faculty collaborated on development and implementation of the irrigation and drainage program.

Multi-state: The surface water development education program may have some impact on similar programs in other states in future years. Half of Louisiana's program is based on experience in Arkansas, Mississippi, and Texas. The dollar equivalent of multi-state work is estimated at $80,136 (.5 x 2 FTEs x $80,136).

Multi-function: At least 50% of the information used in these programs has come to us from extension and research faculty in other states and from federal and state agency staff. The value of multi-function work is $80,136 (.5 x 2 FTEs x $80,136).

Federal Goal 4

WETLAND AND COASTAL RESOURCES

Key Theme: Wetland and Coastal Resources

Program Description

A variety of groups, including farmers, fishermen, recreational interests, conservation groups, and the offshore mineral industry, are in intense competition for limited coastal and wetland resources, a situation exacerbated by wetland losses of over 20,000 acres per year. Most coastal residents and users are aware that major environmental changes are occurring, but there is a general lack of agreement on acceptable solutions, which must be based on a thorough understanding of tradeoffs and consequences in order to result in consensus and collective action. The links among wetland habitats, sustainable natural productivity, and human needs must be clearly understood. Extension and research programs in this area focus on identifying and describing these links.

A specialist position in Wetland and Coastal Resources has existed within the LSU AgCenter since 1992. However, the programmatic efforts supported by the position were combined into a Coastal Enhancement Team in 2001. The purpose of the team is to address a wide range of issues of concern regarding wetland and coastal resources in the Louisiana Coastal Zone. The team leader is Dr. Rex Caffey. Other members of the coastal enhancement team include: Mark Schexnayder, Mark Shirley, Brian Leblanc, Tom Hymel, Kevin Savoie, Rusty Gaude', Sandy Corkern, Mike Liffman, Jerald Horst.

The challenge facing this enhancement team is to identify and objectively assess controversial issues facing coastal constituents. Specific problems exist due to the public's general lack of appreciation for functions and values of the coastal landscape. Where such appreciation does exist, there are additional constraints regarding the efficacy of resource management/restoration policies and strategies. While dollar-implications are the currency of expression for most policy-makers and stakeholders, lack of economic linkage research limits the team's teaching capacity in this area.

In June, 2001, the team completed a survey of extension clientele in wetlands and coastal resources. The survey was administered on-line and through a special edition of the Louisiana Wetland News. The survey was sent to 120 program constituents and 70 responses were received from 19 parishes, the majority of which (63%) were coastal. Respondents from East Baton Rouge were by far the largest group (44%) participating. This large local response was expected because of the team's close association with the state resource management agencies headquartered in Baton Rouge. Concurrently, resource managers/government employees accounted for the largest group of respondents (37%), followed by scientists/researchers (29%), private citizens/business (26%), and other (9%).

Respondents were asked to express to what extent they had utilized extension products or services in this program area during the past year. The responses to this question were "a great deal" 26%; "pretty much" 29%; "somewhat" 29%; and "not much" 17%. Respondents were also asked their opinion as to whether the LSU AgCenter was investing enough time and effort into the extension program in wetlands and coastal resources. Most respondents (53%) said that the time and effort was "about right" and only 9% said that we were doing "too much". It is noteworthy that 39% stated that our time and efforts in this program area were "not enough".

Requests for expanded time and effort were common suggestions among the 54 (77%) respondents who provided specific opinions and suggestions. Though no derogatory comments were made regarding the program, and 41% stated their satisfaction outright, 31% called for an expansion of the program's personnel and 20% called for more program visibility. Several respondents stated that we are understaffed when it comes to education and outreach in the increasingly broad field of natural resource restoration, management, and policy. Additionally, while 13% commended our youth education efforts, 19% reminded us of the need for more adult-focused programming. Our skills in the area of conflict resolution and meeting facilitation were recognized by 13%, though 17% called for more coordination and partnering to achieve this goal.

Given the current budgetary constraints facing the AgCenter, the team recognizes that staff expansion is unlikely. Thus, we have begun to more effectively utilize internet-based programs and communication. In fact, 60 of the respondents (86%) participated using the on-line survey, which confirms that we should continue developing more rapid and convenient forms of web-based extension. The team leader has used the input from this assessment to enhance and re-direct particular areas of existing extension programs. Electronic dissemination of extension materials has increased dramatically within the past year and several publications and

presentations are now available on-line through the AgCenter website. Additionally, in-service training programs and continuing education opportunities have been developed to enhance the capacity of field agents in delivering technical information related to wetland and coastal resources.

The coastal enhancement team has worked with local, state, and federal governments, NGOs, 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 & egress in coastal wetland hydologic units, and fisheries impacts of fresh water diversions. At the youth level, these efforts were primarily represented by 60 days of planning, implementation, and evaluation related to the Marsh Maneuvers Program.

Marsh Maneuvers is an innovative learning adventure designed for high school 4–H students involving hands-on environmental education activities. This wetland educational camping program is a joint effort of the LSU Agricultural Center's Cooperative Extension Service, the Louisiana Department of Wildlife and Fisheries, the Louisiana Sea Grant College Program, and the Barataria-Terrebonne National Estuary Program. Students are involved in a wide range of exciting activities including wetland restoration, marine fisheries sampling, cast netting, sport fishing, crabbing, water quality testing, seafood handling (food safety), nature viewing, and fish and wildlife identification. The Marsh Maneuvers curriculum focuses on coastal ecology, wetland loss, and key social issues affecting the health and economic well being of Louisiana's coastal communities. http://www.agctr.lsu.edu/Subjects/wetlands/MMcamp.htm

The team leader also published a quarterly newsletter during the reporting period titled "The Louisiana Wetland News." Topics covered during this reporting period included: Coastal restoration funding mechanisms, economic impacts of tropical storms, proposed changes to the Clean Water Act, the Supreme Court's SWANCC ruling, Conservation and the Farm Bill, oystermen lawsuits, and other information.
http://www.agecon-extension.lsu.edu/CaffeyWeb/Wetland_News/LWN.htm

The team has also published an "Interpretive Topic Series on Coastal Wetland Restoration in Louisiana." The first half of this series was printed in February 2001. It consists of three outreach brochures. The topics are: Fisheries Implications of Freshwater Reintroductions, Mississippi River Quality: Considerations for Coastal Restoration, and Closing the Mississippi River Gulf Outlet: Economic and Environmental Implications. There have been 6 derivative publications generated from these works, including published abstracts and papers for the Gulf Estuarine Research Society, the International Coastal Society, and the American Water Resources Association. Approximately 15 derivative presentations have also been generated from this series and delivered to audiences including: the National and Louisiana Sea Grant Advisory Councils, the Coastal Wetland Planning, Preservation, and Restoration Act (CWPPRA)Committee, and various civic and academic groups.
http://www.lacoast.gov/reports/its/index.htm

In the fall of 2001, a 3 credit hour graduate class was taught by the team leader as part of the LSU AgCenter's specialization program in natural resources. The class, AGEC 7710, Wetland Policy was a seminar on the evolution of wetland policy through the lens of natural resource economics. The course was offered to twelve graduate students via distance education (compressed video). Three of the students were affiliate members of the coastal enhancement team. http://www.agecon-extension.lsu.edu/CaffeyWeb/7710.htm

During the FY 2001, the team leader developed an historical overview of conservation in U.S. farm policy with an emphasis on the development of those programs of particular interest to Louisiana (e.g. wetlands reserve program and environmental quality incentives program). These presentations were provided on six occasions from October 4th 2001 to June 12, 2002. The slide show has been disseminated to several field agents and a companion document has been published via special edition of the Louisiana Wetland News.
http://www.agecon-extension.lsu.edu/CaffeyWeb/Wetland_News/Summer%202002.pdf

Additionally, the team has begun to make use of the internet for dissemination of a number of educational slide shows related to wetland and coastal resources. Slide show topics now regularly disseminated online include: wildlife and fisheries values in coastal la, diversity and value of coastal agriculture, wetland valuation techniques, wetland functions and values, and wetland delineation and policy. A CD Rom with over 25 power-point presentations has been made available to each member of the coastal enhancement team.
http://www.agecon-extension.lsu.edu/CaffeyWeb/WCR.htm

The team has maintained active participation on various committees involved in wetland restoration, including: the Barataria-Terrebonne National Estuary Management Program's Management Conference, the BTNEP Scientific Advisory Committee, USDA/NRCS State Wetlands Advisory Committee Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) Public Outreach Committee and Citizens Participation Group, Extension Education/Electronic Communication Group, and the Sea Grant Marine Extension Project. The team leader has maintained the NOAA Coastal Restoration Network's Listserve since January of 2000. http://www.nmfs.noaa.gov/habitat/restoration/funding.html

Program Impact

It is difficult to gauge the actual level of learning gained from any extension program. Commodity-based programs deal primarily with a single audience (producers) that may be more easily evaluated regarding technology adoption rates, use of best management practices, etc. However, measuring the assimilation of information by a wide range of stakeholders (e.g. resource managers, fishermen, NGOs, landowners, petroleum industry) is more problematic.

FY 2001 began with a program assessment survey in which our constituents called for an expansion of the personnel and visibility of the wetlands and coastal resources program.

At best, the coastal enhancement team can claim that over the past year, the use of the Internet and electronic dissemination techniques has made our extension education materials more visible and effectively expanded the reach and accessibility of our program efforts. Such an expansion would not have been possible under traditional methods. Coastal and wetland oriented field agents have received valuable training through in-service and graduate level classes and have also collaborated on the production and dissemination of 23 educational presentations and 12 extension publications, all of which are available via the web or CD-ROM. Youth programs were also provided through 60 days of planning, implementation, and evaluation of the Marsh Maneuvers program.

Source of Funds

Smith-Lever 3 b, c and specific grant funds from NOAA Sea Grant, The Barataria-Terrebonne National Estuary Program, the La Governor's Office of Coastal Activities, and the Coastal Wetland Planning, Preservation, and Restoration Act.

Scope of Impact

The impact of these activities is primarily limited to the state of Louisiana. However, national collaboration is ongoing through the NOAA Coastal Restoration Listserv and the team maintains regular communication and interactions with sister Sea Grant extension programs in the southeastern U.S. Several of the team's new extension education publications and presentations were provided at regional and national conferences in FY 2001. The team leader works closely with researchers on the LSU campus involved the biophysical aspects of wetland and coastal research (e.g. engineering, biogeochemistry, agronomy, ecology). Additionally, in July of 2001, the team leader was granted a partial research appointment (25%) within the Louisiana Experiment Station for the purpose of conducting economic investigations into Louisiana's coastal and wetland resources.

Federal Goal 4

WILDLIFE MANAGEMENT AND LEASING

Key Theme: Landowner education

Program Description

Seminars on wildlife management techniques were presented to landowners in order to provide them with an alternative income source to traditional row crop type agricultural systems.

Phone contacts with clientele determine the types of wildlife related enterprises in which landowners are interested. Area forestry agents also have advisory committees that indicate landowners interest in various types of wildlife related enterprises.

Program Impact

Eight wildlife management programs were presented throughout the state with an emphasis on how to improve habitat for targeted wildlife species in order to serve as potential income generating source on impacted lands. Seven hundred individuals attended these programs with an average dollar value impact of $1,500 per workshop participant.

Source of Funds

Smith-Lever 3d, Renewable Resources Extension Act (RREA)

Scope of Impact

Multi-state: Approximately 1.9 FTEs were devoted to this program throughout the year. The programs incorporated the expertise of researchers and extension specialists from various states for a total multi-function effort of $152,258 (1.9 FTEs x $80,136).

Federal Goal 4

YOUTH FOCUSED ECONOMIC AND ENVIRONMENTAL NATURAL RESOURCES EDUCATION

Key Theme: Youth Education

Program Description

All Extension natural resources efforts at the LSU AgCenter are involved in youth education activities designed to increase awareness of the interactions between humans and the environment.

Depending on the particular program, typically advisory committees are used. For the 4-H state annual contest, national guidelines are established. Problems identified include a desire to see Louisiana's youth, particularly in urban areas, become more aware of the rural environment.

Program Impact

Approximately 26 youth from around the state competed in the State 4H Forestry Competition. They learned technical skills related to the forestry profession as well as life skills and leadership development. Four Louisiana 4H'ers competed against youth from 13 other states in the National 4H Forestry Contest. Past experience teaches us that many of these competitors go on to attend college in forestry or other natural resource related curriculum, a potential benefit to Louisiana's economy and environmental quality. A total of 1,712 youth gained knowledge and awareness of forestry both as a management science and as a conservation tool during Forest

Awareness Weeks. This knowledge extends throughout young people's lives and reinforces goals of becoming good land stewards.

Another 50 youth gained knowledge and awareness of forestry and its economic and environmental values through other education programs.

Source of Funds

Smith-Lever 3d, Renewable Resources Extension Act (RREA)

Scope of Impact

Louisiana

GOAL 4
RESEARCH SUMMARIES

ANNUAL REPORT OF ACCOMPLISHMENTS AND RESULTS

Key theme: Effects of Feeding Phytase in Swine and Poultry Diets

Goal 4: Greater Harmony between Agriculture and the Environment

L. Lee Southern, Professor, Department of Animal Sciences, Louisiana Agricultural Experiment Station, LSU Agricultural Center

Issue: Land application of swine and poultry wastes leads to the accumulation of P in soils and potential runoff, which can lead to eutrofication of water sources. Swine and poultry diets are formulated to achieve optimum economic returns for the producer. The nutrient levels in these diets are based on industry experience as well as levels suggested by the National Research Council (NRC; poultry, 1994; swine 1998). The levels of P in the combination of feedstuffs that make up swine and poultry diets are below the level used by the industry or recommended by NRC, resulting in the fortification of these diets with inorganic P. These diets contain excess total P for swine and poultry for three reasons: 1) the diets are over-fortified with P to provide a "margin of safety" 2) the dietary ingredients used contain P in the form of phytic acid, which is nutritionally unavailable to swine and poultry 3) clear P requirements for swine and poultry have not been established for the genotypes of swine and poultry used in commercial farm enterprises.

Phytase is a dietary enzyme that can be added to swine and poultry diets that reduces the need for inorganic P fortification. Phytase fortification releases a portion of the unavailable P from phytate, and it has been shown to provide approximately 0.10% available P and 0.10% Ca.

What was done: Research was conducted to evaluate the effect of dietary phytase supplementation in swine and poultry diets on animal productivity and nutrient loss to the environment. The research focused not only on the improvements in Ca and P utilization, but also on the effects of phytase on energy and amino acid availability. The results showed that dietary phytase improves the availability of Ca, P, amino acid, and energy in swine and poultry diets. Use of phytase resulted in a 25 to 30% reduction in P in waste, and it decreased the amount of amino acids and energy that had to be included in these diets.

Impact: In areas of concentrated animal production where P levels in the soils are an important consideration for the land application of animal waste, the use of phytase will increase the amount of waste that can be applied to the land without exceeding the P standard. Diets also may be more economical because of the reduction in Ca, P, amino acid, and energy supplementation that is required.

Sources of Funding: State, Hatch, Multi-State, and Industry

ANNUAL REPORT OF ACCOMPLISHMENTS AND RESULTS

Key theme: Assessment of forestry BMP effectiveness in the Mill Creek Watershed, Louisiana.

Goal 4: Greater Harmony between Agriculture and the Environment

William E. Kelso, F.O. Bateman Distinguished Professor or Renewable Natural Resources, School of Renewable Natural Resources, Louisiana Agricultural Experiment Station, LSU AgCenter

Issue: The Water Quality act of 1987, Section 319, required that before 1989, all states identify watersheds that are not in compliance with water quality standards because of nonpoint-source pollution (NPSP), identify different types of NPSP, and develop means to control NPSP. Since 1987, various best management practices (BMP's) have been developed for Louisiana's forest industry, and efforts are continuing to determine their effectiveness in protecting the state's water quality. Several studies have documented effects of forest management and road construction/maintenance on water quality and biotic diversity, but few studies have attempted to quantify the relative contributions of these land use activities to NPSP within a watershed, or the effectiveness of BMP implementation in protecting stream ecosystems. It is critical to evaluate the effectiveness of BMPs in protecting stream physicochemistry and biotic structure, and reducing or eliminating elevated organic and inorganic inputs. In this study, we will implement a monitoring program to examine water quality throughout the Mill Creek watershed, quantify the effectiveness of silvicultural BMPs in protecting the structure and function of adjacent streams, and assess the relative contributions of silvicultural activities and road crossings to water quality problems in the watershed

What was done: Preliminary analyses of samples collected in Mill, Six-Mile, and Brushy Creeks have shown extensive variation in water quality, macroinvertebrate communities, and bacterial composition among streams. Land use varies extensively in these watersheds, and we are attempting to relate stream biotic and abiotic characteristics to watershed land use. Additional parts of the study are to commence this summer, with direct evaluations of runoff from harvested sites and stream crossings to assess the relative contributions of these land uses to sediment and nutrient levels in adjacent stream reaches.

Impact: Identifying the magnitude of forestry-related impacts on stream ecosystems is a difficult task, as management practices such as harvesting, site preparation, road building, etc., are periodic in nature, and impacts to nearby streams differ substantially with topography, soil type, weather, and time (re-vegetation of affected areas). Most importantly, forestry-related and road-related effects on stream water quality and biota are most evident during storm events, with minimal impacts during base flows. The proposed research is designed to fill gaps in our knowledge concerning the relationships between forest management practices and stream water quality, as well as the impacts of road drainage on streams in the Mill Creek watershed. Data from these studies should allow identification of the relative contributions of road crossings and

forest management to water quality impairment in the Mill Creek watershed, as well as assessment of the effectiveness of silvicultural BMP programs in protecting the water quality and biotic integrity of low-gradient streams in southern Louisiana. Evaluation of BMP effectiveness will have positive impacts on the Louisiana forest industry by reducing the potential for mandatory harvesting regulations, and will demonstrate our ability to sustainably use our renewable natural resources with minimal detrimental impacts on the functioning of these coastal plain forested watersheds.

Sources of Funding: State, McIntire-Stennis

ANNUAL REPORT OF ACCOMPLISHMENTS AND RESULTS

Key Theme: Interactions of Insects and Environmental Modifications with the Health of Louisiana's Forested Wetlands.

Goal 4: Greater Harmony between Agriculture and the Environment

Dr. Richard A. Goyer, Department of Entomology, Louisiana Agricultural Experiment Station, LSU AgCenter

Issue: Presently, vast acreages of ecologically important forested wetlands in southern Louisiana have been decimated or are in varying states of decline due to the interaction of several anthropogenic and biological processes. One important component of freshwater wetlands restoration and preservation includes river diversions that re-introduce sediment and nutrients from the Mississippi River to slow/reverse lands subsidence, increase soil fertility and flush salt encroachment lethal to keystone forest species such as baldcypress and tupelo. Further, the combination of these activities has had long-term effects on present herbivory, and the impact of populations of these insect defoliators has further exacerbated forest declines.

What was done: Recently, a research initiative was implemented to evaluate the interactions of saltwater intrusion, lack of nutrient and sediment inputs and herbivory by two insect herbivores ? the forest tent caterpillar (FTC) and the baldcypress leafroller (BCLR) as a precursor to planned and on-going state-federal restoration efforts. Firstly, a greenhouse study, feeding assays, and field experiments were designed to evaluate the interactive effects of salinity, hydrology, nutrients, and herbivory by the baldcypress leafroller (BCLR) and the forest tent caterpillar (FTC) on baldcypress and water tupelo, respectively. The results of preliminary studies (alpha ? 0.05) are discussed. The greenhouse study showed that baldcypress saplings are less affected by salt stress, herbivory, and the salt-flooded combination than are water tupelo. Completely defoliated cypress saplings in the fresh, nutrient-poor treatment grew less than controls in that same regime and were similar in growth to all salt-treated (3 ppt) saplings. Herbivory under fresh, nutrient rich conditions also reduced sapling growth, similar to fresh, nutrient-poor saplings without herbivory. The FTC and BCLR were fed leaves from greenhouse saplings. The BCLR female pupal weight was not affected by environmental conditions of the saplings. The

FTC pupal weights were highest in fresh, nutrient-rich treatments and lower in the nutrient-deprived and salt-stressed treatments.

Secondly, a field study of nutrient augmentation to trees in swamps showed that fertilizer application increased nitrogen levels in the leaves, as well as basal area growth of individual trees. Basal area of baldcypress was higher than tupelo in the intermediate and sparsely forested sites (the more degraded sites), but not at the highest density site (the healthiest of the three sites), where growth was similar between the species. Nutrient content of leaves (phosphorous and nitrogen) was positively correlated with tree density among the sites. Tupelo had higher leaf nitrogen content than baldcypress. However, upon analyzing frass content, BCLR frass contained as much as six times more nitrates than the FTC. Adding inorganic nitrogen to trees increased basal area growth, foliar nitrogen and phosphorous, and overall nitrogen content of frass. However, frass nitrate and ammonia (nitrogenous forms causing eutrophication) did not increase when trees were fertilized.

Thirdly, experiments to determine how genotypic variation and fertilization of baldcypress will affect the performance of the baldcypress leafroller (BCLR) were conducted. Five half-sibling genotypes of baldcypress growing in a seven yr-old plantation were subjected to zero, 2133 lbs./acre, and 4266 lbs./acre of slow release fertilization. First year results found that, among the five genotypes, the BCLR responded similarly across nutrient regimes. Female and male larvae reared on genotypes in the low fertilization level displayed significantly higher dry pupal weights than those reared on genotypes in the control fertilization. Foliage samples from genotype in the low fertilization level were significantly higher in nitrogen and potassium, numerically higher in moisture content, and contained significantly lower levels of phenolic compounds.

Genotype alone was an important factor. Both sexes of BCLR displayed significantly lower dry pupal weights when reared on two of the five genotypes. Relative growth rates were not significantly different across either fertilization or genotype, though females displayed an increasing rate of growth at each fertilization level. Females reared on genotypes that produced lower BCLR pupal weights generally grew less rapidly. Foliar moisture, was positively correlated with insect response. Total phenolics were significantly higher in genotypes that produced smaller pupae indicating that those two genotypes might be less suitable for BCLR development.

Impact: Preliminary results indicate that herbivory of young wetland trees may act in concert with a low-nutrient environment to reduce growth. In areas where salinity reaches 3 ppt, salinity may be the driving factor for suppression of tree growth. Nitrogen loading of diverted Mississippi River water can enhance tree productivity of both species. Reducing inorganic nitrogen is a major focus of river diversions, and these tree-insect complexes are proving to be sinks for these compounds. Further, studies of genotypic variation and its interaction with insect herbivory and tree fertilization reveal that the BCLR may produce larger females with higher reproductive capacity when presented fertilized trees. Insect herbivory might be expected to increase with certain genotypes, but be restricted by others. Thus, restoration efforts should carefully select planting stock where herbivory by BCLR is indigenous.

GOAL 5

LSU AgCenter Goal 5 is to enhance economic opportunities and quality of life for families and communities.

Research Reports

Research to address coastal erosion and wetland deterioration has been initiated to halt the annual loss of 25-35 square miles of Louisiana to the sea. Considerable progress has been made to develop lines of smooth cordgrass with improved seed producing ability, wider adaptation, and higher stress tolerance. Molecular techniques have been employed along with conventional breeding approaches. Disposal of waste bagasse from sugarcane refining presents both economical and environmental problems. Bio-based nonwoven composites developed with bagasse, because of their light weight and renewability, are becoming more important in industrial renovation. These materials have potential for use in automotive upholstery, housing, furnishing, and packing which could increase the value-added aspects of one of the state's leading crops. Efforts to add-value to rice starch have been the subject of investigation. Research has shown that simple addition or removal of small amounts of non-starch ingredients can alter the functional characteristics of rice starches and flours to potentially enhance their nutritional value and alter their cooking characteristics. Research on chemically-modified (zinc & calcium borate) oriented strandboard has shown expression of excellent decay, mold and termite resistance, while maintaining structural performance of the products. A major limitation to the use of botanical extracts to treat and/or maintain human health has been techniques to produce standardized extracts. LSU AgCenter scientists, in collaboration with colleagues from the LSU School of Veterinary Science ad the LSU Pennington Biomedical Center have developed and produced a botanical extract that appears promising for reducing hypertension in rats. Clinical trials with humans are planned. Ag Center faculty also are involved in a multi-state project to examine a wide range of impacts and issues related to welfare reform from the perspectives of rural low-income families, within the community context, and across states with differing social support policies and provisions. Findings indicate that until more families have employed members and more who are employed receive higher wages and benefits, it is not feasible that these families will become economically self-sufficient. The data suggests that all families had difficulty making ends meet and are living in-crisis or at-risk of economic inadequacy.

Extension Reports

Examples of accomplishments in Extension programs include:

A total of 218,789 students in schools and 28,865 persons outside the school system were reached in the character education program involving 4,378 school teachers and 3,002 youth peer teachers as instructors. Over 75% of teachers and principals participating in evaluations of the program reported improvement in the behavior of students in school.

The Character Critters Program, piloted in 2000, and now a statewide effort enjoying national visibility and trained 3,866 volunteers and distributed over 3,000 educational kits at Head Start centers, elementary schools or childcare centers. A total of 44,932 children heard the Character Critters stories from a trained volunteer, and 39,782 parents of preschoolers received free storybooks to read to their children. Evaluation of the program indicated that over 90% of teachers, childcare providers, and parents learned from the program themselves and organized and fostered character traits in children.

Disaster education to help the public learn how to cope with natural hazards and to enhance homeland security included continued collaboration with various state agencies, the use of the internet to disseminate information during floods and other emergencies, and access by LCES educators to the information resources of 45 states cooperating in the Emergency Disaster Education Network (EDEN).

The Community Leadership and Economic Development seminars conducted over the last 10 years are showing results. Examples include: 19 livestock producers organized a specialty sale for commercial heifers and formed a marketing association; a new yam festival was organized with 2,000 people attending in 2002; 25 CLED participants developed a farmers' market in a small town; 700 shrimpers and 40 charter guides received leadership training from CLED alumni which has led to the formation of two associations focused on achieving economic stability in their industry.

Education programs in economic development have led to (a) Louisiana residents learning current social and economic conditions, increasing their understanding of economic development alternatives, and developing strategic plans for developing their communities; (b) communities building local capacity and moving ahead to implement strategic plans based on community assets mapping, learned people and process skills, an appreciation of agriculture and natural resources, accessing sources of economic development resources and assistance; (c) the development and teaching of a basic level entrepreneurship workshop to people interested in starting their own business or expanding existing businesses; (d) three major tourism development programs – Southern Hospitality Program for hospitality industry workers, First Impressions Program to make communities aware of their community infrastructure, and the Natural and Cultural Resources Mapping Program to help people identify and create an inventory of resources in their communities that would attract tourists.

In the Louisiana Master Gardener Program in FY 2002, 315 new volunteers were trained and 410 senior master gardeners were retained. These volunteers pledged 31,082 hours of service to home horticulture programs in their parishes (counties) valued at $435,148.

In FY 2002, the 4-H leadership development program had 8,669 adult volunteers, and 9,044 youth leaders. A total of 7,021 youth leaders assumed leadership offices in their clubs, 21,273 youth demonstrated new leadership skills, and 9,445 youth took on leadership roles in their parishes (counties).

Approximately 2,500 parents, grandparents, and teen parents gained parenting knowledge and skills through various workshops such as Every Touch Counts, Bringing up Children, and Children in the Middle. Sample surveys of program participants showed that more than 80% of parents attending education programs learned 10 different parenting practices taught in the programs.

Over 9,000 individuals and families were assisted in learning and applying financial management and budgeting skills. Sample surveys of family resource management programs showed that over 75% of participants planned to follow recommended management practices such as paying bills on time, setting financial goals and priorities, tracking monthly spending, and organizing important papers.

Total extension expenditure on Goal 5 programs is $13,810,638. Of this amount, $3,658,683 is attributed to multi-state work, and $1,618,746 to multi-function work.

Total Extension FTEs on Goal 5 programs were 172.34 and 2,259,491 educational contacts were made.

GOAL 5
EXTENSION SUMMARIES

Federal Goal 5

CHARACTER EDUCATION

Key Theme: Character Education

Program Description

The Louisiana 4-H Character Education Program is structured to collaborate with the state's stakeholders and its success lies in the diversity of groups served, positive behavioral changes occurring, the number of 4-H and non-4-H members reached, the involvement of thousands of school personnel and community volunteers, development of needs-specific educational materials, diverse community collaborations, legislative and gubernatorial support and funding, funding through the out-of-state sale of materials, youth serving as mentors and trainers and youth reaching out to adults.

The program provides research-based, educational materials, guest speakers, consultants and train-the-trainer training for schools, workplaces, sports programs, prisons and probation organizations, governmental agencies, youth development organizations and other groups and individuals interested in youth and character development. The program began in 1996 focusing on creating classrooms of character, schools of character, and communities of character. Collaborators are encouraged to involve youth in teaching other youth and adults. The program is delivered through 4-H clubs, schools, and community partners. Each parish AgCenter office has a staff member designated as a character education coordinator who serves as the local contact.

Educational materials needed were not available elsewhere and were developed by 4-H. They are based on six universal character traits - trustworthiness, respect, responsibility, fairness, caring and citizenship and also focus on decision making. The materials are designed for youth or adult instructors, tied to the curriculum benchmarks of the Louisiana Department of Education, and are age and application specific for pre-k to 12th grade youth, sports and workplaces, probation and prisons.

Principal's Principles: An academic character-building program designed to be read by the principal each morning over the intercom and facilitated in the classroom by the classroom teacher.
Character Critters: A story and activity approach to teaching character to pre-school and kindergarten age children.
A Tool Box of Ideas For Helping Elementary Students Exercise Character In Schools and A Tool Box of Ideas For Helping Secondary Students Exercise Character In Schools: Both provide successful ideas for integrating character education into school programs
Exercising Character In Schools and Exercising Character in the Community: Two sets of activity-based lessons for each pillar of character and decision making for 4-6, 6-9, 9-11, 11-13 and teenagers

Cafeteria Character, School Bus Character, Student Character and School Staff Character: Summaries of the behaviors expected of students and school personnel.
Sports Ethics Handbook: Handbook for P.E. classes, school sports and community sports programs.
Workplace Ethics: Activity-based lessons for high school and workplace settings.
Character Education Manual for Prisons and Probation Organizations: Currently being field tested
Showing Character: Activity-based lessons for use in the livestock exhibiting community
A Guide For Getting Your Community Involved In Character Education: How to establish coalitions.

Materials and services are provided at no cost. New materials are developed as needed. $30,000 was received from out-of-state sales. Train-the-trainer workshops and consulting services are well received by all groups. Partnerships are win-win relationships for the youth of Louisiana. Through these relationships, youth not in 4-H clubs are reached, new club members and volunteers are recruited and new clubs are started. The work with prisons and probations is a means of breaking the incarceration cycle that exists in some families – reaching those incarcerated and their children.

2001-2002 Community Collaborations included:
Sixty-five of the state's sixty-six public school systems, private schools and home-school groups participated. (218,000 youth – 83,000 4-H members and 135,000 non-members)
Head Start programs, technical colleges, community recreational sports programs, Americorp
LSU Athletic Department, LSU Shreveport Department of Continuing Education

- Police departments - city, parish and state; Drug courts - juvenile and adult
- Workplaces, chambers of commerce, civic organizations - youth and adult
- Governor's Office - program support and Governor Foster funds the Character Education Awards for Educators from his salary ($25,000)
- Louisiana Legislature – legislative support for character education and funding ($300,000)
- Louisiana National Guard Youth Challenge Program
- Louisiana Department of Education, Louisiana Department of Public Safety and Corrections, Louisiana Workforce Commission, Louisiana School-to-Work Office and regional consortiums, Louisiana Network of Health and Safety Stakeholders Coalition, Louisiana Safe and Drug Free Communities - state, regional and parish personnel

Program Impact

Through the school initiative, a total of 255,034 individuals were reached: 4,378 adult instructors, 3,002 youth instructors, 218,789 students and an additional 28,865 people not in school.

The Character Critters preschool program reached 52,077 children. Louisiana's 64 parishes utilize the program: 2,000 volunteer resource kits for loan have been placed with volunteers,

3,944 volunteers have been trained to tell the children character stories and some 90,000 storybooks have been given to parents across Louisiana to read to their children.

Of the 735 teachers and over 200 principals surveyed in 1999 and 2000, 75% observed "some" to "very much" improvement in behavior. Focus groups indicated a reduction in discipline problems and a general positive impact on students. One teacher stated, "We definitely noticed a difference with the children who came from a school where the program was implemented. We had less conflicts with them." A teacher in another school reported, "What happened with the kids is great, but what happened with teachers is wonderful. They get along better; professionalism has improved; there is a spirit of cooperation."

Workplaces and prisons report similar changes. For example, the Character Education Program Coordinator noticed an inmate who was a character education mentor and trained two years earlier in a class. He asked him why he was attending again. The inmate replied, "I heard you were going to be here. I get out in two days. I need more of this. I am 27 and have been in and out of jail since I was nine. I am not coming back." Other inmates have asked for information about how they can get their children in 4-H.

Federal Goal 5

CHARACTER CRITTERS

Key Theme: Enhanced quality of life for Americans

Program Description

Stakeholder input – In the fall of 1999, the Vermilion Head Start agency and Vermilion Parish Extension staff expressed the need for a preschool character education program. Existing literature and available research-based programs were reviewed by state extension faculty and it was determined that resources were inadequate. As a result, state extension faculty developed *Character Critters* Program and resources for a pilot project in 2000 in Vermilion Parish with Head Start children.

Problems identified - Children need character education at young ages to develop into responsible, productive citizens. The best window of opportunity for young children to develop a strong foundation of positive character is in the very early years. In Louisiana, there is a need to increase young children's understanding of character concepts and to increase parent's involvement in developing their children's character.

Initiation and Progress of the Program - *Character Critters*, a character education program for preschoolers, their parents, and teachers was implemented across the state by trained Extension volunteers. Ongoing across Louisiana since September 2000, the response to the program from school and childcare professionals has been overwhelming. Educational resources include *Character Critters I* storytelling kits*, Character Critters I storybooks for parents*, and *Character*

Critters II storytelling kits. *Character Critters I and II* are storytelling resource kits developed for use by volunteers in public and private preschool classrooms, Head Start classrooms, childcare centers, libraries, churches, and other sites with preschoolers. Kits include colorful story posters for storytelling, and a program guide with lesson plans, stories, take home parent/child activity sheets, parent education lessons, and program evaluation material. Some agents enhanced the volunteer kits by adding puppets and character education videos for preschoolers.

Local *Character Critters* advisory committees were formed and program donations of volunteer time and financial resources were secured to implement the program. Volunteers and Extension faculty promoted the program with displays, flyers, television, radio, and public speaking events. Program volunteers were recruited and trained by Extension agents across the state. Volunteer storytellers included school teachers, church teachers, librarians, existing Extension volunteers (FCE and 4-H), school aides, childcare professionals, and other community leaders.

During the past year, trained volunteers utilized LSU AgCenter education resources to teach six concepts of character (responsibility, trustworthiness, respect, caring, fairness, citizenship) to children through the telling of appealing stories about cute animals. Each child received a storybook and six take home parent-child character development activities to encourage parent involvement. Educational presentations were given to parents at Head Start Centers, and at other parent organizations on instilling character traits in young children.

Collaboration – Extension educators solicit individuals from the community in all walks of life to serve on Character Critter advisory committees. Committee members volunteer to assist in the promotion, implementation, and evaluation of the program. Collaborators involved in the implementation of this program include school systems, school administrators, school teachers, classroom aides, Head Start agencies, Head Start administrators, Head Start teachers, Head Start aides, childcare centers, childcare center directors, childcare center caregivers, public librarians, church education leaders, church members, Association for Family and Community Education leaders, 4-H leaders, 4-H members, and other community members all serving as program volunteers. Media collaborators include newspaper professionals who promote the program, radio professionals who air public service announcements regarding developing character in young children, and TV stations who contribute by airing Extension developed feature stories on *Character Critters*. Local bookstores, libraries, and businesses carrying children's literature have collaborated by featuring "children's reading events" throughout the state.

Program Impact

LCES staff throughout the state are collaborating with leaders and teachers at Head Start programs, school districts, private schools, childcare centers, libraries and churches to implement the program for preschoolers and their parents. Collaborators enhance the program by conducting literacy and character development events at bookstores, libraries, and local businesses. Extension staff recruited and provided volunteers with training and program materials to tell preschoolers the stories at schools, childcare centers, libraries and churches.

During the past year, 3,866 volunteers were trained, over 3,000 free *Character Critters I and II* educational kits were placed with volunteers or at Head Start Centers, Elementary schools or childcare centers. A total of 44,932 children heard the stories from a trained volunteer, and 39,782 parents of preschoolers received free *Character Critters I* storybooks to read to their children.

Since the program was launched statewide in September 2000, over 5,000 volunteer resource kits for loan were placed with volunteers, schools and centers; 7,810 volunteers were trained to tell the children character stories in classroom and group settings; 97,009 children were told the *Character Critter* stories by a volunteer. *Character Critter* storybooks were given to 95,000 parents across Louisiana to read to their children.

Additional educational activities conducted for the preschool children as program enhancements included use of Critter puppets for storytelling, group sharing by preschoolers of their expressed personal examples of character, parent-child activity sheets completed and displayed at school, character themed art activities, character themed music activities, character related nutrition activities, character themed gardening activities, and character themed citizenship activities and character awards for children presented.

Program evaluation reveals the following impacts:
•100 % of 197 teachers reported the *Character Critters* program helped them (1) learn activities to help with their student's emotional and social development, (2) teach character to their students, and (3) personally to practice good character
•99 % of 197 teachers reported they will conduct character activities for their students that foster character
•87% of 675 childcare providers reported they learned to teach the concepts of character to preschool children. 12% reported they already had knowledge of this information
•82% of 1393 childcare providers reported they learned 6 basic and ideal character traits. 17% of participants reported they already had knowledge of this information.
•99 % of 342 parents reported they learned activities that will help with their child's' development
•93 % of 340 parents reported they will teach the 6 traits of character to their children

Source of Funds

Federal, state and local funds

Scope of Impact

Multi-state impact: This program resource has been shared with extension educators and early childhood educators across the nation and has been used in 26 other states. Alabama, Arizona, Arkansas, California, Georgia, Illinois, Indiana, Iowa, Kentucky, Maine, Mississippi, Missouri, Nebraska, New York, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Virginia, Washington, Wisconsin.

Character Critters presentations were made to Extension professionals at the Children, Youth and Families At-Risk (CYFAR) conference in New Orleans reaching over 600 extension educators and Extension community collaborators from an estimated 45 states. A *Character Critters* workshop was conducted for Alabama Cooperative Extension Service Extension Educators in May 2002 reaching over 60 professionals. A Character Critters workshop was conducted for Southern Region 4-H State Specialists reaching 30 participants from an estimated states.

Over 1,750 Character Critter resource kits are being used in the 26 states. In particular, Louisiana, Oklahoma, Arkansas, Alabama and Mississippi Cooperative Extension Services are sharing resources, training and expertise extensively.

A total of 3 FTEs was expended on this program, 25% of which is estimated to be multi-state effort. The dollar value of multi-state work is $60,102 (.25 x 3 x $80,136).

Federal Goal 5

DISASTER EDUCATION: NATURAL HAZARDS AND HOMELAND SECURITY

Key Theme: Community Development; Family Resource Management

Program Description

In Southeast Louisiana there are over 150,000 properties insured by the National Flood Insurance Program (NFIP), representing roughly half the number at risk of flooding. Ten percent of them have flooded on more than one occasion. An even greater number statewide are subject to wind damage from hurricanes or tornados. While these natural hazards have been the focus of disaster programming at LCES, the terrorist events of 2001 created the need to expand the scope of disaster programs to address the threats we face from purposeful acts of destruction.

LCES hosted a one-week training course for the State Office of Floodplain Regulations and shared flood protection resource information with floodplain administrators at the annual meeting of the Louisiana Floodplain Management Association. Extension also co-sponsored the first Louisiana Flood Forum, bringing together floodplain managers, real-estate agents, and mortgage lenders for cross training on their roles related to floodplain management and flood insurance.

The program leader chairs the Floodproofing and Retrofitting Committee of the Association of State Floodplain Managers, which produced the second triennial National Floodproofing Conference in Tampa, Florida. Louisiana Extension presented three papers; Clemson Extension presented their showcase house in Charleston. The program was sponsored by the Federal Emergency Management Agency; the Corps of Engineers and had additional support from the CSREES Indoor Air program, the Institute for Business and Home Safety, the Public Entity Risk Institute.

LCES developed a new section for the LouisianaHouse.org website that provides advice on flood and wind resistant construction, in parallel with an extensive section on termites. The wind-resistance elements draw from the Institute for Business and Home Safety and Clemson University Extension with reviews from the LSU Hurricane Center's wind engineer.

LCES enlisted cooperation from the State Offices of Emergency Management (OEP) and Public Health (OPH), to host the BioTerrorism First Responders satellite conference of the National Association of Counties. This program brought emergency managers, extension agents, and regional health officials together within their department of health regions of the state. Extension, OEP, OPH, and State Police presented a 1-hour addition to the national program. LCES provides additional viewing sites for the numerous public health training programs that have arisen as a result of the terrorist attacks.

Program Impact

Continued collaboration with the state agencies involved in emergency management, flood mitigation and homeland security, has led to better services for the people of Louisiana. Citizens can now locate through the LouisianaFloods.org website their local floodplain management officials. The data are maintained by the Department of Transportation and Development - Office of Floodplain Regulations. Flood victims can also find, through the addition of the Virtual Mall for Floodproofing, products, contractors, and sample installations of flood protection systems. The extensive treatment of insurable hazards on the web has attracted the attention of the state department of insurance, who asked to outlink to these sites.

LCES was made a member of the State Hazard Mitigation Team, which maintains the state's hazard mitigation plan and selects mitigation projects for federal and state funding. In Tropical Storm Isidore, LCES for the first time occupied a seat in the state Emergency Operations Center, where it can be of greater service to the state in its disaster response to efforts.

The Corps of Engineers emerged from the National Floodproofing Conference with a plan to fast-track development of a testing protocol and evaluation standards for flood protection devices and systems, so consumers will have some means of determining how well those products work.

Source of Funds

Maintenance of the LouisianaFloods.org website and its recovery materials was funded in part by USDA-CSREES Special Needs funds. Creation of the hazards sections of LouisianaHouse.org was funded in part through a Federal Emergency Management Agency Project Impact grant issued through the Louisiana Office of Emergency Preparedness.

Scope of Impact

50% national; 50% state in both development and delivery.

Federal Goal 5

LEADERSHIP AND VOLUNTEER DEVELOPMENT

Key Theme: Leadership and Volunteer Development

Program Description

Steering committees and volunteer boards were used to plan leadership activities as follow up to strategic planning forums. These committees were composed of members representative of the targeted groups and were responsible for encouraging participation.

In the case of the community leadership program (CLED), stakeholders were seen as anyone who lived in the parish or served the parish such as a utility company. Stakeholders for programs such as master gardener were identified by their completion of the program.

Input was used to determine program mechanics, i.e. format, time and meeting location, topics to be taught, etc. For example, in Livingston Parish, stakeholders informed us that a strategic plan had already been completed which identified the need for a leadership program. The recommendation and goals in the plan were used to develop the class.

The major problem common to most of the leadership programs was the lack of willing volunteers who felt they had the skills needed to assume a leadership role. There was a tendency to assume that an individual really couldn't make a difference.

Community leadership classes (CLED) were completed in two parishes and started in a third which will be completed during the coming year. CLED is a ten-week class. Previously completed classes met periodically in some parishes to continue working on community issues. Other community leadership programs were conducted in three parishes. Leadership skills were also included in several economic development programs.

Commodity specific leadership programs were conducted for master gardeners, master horsemen, timber owners, loggers & related businesses, shrimpers and charter guides, and rice farmers.

Collaboration for community leadership classes included local utility companies, chambers of commerce, local governing bodies, and local businesses. Collaborating groups served on the steering committees, provided funds for program implementation and provided speakers and/or a connection between the group and other resources needed to carry out a project.

Collaboration for commodity based programs included the various commodity organizations as well as local businesses.

Program Impact

It is still too early to see the full impact of the community leadership classes since class projects focus on major issues that require time to resolve. Examples include changing the direction of traffic flow near a school or organizing local businesses to stay open on a common night for shoppers. However, all of the plans are being worked on and are at various stages of implementation.

- Commodity based leadership programs have yielded visible results a little faster. Examples include: 19 livestock producers used their new skills to organize a specialty sale for commercial heifers which enabled them to get a premium price and thus increased their net farm income. They have now formed a marketing association.
- A new yam festival was organized with 2,000 attending the first year.
- In a small town, 25 leadership participants organized the first farmers market.
- 700 shrimpers and 40 charter guides participated in leadership development training meetings which resulted in the formation of two associations that are influential in creating economic stability in their industry.
- Eight leaders completed the requirements for Master Horseman and will now put their skills to use working with 4-Hers and other youth.
- Master Gardeners used their leadership skills to organize and implement a large plant sale which generated funds to further horticulture education in the parish. Held at a horticulture experiment station, the plant sale is now considered one of the premier events for gardeners.

Source of Funds

A combination of Smith-Lever and state funds was used to pay faculty salaries and basic printing and travel costs. Local funds were used for actual program implementation.

Scope of Impact

Statewide

Federal Goal 5

EXTENSION DISASTER EDUCATION NETWORK

Key Themes: Community Development; Family Resource Management

Program Description

Natural hazards cost the US more than $50 billion per year. Although the Extension System has a long-standing commitment to disaster preparedness and recovery through the USDA Emergency Programs and the Federal Response Plan, few states have a fully developed

Extension disaster education program. There is a need for states to collaborate and share their disaster education resources and training and program development successes.

Since September 11, 2001, America has been on terrorism alert. The public is concerned that local communities are not prepared for bioterrorism, and this concern is justified. Bioterrorism and the response to it crosses outside the boundaries of the agencies previously viewed as first responders, and requires expertise not found within those agencies. Effective management of bioterrorism will require new collaborations and expansion of missions and cross training.

The Extension Disaster Education Network (EDEN) has grown and evolved during the program year. Membership is up to 44 states and territories. EDEN applied for and received USDA Special Needs Funds (granted to Michigan State University) to support training programs in seventeen states. Those programs must be collaborative efforts with the emergency management communities in those states.

EDEN also received USDA funds to build a plant biosecurity education program that will serve the needs of the Extension system, as part of an overall enhancement of EDEN's networking function and ability to address homeland security issues. In its initial needs assessment, EDEN found that Extension educators in the field support the concept of Extension delivering homeland security educational programs (73% of 1,500 respondents). Those educators identified the forms of educational materials they think will be effective in addressing the needs in several areas. In a sampling of agricultural producers, EDEN found that 75% say Extension would be the first place they'd turn if an unusual crop disease showed up on their farms.

With this information and new involvement of the Federal Emergency Management Agency (FEMA) and USDA's Animal and Plant Heath Inspection Service (APHIS) in this project, EDEN is moving forward to address homeland security issues, enhance its website so it reaches out directly to the public (where it had been focused as a source for Extension professionals) while maintaining its ability to support internal network communications.

Program Impact

Extension educators in the field have Internet access to disaster education materials developed by their states and by other states and, because of the new directions and funding will have both improved access and access to resources developed by other agencies. Extension educators can obtain immediate help with specific disaster problems using e-group communications. Extension educators in seventeen states are being trained in the emergency management process as a result of EDEN training committee project.

Extension is being recognized increasingly for its role in mitigating disasters and its potential to facilitate the evolution of disaster management plans to include previously uninvolved agencies and subject areas. Relationships with the Federal Emergency Management Agency, Department of Commerce/NOAA, the Natural Hazards Center and Association of State Floodplain Managers

are growing, and the number of involved agencies is expanding to include most notably APHIS and the Institute for Business and Home Safety.

Source of Funds

Development of the EDEN website and coordination of EDEN activities was funded in part by USDA-CSREES Special Needs funds and is presently supported through USDA biosecurity funding through a subcontract with Purdue. The EDEN training project is funded with USDA Special Needs funds administered through Michigan State University Extension.

Scope of Impact

100% of this program can be attributed to a multi-state effort of over 40 participating states. Seventeen states are directly involved in the emergency management training grants program. Six states participated actively in developing the biosecurity proposal and continued to act as a steering committee for that project.

Federal Goal 5

ECONOMIC DEVELOPMENT INITIATIVE

Key Theme: Economic Development

Program Description

In 1998, the LSU AgCenter and the Louisiana Cooperative Extension Service (LCES) conducted a series of forums in each parish in the State. In these forums, Louisiana residents in 59 of the State's 64 parishes identified economic development as one of their most pressing issues.

Participants specifically asked for assistance in the following areas:

- Business development, retention and expansion
- Workforce development
- Civic engagement and leadership development
- Natural resource and heritage based tourism development

In response, the LCES assembled a new economic development initiative team to identify strategies and educational programs to address these issues. By the summer of 2001, the LCES reassigned eight (8) county and extension agents as Community Economic Development (CED) Area Agents. The CED Area Agents work as a team with faculty in the Department of Agriculture Economics and Agribusiness to provide community and rural economic development education, technical assistance, and facilitation services to the Louisiana public. CED Area Agents are in the process of completing an educational specialization (15 hours) of graduate work in community and rural development. In the past year, three CED Area Agents have completed the Specialization process and three will be finished at the end of the Spring Semester,

2003. The mission of the CED Team is to strengthen communities and facilitate rural economic development. The CED Team is concentrating on the processes of (a) civic engagement and (b) entrepreneurship, with an emphasis on small and/or natural resource based business development. The CED Team works with other LCES faculty in workforce development education. The CED Team works closely with the Southern Rural Development Center and is networking with counterparts throughout the South.

Program Impact

Louisiana residents are learning about current social and economic conditions in their communities.
Louisiana residents are gaining an increased understanding of economic development alternatives (i.e., moving beyond smokestacks).
Community members are developing strategic plans for community development.
Community members are beginning to implement components of strategic plans.

Source of Funds

Smith-Lever 3 b, c; Grant from Red River Waterway Commission.

Scope of Impact

Multi-state: Approximately one half (50%) of the Louisiana program can be attributed to shared information and training from the states of Mississippi, Florida, Missouri, Kentucky, Oklahoma, South Carolina, Tennessee, and Wisconsin. A total of 2.5 state and parish FTEs were devoted to the Economic Development Initiative. With the dollar equivalent of 1 extension professional at $80,136, the dollar value of the multi-state effort = [(50%) x (2.5 FTEs) x ($80,136)] = $100,170.

Multi-function: Approximately 25% of this program is based on data analysis and other research findings. A total of 2.5 state and parish FTEs were devoted to the Economic Development Initiative. With the dollar equivalent of 1 extension professional at $80,136, the dollar value of the multi-function effort = [(25%) x (2.5 FTEs) x ($80,136)] = $50,085.

Federal Goal 5

ECONOMIC DEVELOPMENT: BUILDING LOCAL CAPACITY

Key Theme: Economic Development: Building Local Capacity

Program Description

In recent years, rural development practitioners have come to realize that traditional economic development strategies are generally inadequate in today's fast-paced economy. Most of the

traditional models are either based on urban models or do not take into account today's spatial division of labor. Traditional economic development models typically rely on the identification of perceived needs in rural areas and concentrate on importing these "needed" resources into the rural area. A more realistic approach for today's economy is to build local capacity. Most rural communities have unique resources (i.e., land, labor, talent, existing economic activity, natural resources) on which a viable local economy can be built.

Participants in the LCES community forums of 1998, advisory boards, and local stakeholder meetings indicated they need assistance in developing their social, civic, physical, and entrepreneurial infrastructures for economic development. In the past year, the LSU AgCenter and LCES provided educational civic engagement and leadership programs and workshops (Strategic Adult Leadership, Community Leadership and Economic Development, and Take Charge) throughout the State. CED Area Agents, along with County and Extension Agents, helped communities implement strategic plans developed in these workshops through follow-up meetings with local working groups organized during the workshops.

Program Impact

- Participants learned to identify assets in their communities.
- Participants learned about team building, conflict resolution, visioning, strategic planning, leadership, group dynamics, local involvement, and workplace ethics.
- Participants learned about the value of agriculture and forestry production in their local economies.
- Participants learned about economic and community development services and assistance from Federal, State and local organizations.
- Participants assumed leadership roles in local and regional economic and community development projects.
- Participants initiated, organized and completed community development projects ranging from litter clean-up to building acquisition.
- Producers (including shrimpers and other fishermen) formed marketing and other type of organizations designed to increase economic stability.

Source of Funds

Smith-Lever 3 b, c

Scope of Impact

Multi-state: Approximately one quarter (25%) of the teaching materials and information used in the Louisiana program can be attributed to information and training from the states of Mississippi and Missouri. A total of 3.5 state and parish FTEs were devoted to the Economic Development: Building Local Capacity Program. With the dollar equivalent of 1 extension professional at $80,136, the dollar value of the multi-state effort = [(25%) x (3.5 FTEs) x $80,136)] = $70,119.

Multi-function: Approximately one fifth (20%) of the information used in this program is based on experiment station findings. A total of 3.5 state and parish FTEs were devoted to the Economic Development: Building Local Capacity Program. With the dollar equivalent of 1 extension professional at $80,136, the dollar value of the multi-function effort = [(20%) x (3.5 FTEs) x ($80,136)] = $56,095.

Federal Goal 5

ECONOMIC DEVELOPMENT: BUSINESS

Key Theme: Economic Development: Business

Program Description

In the 1998 LCES community forums, participants identified business development, retention and expansion as a major issue. Many rural communities have been hard hit by the closing and relocation of manufacturing plants and the subsequent closing of local businesses. Many small business start-ups fail within a very short time. Residents of rural areas report difficulty in obtaining assistance for enterprise development. Although there are many opportunities for small business development in urban areas through the Small Business Assistance Centers, the Louisiana Department of Economic Development and universities, many rural residents wanting to go into business are not yet ready to seek help from these sources. The CED Team has assembled a very basic, elementary level entrepreneurship program (based on the Exploring Entrepreneurship program developed at the University of Tennessee) that begins with whether or not someone should be in business and progresses through the development of a business plan. Once clientele have completed the entrepreneurship workshop, they are prepared to obtain assistance from other State sources. In addition to the entrepreneurship program, CED Team members, along with county and extension Agents are helping producers and natural resource managers understand and incorporate financial management and alternative enterprise development into their operations.

Program Impact

- Participants learned fundamental principles of starting and running a business.
- Participants learned economic benefits of natural resource stewardship.
- Producers learned about economics and strategies for economic efficiency.
- Natural resource owners and managers learned about e-Business
- Producers learned about alternative enterprise opportunities.
- Producers developed alternative enterprises to supplement farm income.

Source of Funds

Smith-Lever 3 b, c

Scope of Impact

Multi-state: Nearly two-thirds (60%) of the materials and information used in the Louisiana program can be attributed to information and training from the states of Mississippi, Missouri, Tennessee and Arkansas. A total of 2.0 state and parish FTEs were devoted to the Economic Development: Business Program. With the dollar equivalent of 1 extension professional at $80,136, the dollar value of the multi-state effort = [(60%) x (2.0 FTEs) x ($80,136)] = $96,163.

Multi-function: Approximately one fifth (20%) of the information used in this program is based on experiment station findings. A total of 2.0 state and parish FTEs were devoted to the Economic Development: Business Program. With the dollar equivalent of 1 extension professional at $80,136, the dollar value of the multi-function effort = [(20%) x (2.0 FTEs) x ($80,136)] = $32,054.

Federal Goal 5

ECONOMIC DEVELOPMENT: TOURISM

Key Theme: Economic Development: Tourism

Program Description

Tourism emerged during the 1998 LCES community forums as an economic development strategy with which communities needed assistance. The CED Team implemented three major programs for tourism development. The first is the Southern Hospitality Program, a program designed to train front-line workers in the hospitality industry to interact positively with tourists and other visitors. The second is the First Impressions program, a visitor infrastructure awareness program that helps community members become aware of how their communities are perceived by outsiders. The third program is Natural and Cultural Resource Mapping, in which participants learn to identify and create an inventory of those resources in their communities to attract tourists. The CED Team is working with the Atchafalaya Trace Commission (Louisiana Dept. of Culture, Recreation and Tourism) to develop tourism-based economic development opportunities in the southern part of the State. In addition, the CED Area Agents, along with County, Extension, and Sea Grant Agents provide seminars on tourism opportunities. They also provide technical assistance with tourism based projects.

Program Impact

- Landowners, producers, community leaders and small business owners learned about economic development potential of natural resource based tourism.
- Primary school students learned about impact of litter on tourism.
- Family and Consumer Educators volunteered at parish tourism centers.
- Communities organized and held natural resource and commodity based festivals ranging from rabbits to cattle and day lilies to yams.

- Community members became aware of the condition of their visitor infrastructures.
- Community members are beginning to address issues identified in visitor infrastructure awareness surveys.
- Communities initiated natural resource and cultural tourism based projects, ranging from nature trails to trade fairs.

Source of Funds

Smith-Lever 3 b, c

Scope of Impact

Multi-state: Approximately two-thirds (67%) of the information and materials used in the Louisiana program can be attributed to information from many other states. The bulk of the information comes from Mississippi, Oklahoma and Wisconsin. A total of 2.0 state and parish FTEs were devoted to the Economic Development: Tourism Program. With the dollar equivalent of 1 extension professional at $80,136, the dollar value of the multi-state effort = [(67%) x (2.0 FTEs) x ($80,136)] = $107,382.

Multi-function: Approximately one quarter (25%) of the teaching materials and information used in this program is based on experiment station reports. A total of 7.42 state and federal FTEs were devoted to the Economic Development Tourism Program. With the dollar equivalent of 1 extension professional at $80,136, the dollar value of the multi-function effort = [(25%) x (2.0 FTEs) x ($80,136)] = $40,068.

Federal Goal 5

FAMILY ECONOMICS

Key Theme: Family Resource Management

Program Description

Research indicates that almost one-fifth of families and one-third of children in Louisiana live in poverty. The median income for families is 76% of the national average and many families are transitioning from public assistance. "Money and You", a nine-unit multi-state educational program of the Arkansas, Louisiana, and Mississippi Extension Services is being used by agents and volunteers to assist limited resource audiences, including prisoners and parolees, in managing their resources to improve their quality of life.

Increasing home ownership rate is a national goal. There is a critical need for home- buyer education, since Louisiana has a low rate of home ownership and many lending institutions require it (or want to), but the quality and availability of homes is inadequate. Consumers face a complex, intimidating, expensive process; mistakes are costly. The "Extension Your Path to

Home Ownership" program involves teams of extension agents and local partners in teaching a 12-hour series of classes targeting low- and moderate-income households.

Today's teens work 15 hours per week at $5.70 per hour for a weekly paycheck of over $80, yet spend $94 each week. One in three teenagers carries a credit card. They have a future earning potential of over $1 million. However, Louisiana teens scored only 47.3% on a nationwide test of financial literacy. Extension is conducting financial literacy programs to improve the financial management skills of Louisiana's youth.

Program Impact

- As a result of Extension Family Resource Management Programs over 9,000 individuals and families were assisted with financial management and budgeting skills. Surveys of a sample of program participants revealed the following intentions:
- 76% of 107 participants indicated they will make changes so that they can pay their monthly bills on time.
- 75% of 52 participants indicated they will set financial goals and priorities
- 74% of 31 participants indicated they will keep track of their spending for one month
- 71% of 241 participants indicated they will set up a way to keep and organize important papers.
- 58% of 38 participants indicated they will make and use a spending plan.
- 30% of 2,540 (762) first term military personnel enrolled in a debt management program.
- 20% of 2,540 (508) first term military personnel indicated they will set up a budget.
- 10% of 2,540 (254) first term military personnel indicated they will get financial counseling.

In FY02, the "Your Path to Home Ownership" program, taught 102 people how to better manage their finances, overcome their personal obstacles to home ownership, avoid costly mistakes during the home buying process, and protect their investments. In prior years this program helped over 642 prospective homebuyers. The majority are low-or moderate-income households.

Forty-two extension agents and 182 teachers and volunteers were trained to conduct the "High School Financial Planning Program" for high school students. This six-unit hands-on course teaches money management, budgeting, savings and investing, credit management and risk management skills. In one parish, 50 volunteers who are federal employees were trained and linked with schools where they are teaching the curriculum. Many of the youth are from low-to moderate-income households.

Source of Funds

Smith-Lever 3 b, c

Scope of Impact

Multi-state: In FY02, 10.66 FTEs were spent on family resource management education resulting in 116,290 contacts. It is estimated that 40% of the program effort is attributable to multi-state work in the acquisition and sharing of information. The dollar equivalent of this share of the program effort is $341,700 (10.66 FTEs x $80,136 per FTE x .40).

Multi-function: It is estimated that 25% of the program effort is attributable to collaborative work between research and extension in recommendations, curriculum development, agent training and presentations to clientele. The dollar equivalent of this share of the program is $213,562 (10.66 FTEs x $80,136 per FTE x .25).

Federal Goal 5

FARM SAFETY

Key Theme: Adult and youth farm safety, workforce safety, home safety

Program Description

The LSU AgCenter farm safety program is a grass roots effort involving state office specialists, field agents and administration. Farm safety programs are primarily delivered as an integral part of subject-matter programming. For example, a field agent conducting an animal health clinic would also cover safe animal handling. In instances where the program would essentially be devoted entirely to safety, we usually try to team with other pertinent organizations such as Farm Bureau, local emergency medical technicians, (EMTs), local fire departments, schools of nursing, Progressive Farmer, safety suppliers, agricultural machinery dealers and manufacturers, and local schools. Our field faculty utilizes advisory committees and local community and agricultural leaders in determining local needs. They also rely upon state office specialists for information, guidance, and materials. This approach, primarily relying upon grass roots, with occasional state office program input, has worked well in addressing the diverse needs of Louisiana. Some of the programs that we have been working on this year include farm safety day camps, farm medic training programs for rescue squads, First-On-Scene safety programs for Young Farmers and Ranchers, Sugarcane Burning/Ash and Smoke Management training, pesticide safety, personal safety, and plans for intensive farm safety presentations at field days. In addition, we have conducted an extensive 4-H safety program, including hunter safety, boating and swimming safety, outdoor skills, babysitting, bicycle safety, on-line computer safety, lawn and garden safety, automotive safety, and tractor safety.

Program Impact

Individual contacts with 6,157 farmers and 3,641 small farmers were made regarding some aspect of farm safety. The primary emphasis was on pesticide safety followed by equipment (including highway) safety and safely working with animals. Bicycle safety was the main topic

of safety for youth with 9,543 individual contacts made. Relatively little surveying of participants was done, however, on the surveys that were taken, 70 to 98% of the respondents reported satisfaction with the program and a willingness to put the safety information into practice. A rather unique farm safety program was initiated and carried out. Sugar cane farmers in Louisiana practice burning prior to harvesting. The purpose is to reduce the amount of trash brought to the mill. This is a standard production technique. However, there are public health, safety, and nuisance effects of the smoke and ash resulting from the burning. A particular safety concern is lack of visibility on public roads as a result of the smoke. The LSU AgCenter developed a "Safety and Smoke Management for Sugarcane Harvesting" program and provided information on alternative harvesting techniques to combat these problems. Under this program, prescribed burning is combined with smoke and ash management. Prescribed burning can be defined as the controlled application of fire to sugarcane fields under weather conditions that allow the fire to be confined to a predetermined area in a manner that will produce the desired result of reducing trash in the delivered cane supply. Smoke and ash management can be defined as conducting a prescribed burn under recommended weather conditions and with burning techniques to lessen the impact of smoke and ash generated from prescribed burning on the environment, public health and welfare. Safety guidelines are intended to manage smoke and ash from sugarcane prescribed burning operations to lessen their impact on public health and welfare. The advantages obtained by those participating in this program include the following aspects of smoke and ash management:

- Minimize the adverse effect caused by open field burning of sugarcane.
- Prevent it from being blown across public highways and airports.
- Prevent it from affecting public areas, especially public health facilities such as hospitals, clinics, nursing homes and doctors' offices, etc.
- Prevent it from affecting schools during times when students and teachers are present.
- Prevent it from affecting subdivisions, individual homes and other housing facilities.
- Minimize ash fallout that may result from burning sugarcane.

A total of 1,425 producers and employees representing over 95% of the growers and accounting for approximately 500,000 acres, have been trained by the LSU AgCenter and tested and certified by the Louisiana Department of Agriculture and Forestry. As a result, sugarcane burning-related complaints are down by 90%, over three-fourths of the growers are using alternative harvesting techniques and a valuable agricultural practice which was in danger of being outlawed, either by regulatory action or de facto by lawsuit, has gained acceptance by the general population and been allowed to continue.

Source of Funds

Smith-Lever 3 b, c

Scope of Impact

Multi-state: A total of 3.25 FTEs of professional effort was expended on the farm safety education program. Of this effort, approximately 80% is multi-state effort and information valued at $208,354.

Federal Goal 5

HEALTHY HOMES AND INDOOR AIR

Key Theme: Human Health, Quality of Life, Child Care

Program Description

The LCES healthy home program encompassed the ongoing national Healthy Homes (HUD-CSREES) and Healthy Indoor Air for America's Homes programs (EPA-CSREES) as well as educational outreach and response to an onslaught of requests for information about mold and moisture problems.

The HUD Healthy Home program was incorporated into the LCES childcare provider training and parenting education programs. Forty agents received training and *Help Yourself to a Healthy Home* booklets for use in the lesson on providing a safe and healthy environment for children. Agents conducted this lesson with approximately 2,400 child care providers.

The EPA Healthy Indoor Air program involved meeting presentations (to 460 consumers and public employees), training of 8 volunteer leaders and paraprofessionals, and newsletter outreach (reaching 40,000 statewide) on how households can prevent and remedy indoor air pollutants in their own homes. Emphasis was on control of biological pollutants (mold and dust mites), combustion pollutants, and new lessons on second-hand smoke and asthma.

As a result of sensational media coverage, two hurricanes that caused flooding and damage to homes, and a rainy year, both public need and demand for information on mold hazards, remediation, and prevention increased sharply. LCES responded to this need via the www.LouisianaFloods.org, www.LouisisanaHouse.org, and www.lsuagcenter.com Web sites, newspaper articles statewide, TV and radio interviews and FCS faculty response to many hundreds of individual citizens by phone and email. The housing specialist also provided educational seminars for over 300 architects, home builders, engineers and public officials.

Program Impact

- 73% of the child care providers indicated intent to adopt practices to provide a safe and healthy center or home for children.
- 90 families stopped exposing children to secondhand smoke (reducing risk of asthma, ear infections, and other health effects).

- 60 families took steps to maintain combustion appliances and 35 families installed CO alarms (to prevent carbon monoxide poisoning and exposure to other combustion pollutants).
- An estimated 2,000 families corrected moisture and/or mold problems in their homes (to prevent potential health effects, including allergies, asthma and toxic effects).
- 300 building professionals gained knowledge of mold and climate-specific building science principles that prevent moisture problems and resulting liability risks.

Source of Funds

Smith-Lever, U.S. EPA through USDA-CSREES, and U.S. HUD through USDA-CSREES.

Scope of Impact

Parts of this program are attributable to two national programs in which over 40 states participate. The lead states (Montana for Healthy Indoor Air, Wisconsin for Healthy Home) coordinated educational material development, conducted training of state program managers, and manage the national programs. The Healthy Home program is also an adaptation of the national Home-A-System program

Multi-state: Curricula and teaching materials developed in these national programs were responsible for approximately 60% of Louisiana's healthy home program in FY 2002. It is estimated that 0.80 FTE was devoted to this program, hence the dollar value of the multi-state effort totals $38,465 (.6 X .8 X $80,136/FTE).

Federal Goal 5

HOME GARDENS

Key Theme: Home Lawn and Gardening/Consumer Horticulture

Program Description

Random sampling of stakeholders statewide in town meetings indicated a priority to receive LCES help and advice in home gardening to better succeed against the elements in producing home landscaping and vegetable supply. County agents in urban/suburban parishes are swamped with home horticulture calls and demands. Some agents report 75% of telephone calls received in the growing season relate to home horticulture. Some people wish to receive in- depth horticultural study beyond production agriculture as well as an opportunity to provide a community service in that area. A louisianalawnandgarden.org site was developed and regularly updated to enhance accessibility to AgCenter consumer horticulture information.

The Louisiana Cooperative Extension Service developed and implemented an annual volunteer education and service consumer horticultural program called Louisiana Master Gardeners (LMG). The program follows the traditional Master Gardener format patterned after that found in

most states. The AgCenter-controlled program interacts with Habitat for Humanity, garden foundations, native plant society, schools, food banks, local master gardener associations, and the Master Gardener program of other states.

Program Impact

Louisiana has an estimated 372,094 home vegetable gardens with a projected annual production value of $110,488,200. There are also countless home landscapes requiring maintenance and development. Most of these gardens/landscapes are found in areas enhanced by LMG programming. In FY 2002, the LMG program trained 315 new volunteers and retained 410 senior LMGs. These volunteers pledged 31,082 hours of service (17.1 paraprofessional FTEs) to their parish home horticulture programs valued at $42,800.

LMGs in urban /suburban areas significantly assisted local extension efforts with area garden shows that attracted over 19,000 home owners in search of garden info and ideas. LMGs in East Baton Rouge parish landscaped 15 "Habitat for Humanity' homes, demonstrated proper composting to 600 clients, made 38 group presentations on home environmental stewardship and contacted 5,500 individuals with consumer horticulture questions.

Source of Funds

Smith-Lever 3 b, c funding for professional CES staff; volunteers pay for training materials and pledge volunteer program hours. LMG associations generate money for programming efforts.

Scope of Impact

The ideas of LMG program come from regional and nationwide master gardening programs, conferences, and workgroups (90%). Materials were borrowed from southern region master gardening programs and adapted for Louisiana use (75%). There is a total of 22.34 FTEs of professional staff reported for home gardens and home grounds-lawn programming.

Multi-state: Of the 22.34 FTEs, 75% is attributable to home lawns and gardens work through the LMG program and representing multi-state work. The dollar equivalent attributable to multi-state activities is $1,342,678 (22.74 FTEs x $80,136 x .75)

Multi-function: Multi-function work of research and extension collaboration in consumer horticulture, both instate and between southern states, is 50% of professional FTEs. This is equivalent to $911,146 (22.74 FTEs x $80.136 x .50)

Federal Goal 5

LEADERSHIP TRAINING AND DEVELOPMENT

Key Theme: Leadership Training and Development

Program Description

The Louisiana 4-H Program is committed to developing leadership skills in both youth and adults. 4-H members participate in junior leader clubs, officer roles within clubs, state junior leadership conference, and the leadership project. Adults participate in parish, regional, and state trainings. In November 2002, a statewide leadership training was conducted for adults. Training material included *Training Trainers To Teach* and *Moving Ahead, Preparing the Youth Development Professional*. Also, youth and adults participate in national events such as National 4-H Congress and the Southern Region 4-H Volunteer Forum for training ideas. The knowledge gained from these trainings is brought back to the state and offered in workshops at state, regional, and parish levels. A Volunteer Leaders Association is being formed that will be committed to leadership development for adult volunteers.

Program Impact

In FY2002, 8,669 adult volunteers received training and support. There were 9,044 youth enrolled in the 4-H leadership project. There were 7,821 youth who assumed leadership offices in their clubs, 21,273 demonstrated new leadership skills, and 9,445 youth assumed volunteer leadership roles within their parishes.

Source of Funds

Smith-Lever and Louisiana 4-H Foundation Funds

Scope of Impact

Multi-state: Training ideas obtained from other states, the southern region and national entities impacted all 4-H agents in the state. At least 20% of each agent's time is devoted to leadership development. Therefore, the dollar equivalent of multi-state work is $403,224 (25.16 FTEs x $80,136 per FTE x .20).

Federal Goal 5

PARENTING/CHILD CARE

Key Theme: Parenting/Child Care

Program Description

Lack of parenting skills was identified as a concern by a statewide advisory committee. Education in parenting skills is also a requirement for teen mothers receiving welfare assistance. Parolees are being required to complete parenting education classes as a condition of their parole. Over 800,000 children in Louisiana are in need of quality child care. Developmental stages of children, strengthening relationship and communication, and child guidance are dominant issues.

Over 1,000 parents and volunteer mentors attended a series of workshops on building interpersonal relationships, communication skills, and conflict resolution. Many of the parents involved in these workshops were divorced, and were attempting to avoid putting their children in the middle of their conflicts. Many children attended simultaneous workshops which helped them to understand their parents' conflicts. Research indicates that communication is a skill which can prevent divorce, discipline problems in youth, and conflict. Audience participants included parents, teens, senior citizens, and family members.

Over 1,600 parents and grandparents and more than 2,100 child care educators attended a series of workshops to learn more about recommended parenting/caregiving practices and skills to create a safe and nurturing environment for children. The Louisiana Child Care Provider Training Program effort has entered its second year in the training of early childhood educators.

Program audiences included incarcerated and early release parents, single parents, divorced parents, fathers, early childhood educators, pregnant teens, shelter residents, Head Start families, and the general public. Collaborative efforts in parenting/child care education were accomplished with personnel from Head Start, parenting centers, Office of Family Support, YWCA, Kiwanis Clubs, Prevent Child Abuse Louisiana, Family and Community Education Council, schools, family literacy programs, Housing Authority, Office of Community Service, Department of Corrections, and staff from some of the cooperative groups who provided leadership for parenting education.

Audiences were recruited through a variety of methods including personal, agency, and organizational contacts, newsletters, news articles, and television and radio spots. Extension agents from 25 parishes reported teaching or disseminating information in some manner on parenting/child care through workshops, newsletters, exhibits, and radio and television broadcasts.

According to self-reports and evaluations by extension home economists, approximately 2,500 parents, grandparents, and teen parents gained knowledge and skills in parenting education through a series of workshops using curricula such as Every Touch Counts, Bringing Up Children, Children in the Middle, Louisiana Child Care Provider Training Program or other classes taught in the parishes. The "Security Blanket" age-paced newsletter was distributed to parents of newborns. Over 900 parents reported changing their discipline or guidance techniques with their children as a result of parenting classes. This translates into a potentially significant reduction in the incidence of child abuse in Louisiana. In specific cases, one family with 6 children remained intact as a result of parenting skills training. According to the child welfare caseworker, the children were not removed form their home because of the changes the parents had made in discipline and care of their children. In another instance, three young mothers maintained custody of their children after attending and learning from parenting classes taught by LCES agents. One of these young mothers continues to attend additional series of lessons so that she can continue to improve her parenting skills.

Program Impact

The program was evaluated for educational impact on the extent to which program participants learned parenting practices taught in training sessions around the state.
The number of respondents and percentages of respondents indicating they learned practices taught are shown below:

Parenting practice	Number of respondents	% learning practice	% not learning practice
Activities to help children's development	4981	87	22
Age-expected child behaviors	2556	78	1
Interpersonal communication skills	136	96	1
Best guidance and discipline practices	1126	83	0
Positive communication with others	1444	80	1
Best practices in parenting or caregiver styles	2546	87	2
Provide nurturing environment for children	1379	64	35
Model behavior for children	2847	80	1

(Note: Where total percentage does not add up to 100, the difference reflects the percentage of respondents who did not respond.)

Source of Funds

Smith-Lever 3 b, c; State contract (Children's Trust Fund)

Scope of Impact

Multi-state: In FY 2002, 19.7 FTEs were spent on parenting and child care education. It is estimated that 30% of the program effort is attributable to multi-state work, i.e., joint planning and implementation, and acquisition and sharing of information. The dollar equivalent of multi-state work is $473,603 (19.7 FTEs x $80,136 per FTE x .30)

Multi-function: Contributions from research counterparts included assistance in curriculum development, agent training and presentations to clientele is estimated at 20% of the program FTEs. The dollar equivalent of multi-function work is $315,736 (19.7 FTEs x $80,136 x .20)

Federal Goal 5

WORKFORCE PREPARATION

Key Theme: Workforce Preparation

Program Description

Louisiana 4-H convened a group of youth, parents, employers, education institution representatives, and other concerned citizens to discuss issues important to the future needs of youth and families in Louisiana. These Community Conversations established mechanisms for ongoing communication between the LSU AgCenter and stakeholders. The results of these statewide meetings helped to facilitate broad community involvement in identifying the knowledge and skills required by youth to succeed in the emerging global society.

Stakeholders recommended that to best serve youth, there needs to be an increase in career guidance and access to career development resources. Youth consistently requested more information on career options. Louisiana 4-H integrated the workforce preparation knowledge and skills identified by the community conversations into ongoing 4-H programs statewide. A Workforce Preparation Initiative Implementation Team (WPIIT) was organized to facilitate these efforts. The WPIIT, members act as information intermediaries between the AgCenter and the business and economic development communities. Team members have been instrumental in involving Tech Prep, the Louisiana Workforce Commission, parish school boards, and School-to-Work regional consortiums in workforce preparation strategies in different communities statewide. The Team published *Sharing Success*-a compilation of model workforce preparation initiatives to recognize the efforts of local collaborative groups and parish youth development programs.

A Career Odyssey Program was conducted reaching 200 youth that engaged them in using the Holland Code Career Assessment strategy to identify their skills, interests and personality traits to match with suggested careers in the Occupational Outlook Handbook. Through a Career Connections program coordinated by 4-H field faculty, local School-to-Work groups and parish school boards, more than 1,000 tenth grade students interacted with potential employers by

participating in a business expo and career interview sessions. Louisiana 4-H used the *Reality Store* career development program and the *Welcome to the Real Program* developed by other State Extension Service organizations to conduct educational programs that involved more than 2,100 students in career decision-making, financial management and career planning activities.

Thirty five Louisiana 4-H'ers attended a Management Conference conducted by the Mississippi Extension Service on how to use credit wisely and general banking skills. Educational resources shared were later used to conduct monthly youth club programs reaching more than 200 youth. To foster greater awareness of work-based requirements, some 2,300 youth were involved in job shadowing activities and career talks at school sites at a variety of locations. Through a juvenile corrections program held at a juvenile center, 18 youth viewed videos and were involved in hands-on activities focusing on workplace ethics. Finally, monthly career development lessons were taught at 4-H club meetings involving some 4,000 youth in career awareness activities and lessons plans developed by 4-H agents were distributed to teachers and shared across the state with other 4-H agents.

Louisiana 4-H collaborated with the National 4-H Council and the Hilton Hotel in Jefferson Parish to conduct a hospitality career development program. A result video and resource guide were developed and shared with other Extension Services. Through collaboration with local school boards, 200 youth enrolled in an Alternative School Program acquired knowledge on careers and job-seeking strategies. The Ouachita Parish 4-H Program collaborated with the University of Louisiana at Monroe, the City of Monroe and the Youth Job Program office to conduct training programs for youth involved in the parish's Summer Job Program. In collaboration with the State Attorney General's Office, a career development workshop was conducted involving some 60 youth in hands-on activities. In partnership with the National 4-H Curriculum Cooperative System, Louisiana 4-H incorporates use of selected curricula and *Jump Start for Job Seekers* developed by the Kentucky Extension Service.

Program Impact

More than 8,000 participating youth gained insights into the necessary skills and knowledge they need to succeed in future occupations, while business leaders and other collaborators developed ways to give back to communities by supporting workforce preparation programs as guest speakers, coordinating site visits and volunteering to conduct career day educational sessions.

Source of Funds

Funds were used from Smith Lever, National 4-H Council, the Louisiana 4-H Foundation, and School-to-Work groups.

Scope of Impact

Multi-state: 20% of one state FTE and 10% of 52 parish FTEs of programming in this area are a direct result of collaborative efforts between Louisiana 4-H, national, and multi-state cooperative efforts. The dollar equivalent of multi-state work is $416,723 (1 FTE x $80,136 per FTE x .15) plus (52 FTEs X $80,136 per FTE)

GOAL 5
RESEARCH SUMMARIES

ANNUAL REPORT OF ACCOMPLISHMENTS AND RESULTS

Key Theme: Characterization of The Compositional And Functional Properties Of Rice Starch As A Potential Value-Added Food Ingredient

Goal 5: Enhanced Economic Opportunity and Quality of Life for Americans

Joan M. King, Assistant Professor, Department of Food Science, Louisiana Agricultural Experiment Station, LSU AgCenter

Issue: The rice industry suffers from a glut in the market, which has driven the price for rice as a whole kernel down. The economic returns for rice has dropped from $4 / bushel to less than $2 / bushel, while those of the soybean and corn industries have remained steady from 1998 to 2002. The total 2001 U.S. production value for corn and soybeans were $19 billion and $12 billion, while rice was only $0.9 billion. The main difference between these industries is that corn and soybean are not only sold whole but are made into value-added ingredients. The modification of corn starch to produce value-added food ingredients has driven the selling price of native corn starch from $0.20/pound to $2.50/pound for modified corn starch-based fat replacers. There is a potential of a 10-fold increase in the value of rice starch, from the development of rice starch-based fat replacers and resistant starch, through utilization of the same technology.

What was done: The overall goal of this research is to enhance the resistant starch properties of rice flours. Our two main objectives are 1) to determine the effects of lipid, amino acid and beta-cyclodextrin additives on the crystallinity of commercial and isolated rice starches. Enhanced crystallinity may indicate that the starch is more resistant to enzymatic digestion and so may have fiber-like properties in the body; 2) to determine the effects of thermal processing and enzymatic treatment on the resistant starch properties of rice starch and flours. Brown rice flour isolates showed greater potential crystallinity than white rice flour isolates. Monoglyceride and saturated fatty acids increased crystallinity potential through enhancing retrogradation of rice starch. Our results indicated that the negatively charged amino acids (aspartic and glutamic acids) had opposite effects on retrogradation tendency than that of the positive charged amino acids (lysine and arginine), but all charged amino acids caused increased relative crystallinity for both commercial rice starch and white rice flour starch isolate. This research showed that simple addition or removal of small amounts of non-starch ingredients can alter the functional characteristics of rice starches and flours to potentially enhance their nutritional value and alter their cooking characteristics.

Impact: The information from this research could be utilized to produce value-added food ingredients from rice starch and flour. There could also be an increase in the value and use of broken rice kernels, which make up 15% of milled rice in the U.S., through their use in the production of starch-based food ingredients. This research will benefit the Louisiana rice farming and processing industries by providing a new utilization for rice that will result in an increase its national competitiveness and demand in the food ingredient and product market. This will in

turn increase the economic value of rice and increase the amount of production and processing done by the existing industry and result in new facilities being opened. This research will also provide an easily incorporated source of food fiber that can be beneficial in helping to control or prevent diseases such as diabetes and cancer.

Sources of Funding: State, Hatch, Louisiana Rice Research Board

ANNUAL REPORT OF ACCOMPLISHMENTS AND RESULTS

Key Theme: Creating new medicinal crops through collaborative, multi-disciplinary research in botany, chemistry, and medicine

Goal 5: Enhanced Economic Opportunity and Quality of Life for Americans

Zhijun Liu, Associate Professor, School of Renewable Natural Resources, Louisiana Agricultural Experiment Station, LSU AgCenter

Issue: Botanical medicines enjoy a long history of successful use. Forty percent of the world population currently uses botanical medicines to treat diseases and/or maintain health. Eighty percent of the developing country population relies on medicinal plants as medicines or health care products, and 20% of the developed world population use medicinal plants. And the uses of alternative medicines in the United States increased by 40% since the 1980s. One reason may be the fact and perception that plant-based medicines have fewer side effects and are particularly suitable for dealing with chronic and progressive diseases, such as pain, hypertension, congestive heart failure, obesity, and diabetes. Major challenges to steady and progressive use of botanical extracts lie in the identification and standardization of effective principles to overcome consistency and repeatability problems, often seen as a flaw in their use. Standardized extract and validated bioactivity and safety are keys to successful plant-based healthcare product developments.

What was done: Teaming up with researchers in the LSU School of Veterinary Medicine and LSU Pennington Biomedical Research Center, LSU Agricultural Center researchers identified and selected a medicinally important tree, Eucommia ulmoides. An Industrial Ties Grant was awarded from the LSU Board of Regents and Sage Pharmaceuticals in Shreveport, Louisiana to Zhijun Liu of the Agricultural Center, David Baker of the School of Veterinary Medicine and Frank Greenway of the Pennington Center. Eucommia is an herbal ingredient that has been used to treat hypertension in Japan. Zhijun Liu planted Eucommia at the LSU Ag Center's Burden Research Station, developed and produced a standardized extract, which was given to David Baker who performed toxicity tests in rodents confirming its safety, and confirmed its efficacy in spontaneously hypertensive rats. This same Eucommia extract is now being tested at the Pennington Center in a human clinical trial with 50 hypertensive participants by Frank Greenway.

Impact: The success of the trial will result in a license of the extract to Sage Pharmaceuticals. This license should enrich the three collaborating LSU campuses through royalties and enrich the Louisiana economy by providing a new product that Sage plans to sell around the world and by presenting a new cropping opportunity for the Louisiana agriculture sector.

Sources of Funding: Louisiana Board of Regents, Sage Pharmaceuticals, Pacific West Cancer Fund, Louisiana Agricultural Experiment Station, and McIntire-Stennis Forestry Cooperative Fund

ANNUAL REPORT OF ACCOMPLISHMENTS AND RESULTS

Key Theme: End-Use Applications of Bagasse/Kenaf Non Woven and Composite Materials

Goal 5: Enhanced Economic Opportunity and Quality of Life for Americans

Y. Chen, Associate Professor, School of Human Ecology, Louisiana Agricultural Experimental Station, LSU AgCenter

Issue: According to the Executive Order 13134, developing and Promoting Biobased Products and Bioenergy became a nation's research priority. Sugarcane is an important agricultural crop in the Southern U.S., with a total production of 35.3 million tons in 2002. This volume of sugarcane yield can generate about 28.2 million tons of waste wet bagasse during sugarcane refining. How to dispose the waste bagasse economically and environmentally is a current issue. This research is focusing on development of biobased nonwoven composite materials using waste bagasse and other agricultural resources.

What was done: Three types of biobased composite materials were developed in the laboratory: single layer bagasse composite; single layer cotton/bagasse/kenaf blended composite; and multi-layer kenaf/bagasse/kenaf and ramie/kenaf/ramie composites. Bagasse fiber, cotton fiber, kenaf fiber, and ramie fiber were opened and cleaned, carded, needle-punched to form nonwoven webs. These fiber webs were bonded into composites through a hot-pressing procedure. Thermal bonding and wet bonding methods were used during this hot-pressing procedure. Properties of these composite materials, in terms of tensile strength and flexibility, water absorption and thickness swelling, thermal property, and composite bonding structure, were evaluated using a series of instrumental methods. End-use applications of these composite products for horticulture and automotive interiors were studied. Results indicated that the bagasse-based composites had strong tensile strength, excellent flexural rigidity, tough compressibility, good wet stability, and good biodegradability.

Impact: Biobased nonwoven composites become more and more important in industrial renovation because of their light weight and renewability. These biobased materials have great potential for diverse end-uses in many industrial sectors, such as automotive manufacture, agriculture, housing, furnishing, and packing. The conducted research will help the sugarcane industry to convert the byproduct into value-added industrial materials. This will strengthen the

sugarcane producers' productivity by uplifting technological competitiveness in a more opened global market. The research accomplishment has led to securing a long-term research grant from Governor's Biotechnology Initiative, aiming at development of high performance engineered biocomposite materials in cooperation with other AgCenter Professors. As an excellent manufacture and application sample for industries, this research has been cited by two U.S. consulting companies as initial technical information for investors. Two industry–sponsored research proposals are in process for further developing biobased composite products.

Source of Funding: Hatch

ANNUAL REPORT OF ACCOMPLISHMENTS AND RESULTS

Key theme: Genetic Improvement of Smooth Cordgrass for Conservation and Restoration of the Louisiana Coast.

Goal 5: Enhanced Economic Opportunities and Quality of Life for Americans

Prasanta K. Subudhi, Assistant Professor, Department of Agronomy, Louisiana Agricultural Experiment Station, LSU AgCenter

Issue: Coastal erosion and wetland deterioration are serious and widespread in the state of Louisiana. Despite continuous effort over a decade, Louisiana continues to lose 25-35 square miles to sea every year. Smooth cordgrass (*Spartina alterniflora*) is the sole grass species, constituting the salt marsh along Atlantic and Gulf coasts and used extensively for shoreline protection and tidal marsh restoration because of its aggressive colonizing ability and tolerance to a wide range of salinity. Although application of agronomic and molecular techniques for improving crop species is well documented, these have not been routinely applied to any species of ecological value. Development and utilization of improved smooth cordgrass cultivars to revegetate the eroded and newly created marshland must be an integral part of reclamation activities to preserve this invaluable ecosystem. Therefore the coastal plant project was established to develop superior smooth cordgrass lines using both conventional and molecular breeding approaches to benefit the coastal restoration projects.

What was done: A marsh genetics laboratory was established within the Department of Agronomy to conduct research involving wetland plant species. Protocols for fingerprinting *Spartina alterniflora* using RAPD (Random Amplified Polymorphic DNA) and AFLP (Amplified Fragment Length Polymorphism) DNA markers was standardized. Cluster analysis was performed on agronomic and molecular data from a total of 40 plants from nine accessions based on genetic distance within each accession (among plants) and among accessions from the same location. Preliminary results showed considerable natural variation among the original collections across south Louisiana for traits contributing to plant establishment from seed. The differences in clustering pattern indicated the potential of molecular markers in accurate assessment of genetic diversity. Additionally, fingerprinting and field evaluation of a sample of 44 clones collected from brown marsh areas are under progress.

To determine if Vermilion (a released clone commonly used in restoration projects) seedlings are comparable to vegetative clones in terms of its performance, thirty clones and seedlings of Vermilion were planted in a replicated trial in two locations. The clones are also currently fingerprinted to determine and compare the amount of genetic variation between the clones and seedlings. A population of 100 hybrids involving two smooth cord grass lines was generated for construction of a genetic map to locate the QTL for seed characteristics. A number of crosses were made for initiating the recurrent selection program and the hybrids will be evaluated in the marsh condition and the best performing ones will be identified for next round of crossing and selection. A mutation experiment was initiated and 800 M1 plants from two different mutagens; Ethyl Methane Sulphonate and Sodium Azide were evaluated in a marsh location in Cameroon parish and in the first cycle, 50 lines were selected based on their growth, vigor and seed set characteristics for selfing, crossing and further evaluation.

Impact: Maintenance of adequate vegetation in the existing and newly restored marshlands can help slow down the coastal wetland loss in the state of Louisiana. DNA Fingerprinting protocols developed through this project will help to test the authenticity of plant materials used in the restoration projects. In addition, development of smooth cordgrass lines with improved seed producing ability, wider adaptation and higher stress tolerance will accelerate the on-going restoration projects by providing options for a range of improved plant materials, thus directly impacting the economy and environment of the state of Louisiana.

Sources of Funding: Hatch, USDA-CSREES, Louisiana Department of Natural Resources

ANNUAL REPORT OF ACCOMPLISHEMENTS AND RESULTS

Key Theme: Impact on Economic Development and Quality of Life for Rural Low-Income People and Communities

Goal 5: Enhanced Economic Opportunities and Quality of Life for Americans

Fran Lawrence, School of Human Ecology, LSU AgCenter

Issue: The changing structure of agriculture has affected the viability of rural communities and rural residents' quality of life. Communities in rural areas are encouraged to expand their economic bases and develop local workforces that meet local and regional employers' needs. However, high levels of poverty are a barrier to workforce and economic development. The overall purpose of this multi-state project is to examine a wide range of impacts and issues related to welfare reform from the perspectives of rural low-income families, within the community context, and across states with differing social support policies and provisions.

What was done: Researchers participating in a 15-state, longitudinal study analyzed quantitative and qualitiative data from low-income rural mothers residing in three southern states. Research and policy questions arising from the literature and current data about public assistance were investigated: what is the availability of, and adequacy of, earned income

amoung these families; what differences exist between families with married or live-in partners and those without partners; to what extent are these families eligible for, or using, public assistance to alleviate economic stress; given their present income (earned and assistance), is it feasible that the families are, or will be economically self-sufficient; and what needs, relevant to rural, low-income families, exist that could be addressed by public policies and/or programs. Our data suggest that all families had difficulty making ends meet and are living in-crisis or at-risk of economic inadequacy. This is true of those married or living with a partner as well as those without partners though incomes are lower for single mothers. If the weakening economy continues, the families face the likelihood of further diminished income. They received an array of assistance from extended families to the government; yet, many who were eligible were not receiving some benefits-especially food stamps. Policy statements have been developed and research findings have been presented at many conferences, including Children, Youth, and Families at Risk Conference, Eastern Family Economics-Resource Management Association Conference, and American Association of Family and Consumer Sciences Annual Conference.

Impact: The current research helps to document the impact that welfare reform has had on rural families, within the community context, and across states. The findings provide insights to agencies and policy makers as they adjust welfare policies to enhance rural family functioning within their rural communities. It appears that until more families have employed members, and more who are employed receive higher wages and benefits, it is not feasible that these families will become economically self-sufficient. The data immediately contribute to the debate about public assistance as Congress reauthorizes relevant legislation in 2003.

Sources of Funding: Hatch, Multi-State

ANNUAL REPORT OF ACCOMPLISHMENTS AND GOALS

Key Theme: Investigating the long-term structural performance of borate-modified oriented strandboard.

Goal 5: Enhanced Economic Opportunity and Quality of Life for Americans

Qinglin Wu, Associate Professor, School of Renewable Natural Resources, Louisiana Agricultural Experiment Station, LSU AgCenter

Issue: The degree of damage to homes caused by Formosan termites has been significantly deepened due to the rapid increase of the termite colonies and the absolute population. The cost of Formosan termite treatments and repairs is estimated at $2 billion a year nationwide, with $100 million or more of that in New Orleans, LA. The ultimate solution is to make wood inedible to termites or to stop using wood or wood products in construction. As a result, it would be of great importance for the wood products industry to develop production strategies to deal with the problem before durability of wood housing becomes more subject to criticism by homeowners. Treated structural wood composites such as oriented strandboard have a strong future. As the type of timber available for use in forest products continues to change and the

demand for exterior-use products continues to grow, there will be a growing need for fungal- and insect-resistant structural composites. Research that can provide effective protection of wood-based composites can help sustain a strong forest-based industry in the state and the South in general, while maintaining high durability standards of wood-based houses.

What was done: A new research initiative on developing chemically-modified structural wood composites began in 2000. The approach is to use powder zinc borate and calcium borate as additives during the composite manufacturing process. The effect of added borate on resin gel time, strength, swelling, leaching, termite, decay, and mold resistance properties of oriented strandboard were measured. Long-term structural performance of the produced products is also being assessed and mathematical models are developed to predict the performance behavior over an extended loading period (up to 30 years). The results indicate that both types of borate chemicals provide an excellent decay, mold, and termite resistance for oriented strandboard, while maintaining its structural performance of the products. Panel processing variables such as resin type and content, wood species, chemical type and loading levels, and pressing conditions have significant influence on final panel performance. A proper manipulation of these properties can lead to the development of a high quality product.

Impact: Oriented strandboard is widely used in house construction as sheathing, flooring, and I-joist materials. Oriented strandboard production in North America exceeds 20 billion square feet (3/8-inch basis), overtaking that of plywood. In the southern U.S., low-grade bottomland hardwoods are being successfully used to manufacture mixed hardwoods oriented strandboard, adding significant value to a vast amount of low quality materials. The technology developed in this work allows structural wood composites to be manufactured and used for applications where biological attacks to wood products (i.e., decay, mold, and termites) are significant problems, thus opening a new market for the structural wood panel products. This helps structural wood composites compete directly with exterior plywood at reduced manufacturing costs.

Sources of Funding: National Science Foundation, State, Wood Products Industry

ANNUAL REPORT OF ACCOMPLISHMENTS AND RESULTS

Key Theme: Value Addition to By-Products and Wastes from Louisiana Crawfish and Catfish Processing Plants

Goal 5: Enhanced Economic Opportunity and Quality of Life for Americans

Witoon Prinyawiwatkul, Associate Professor, Department of Food Science, Louisiana Agricultural Experiment Station, LSU AgCenter

Issue: Because of declining natural fishery resources and increasing consumer demand for fishery and aquaculture products, it is no longer practical to discard undersized crawfish and byproducts and wastes from crawfish and catfish processing plants, especially when a significant

amount of valuable raw materials can be recovered and used to produce value-added new products and functional ingredient. The magnitude of this resource as a new material for value-added products suggests a strong economic potential with major impact on the entire catfish and crawfish industries.

What was done: Minced meat recovered from cooked undersized crawfish was successfully used as a base for several new formed seafood products such as nuggets, patties, sausage, etc. Our study suggested that consumers preferred the nugget product in combination with the baked reheating method at the lowest possible price. Results from market segmentation provided several implications for commercial development of these types of products. This study is a classic example of the research supporting "total resource and byproduct utilization." As availability of crawfish is highly seasonal, thorough understanding of storage conditions, shelf-life quality, and microbial safety of crawfish mince is critical if it is to be effectively used for the development of value-added new seafood products that are safe for human consumption. Crawfish mince without any added preservatives could be frozen stored up to 6 months without quality deterioration. The shelf stability of frozen crawfish mince was attributed to the low fat content (2.1%) and the presence of natural antioxidant astaxanthin. Our parallel research was focused on utilizing shell waste from undersized crawfish as a raw material for chitosan production. Crawfish chitosan possesses desirable water and fat binding capacity with potential applications in food system. The simplified process we developed to produce crawfish chitosan affected its water and fat binding capacity. Catfish viscera, a processing waste from the filleting process, contained about 30-35% fat and may contain heath promoting fatty acids. Fatty acid profile of oil recovered from catfish viscera was characterized by the microwave-assisted fatty acid analysis developed in our laboratory. Visceral oil contained 4.3 mg/g of decosahexaenoic (DHA) and 4.6 mg/g of arachidonic acids. Catfish liver contained the highest quantity of DHA. This study indicated that the whole viscera and liver portion may serve as a good source of health-promoting fatty acids. Quality of purified catfish oil was thoroughly characterized. Thermal degradation of fatty acids of catfish visceral oils was monitored. Rheological properties of catfish oils during purification process were characterized. A design for a fixed-bed or continuous adsorption column for removal of free fatty acids and oxidized compounds from crude catfish oil was successfully developed. The information obtained is useful for developing unit operations for commercialization of catfish oil.

Impact: Adding value to crawfish shell waste and catfish viscera as well as maximizing the use of undersized crawfish would minimize pollution problems and offset costs involved in disposal of processing byproducts or waste, and, at the same time, maximize the processors' profits. Development of new value-added products and functional ingredients from byproducts and processing wastes will not only enhance the competitiveness of the Louisiana crawfish and catfish industries, but also enhance the state's economic development. The information obtained from this research will be useful for crawfish and catfish processors who wish to adopt the technology for developing value-added new food products and functional ingredients.

Sources of Funding: State, Hatch, USDA Aquaculture Special Grants, Louisiana Catfish Promotion and Research Board

STAKEHOLDER INPUT

The LSU AgCenter consistently seeks stakeholder input on all research and education programs in order to maintain a focus on clientele needs and ensure that its research and extension programs have value and impact. During this programming year the LSU AgCenter has placed a renewed emphasis on its Advisory Leadership System which has as its primary goal to ensure that all research and educational programs of the LSU AgCenter are: *(*1) effective in meeting the needs of clientele, (2) being delivered in a manner that makes them accessible to all people, and (3) constantly assessed for relevance to insure that they remain current. Regional Advisory Leadership Councils have been added to this system this year as the structure of the AgCenter has changed. These regional councils made up entirely of stakeholders provide valuable advice to the Regional Directors regarding how the LSU AgCenter can improve service to stakeholders in the region by marketing the LSU AgCenter and its programs and identifying issues within the region. In the 2001-2002 program year all eight AgCenter regions conducted Advisory Council meetings with a total of over 200 stakeholders participating. Issues that the AgCenter will be addressing during the coming year that emerged from the stakeholder meetings are better marketing of AgCenter programs; the need for public education regarding agricultural production; increased partnerships and collaborations between AgCenter and businesses, agencies and organizations; the future of Extension in regards to staffing and maintaining a local presence in the community; the future of Louisiana agriculture and issues regarding rural/urban interface.

The AgCenter works closely with all the major commodity associations, i.e., cattlemen, rice producers, grain producers, sugarcane producers, the Louisiana Farm Bureau, family and community development associations, 4-H youth associations and groups to get input and guidance on programs. These organizations not only give guidance but also support many of the programs with monetary and physical assistance.

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.

Extension Section

The Cooperative Extension Service had conducted a series of community focus forums in every parish during the 1999-2000 program year involving a wide base of the citizenry and leadership of the state, including public officials, and representatives or business and industry, and youth and minority groups. The diversity of the state was captured by ensuring that gender, age, and ethnic groups were represented in the forums. Parish forums identified key concerns and issues

needed to be addressed for a better future for parish residents. Major concerns identified in the forums were economic development, protection and conservation of the environment, quality education, youth development, family support and structures, crime and other social issues. Based on this input from stakeholders, the LCES developed a statewide strategic plan for the five-year period, 2000-2004, focused on 12 initiatives – After-school Education and 4-H Adventure Clubs; Economic Development; Master Farmer; Water Resources Management; Waste Management; Coastal Restoration, Environmental Horticulture; Family Financial Management; Farm Financial Management; Leadership and Volunteer Development; Nutrition, Diet, and Health: Parenting and Child Care. Parishes reported to their citizen groups the outcome of the forums, including strategic plans at the local and state level to address the initiatives that would be addressed. Initiative teams consisting of extension agents and specialists, and researchers have since developed action plans and educational resources and curricula to enable agents to conduct education programs in need areas.

In addition to the above strategic planning process, parishes continued to involve leaders and influentials in agriculture, home economics, youth, and community and economic development in various commodity and subject-matter advisory committees to provide input on needs and problems which could be addressed in local programs. For a state perspective, extension specialists engaged representatives of their commodity or subject-matter area to give input on clientele needs and problems.

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 presentations of research findings and proposed research activities by scientists directly to the stakeholder panels. This is followed by questions and discussions led by the stakeholders which provides focus, direction, and 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.

MERIT REVIEW
Meetings with Stakeholders - (1998 - 2002)

Cotton Support Committee:	March 18, 1998 March 17, 1999 March 14, 2000 March 13, 2001 September 10, 2002
Rice Research Board:	October 28, 1998 December 16, 1999 December 14-15, 2000 November 12-13, 2001 November 21, 2002
Soybean and Grain Research & Promotion Board:	December 1-2, 1998 December 8-9, 1999 November 30-Dec 1, 2000 November 28-29, 2001 November 19-20, 2002
American Sugarcane League:	February 3, 1998 February 4, 1999 February 23, 2000 January 28-29, 2001 February 19, 2001 January 28, 2002
Louisiana Beef Industry Council:	May 5, 1998 October 14, 1999 October 10, 2000 October 11, 2001 January 11-12, 2002
Louisiana Catfish Promotion and Research:	September 2, 1998 June 23, 1999 September 29, 1999 December 5, 2000 August 29, 2001 October 29, 2001 May 9, 2002 August 21,2002

Meetings with Stakeholders - (1998 - 2002) - Continued

Louisiana Crawfish Promotion and Research Board:	May 19, 1998
	August 10, 1999
	July 17, 2001
	February 12, 2002
	May 9, 2002
Louisiana Sweet Potato Commission:	June 11, 1998
	June 17, 1999
	June 14, 2000
	June 13, 2001
	May 22, 2002
Louisiana Farm Bureau Federation:	July 3, 1999
	July 15, 2000
	July 12-15, 2001
	July 10-12, 2002

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 Animal, Dairy, and Poultry Sciences was held on April 105, 2002. Statewide research and extension programs in Horticulture were reviewed on May 5-9, 2002. 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 in these two important areas.

Project peer reviews of the proposed research activities of individual scientists continued according to CSREES guidelines as reflected in the Plan of Work. Approximately 50 project reviews were conducted which led to the establishment of approved projects with initiation dates during the reporting period, 10/1/01 to 9/30/02. 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 MULTI-STATE ACTIVITIES

Extension Section

The evaluation of multi-state activities has been beneficial in identifying ongoing activities and opening up new opportunities for collaboration between states and extension/research personnel thus strengthening the overall cooperative effort. In most cases, programs were identified and developed that had been identified by stakeholders. Under-served and under-represented populations were identified especially in youth and family and consumer sciences programs. Preliminary assessments indicate that these programs are having the desired impact. Effectiveness and efficiency in utilizing materials from other states, collaborating on research projects, and communication among professional faculty and staff in different states have improved. Multi-state efforts initiated last year among Arkansas, Mississippi, and Louisiana on pesticide applicator training, digital diagnostic centers, and limited resource management program for young families were successfully continued through new materials, publications, and joint training programs. In addition, extension specialists participated in the Southern Extension Research Association (SARE) exchange groups, the Southern Agriculture and Natural Resources committees, and numerous national and regional meetings. These exchanges provide extension professionals with new ideas and materials, and enable collaborations that result in new and more effective programs for Louisiana. Furthermore, the economic development initiative of the LCES has been greatly enhanced by collaborative work with the Southern Rural Development Center, Mississippi.

The Cooperative Extension Service had conducted a series of community focus forums in every parish during the 1999-2000 program years involving a wide base of the citizenry and leadership of the state, including public officials, and representatives or business and industry, and youth and minority groups. The diversity of the state was captured by ensuring that gender, age, and ethnic groups were represented in the forums. Parish forums identified key concerns and issues needed to be addressed for a better future for parish residents. Major concerns identified in the forums were economic development, protection and conservation of the environment, quality education, youth development, family support and structures, crime and other social issues. Based on this input from stakeholders, the LCES developed a statewide strategic plan for the five-year period, 2000-2004, focused on 12 initiatives – After-school Education and 4-H Adventure Clubs; Economic Development; Master Farmer; Water Resources Management; Waste Management; Coastal Restoration, Environmental Horticulture; Family Financial Management; Farm Financial Management; Leadership and Volunteer Development; Nutrition, Diet, and Health: Parenting and Child Care. Parishes reported to their citizen groups the outcome of the forums, including strategic plans at the local and state level to address the initiatives that would be addressed. Initiative teams consisting of extension agents and specialists, and researchers have since developed action plans and educational resources and curricula to enable agents to conduct education programs in need areas.

In addition to the above strategic planning process, parishes continued to involve leaders and influential in agriculture, home economics, youth, and community and economic development in various commodity and subject-matter advisory committees to provide input on needs and problems which could be addressed in local programs. For a state perspective, extension specialists engaged representatives of their commodity or subject-matter area to give input on clientele needs and problems.

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 2002-2003 LAES scientists were active participants in 46 approved multi-state projects. Of these 46 projects, 16 (35%) 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. The 46 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 10 active multi-state research projects.

INTEGRATED RESEARCH-EXTENSION ACTIVITIES

During the year, the LSU AgCenter was reorganized to more closely align research and extension functions in addressing problems and issues of various client groups. At the campus level, extension specialists who had been centrally located in the Cooperative Extension Building were moved into respective subject-matter departments and housed with their research counterparts under the administrative supervision of a department head. Several joint research-extension appointments have been made to promote integration. In the field, administrative lines were redrawn to create eight regional research and extension centers, subsuming parish extension agents and experiment station research personnel under their supervision. Regional directors were in the process of being appointed to provide administrative guidance and better integrate research and extension efforts at the point of local program delivery.

In this way new competencies are brought to both the extension and research clientele. More use of joint appointments is likely as the departmentalization is completed in FY 2002. This administrative approach includes placement of specialists at experiment stations around the state. Joint appointments are increasing at the stations.

Research and extension personnel continued to work closely to develop joint publications, coordinate research, and conduct educational programs. Concerted efforts have been made to improve communication between research and extension personnel so as to provide improved and rapid service to clients. Special initiatives such as the Formosan subterranean termites, fire ants, water quality, and master farmers are being jointly conducted by the Extension Service and experiment station personnel.

Each year, research and extension personnel meet in AgCenter Exchange Groups. Researchers update extension personnel on the latest research projects and results, and extension personnel share their educational programs and the issues and problems their clients are facing for researchers to review and consider in their research agendas. In addition, teams of research and extension personnel meet in discussion groups two to four times a year to update one another on the latest research and education programs.

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

The LSU AgCenter established a Faculty Council in 2002. It includes 20 elected representatives proportional to faculty rank and divided between “on-campus” and “off-campus”. Off-campus members include extension agents and researchers located throughout the state. The Council provides rapid response and feedback to administration and increased communication and participation in policy to faculty. The administration accepted Council recommendations for increased participation of faculty in vice-chancellor and department head reviews. Council is in the process of reviewing policies on tenure, promotion and dismissal and has been asked to help develop long range plans for the AgCenter.

INTEGRATED ACTIVITES

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 and Agricultural Biosecurity:

In 2001 the state's agricultural community and government officials became concerned about terrorist attacks as well as the ever-present likelihood of the accidental introduction of damaging diseases and/or other pests into Louisiana's food production system.

In response, the LSU AgCenter and several co-sponsors hosted the Louisiana Food and Agricultural Biosecurity; Producer Awareness Conference. The conference helped Louisiana farmers and ranchers become more aware of the problems that could arise from the introduction of plant or animal diseases or pests into their operations.

Speakers prompted attendees to identify the diagnostic capacity needed to protect the food supply and identifying how a food-linked terrorism attack would affect Louisiana's food industry.

The conference was a forum for participants to interact and exchange ideas with leading biosecurity and agrosecurity experts and key policymakers from Louisiana and the nation. Attendees and speakers were able to address actions needed to reduce food contaminations risks.

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.

Master Farmer Program:

The Louisiana Master Farmer program is an effort to demonstrate that agricultural producers can, and will, voluntarily reduce the impact that agricultural production has on Louisiana's environment while remaining economically viable through the adoption of research-based production practices and following recommended farm and financial management principles, as it relates to environmental stewardship. The Master Farmer Program will be implemented through a multi-agency/organization partnership with the Louisiana Farm Bureau Federation (LFBF), the Natural Resources Conservation Service (NRCS), the Louisiana Department of Environmental Quality (LDEQ), the Louisiana Department of Natural Resources (LDNR), the National Oceanic and Atmospheric Administration (NOAA), the Louisiana Cattlemen's Association (LCA), and the Louisiana Department of Agriculture and Forestry (LDAF). Upon completion of the Master Farmer program, producers will be certified in environmental stewardship.

The Master Farmer Program is divided into three phases, and a participating farmer must complete all three to become a certified master farmer. The program consists of three phases. Phase one consists of environmental and BMP education, including an eight-hour session of classroom lectures and interaction between the Ag Center and farmers. The course is made up of material developed by the NRCS, LDEQ, DNR, LACD and the AgCenter. The second phase consists of "model farm" visits, where enrolled farmers visit sites in their watershed where BMPs have been implemented and the farm managers have completed the training. The third phase is the development and implementation of site-specific conservation plans including the implementation of BMPs at a cost-effective level.

The Master Farmer program is a unique, statewide, and successful comprehensive watershed based approach to reducing agricultural nonpoint source pollution. Currently, the initial "model farms" are in the implementation stage and each year, farms in two or more watersheds throughout the state will be added to the list. There are over 500 enrolled farmers representing approximately 600,000 acres. Each of the agencies contributes through either monetary or information means, and are determined to participate even more as the program spreads throughout each of the twelve watersheds. Federal funds are also used to support the implementation, this year 319 money will be used for BMP implementation on the model farms, and the program administers plan for USDA conservation program funds will also be used in the implementation phase as well. Other states, such as Mississippi and Arkansas, have shown interest in starting similar programs due to the success of the initial push in Louisiana. The farmers in Louisiana are excited about the program and the opportunities it creates, and enrollment is increasing. The farmers, agency employees, programming organizers, and the public are energized to take this integrated approach of production, economic, and environmental stewardship to facing the pollution problems of today.

*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.

West Nile Virus:

The LSU AgCenter's rapid response to the health threat of mosquito-borne diseases was comprehensive: 1) Awareness: The AgCenter's mosquito website made its debut in May, 2002. It evolved from the initial purpose of being the host site for the mosquito conference held in June, 2002. The mosquito website then was transformed into a popular resource site with extensive information about mosquitoes. 2) The mosquito-borne diseases conference was timely in both raising awareness and providing scientists, educators and the media a means to assure the best available materials were available to the public. 3) An LSU AgCenter and Louisiana Department of Health and Hospitals initiative to conduct mosquito surveillance in the 11 parishes that had confirmed cases of West Nile Virus and did not have a parish mosquito abatement program was conducted. A youth outreach program **(Skeeter Busters)** via 4-H clubs was an element. Family and Consumer Services targeted the elderly population due to their susceptibility to West Nile infection. 4) Posters and publications: a) Questions about Eastern Equine Encephalitis and Horses, b) Insect Repellants, 3) Taking the Bite out of Mosquitoes, 4) West Nile Virus – A new mosquito-borne Disease in Louisiana, and 5) What's the Buzzy About.

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

Institution:LSU Agricultural Center
State: Louisiana

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

Title of Planned Program/Activity	**Actual Expenditures* FY2002**
Aerial Application	15074
Agricultural Financial Management	16700
Agricultural Marketing	9592
Aquaculture	72682
Beef	98440
Character Critters	13703
Commercial Nursery and Landscape Systems	16444
Commercial Vegetables	12732
Cotton	37914
Dairy	66214
Digital Diagnostic Program	41840
Economic Development Initiative	22839
Economic Development: Building Local Capacity	15907
Economic Development: Business	21925
Economic Development: Tourism	24483
EFNEP	59526
Family Economics	77908
Farm Safety	44505
FNP	71243
Food Safety	37273
Formosan Subterranean Termite	12974
Healthy Homes and Indoor Air	8770
Home Gardens	306131
Horses	8039

(continued on page 193)

*Expenditure from federal budget (Smith-Lever 3 b,c,d) in FY 2001 was 22.8% of total Cooperative Extension budget (state and federal). Multi-state (total) and multi-function (total) dollars multiplied by .228 to determine share of Smith-Lever funds attributed to multi-state and multi-function work.

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

Institution:LSU Agricultural Center
State: Louisiana

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

Title of Planned Program/Activity	**Actual Expenditures* FY2002**
Leadership Training and Development	91935
Louisiana Master Farmer Program	45678
Master Tree Farmer	227407
Natural Resource/Environmental Education (4-H Youth)	47504
Nematode Control	13703
Ornamental/Green Agriculture	8221
Parenting/Child Care	107982
Pasture, Forage, and Small Grains	65447
Pesticide Applicator Training	9866
Plant Pathology	914
Portions and Health	134840
Poultry	18417
Soybean and Grain Production	35628
Water Quality	39283
Water Resources Development	18271
Weed Science Education Program	16444
Wildlife Management and Leasing	34715
Workforce Preparation	95103
Total	**1924216**

Paul Coreil, Director — 03/01/03

*Expenditure from federal budget (Smith-Lever 3 b,c,d) in FY 2001 was 22.8% of total Cooperative Extension budget (state and federal). Multi-state (total) and multi-function (total) dollars multiplied by .228 to determine share of Smith-Lever funds attributed to multi-state and multi-function work.

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

Institution:LSU Agricultural Center
State: Louisiana

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

Title of Planned Program/Activity	**Actual Expenditures* FY2002**
Aerial Application	9136
Agricultural Financial Management	8350
Agricultural Marketing	6395
Air Quality (Sugarcane Burning)	6841
Aquaculture	40172
Beef	196888
Commercial Nursery and Landscape Systems	13703
Commercial Vegetables	127322
Cotton	151650
Dairy	70352
Economic Development Initiative	11419
Economic Development: Building Local Capacity	127190
Economic Development: Business	7308
Economic Development: Tourism	9136
EFNEP	295990
Family Economics	48692
FNP	1243
Food Safety	27955
Formosan Subterranean Termite	12974
Healthy Homes and Indoor Air	207741
Horses	40916

(continued on page 195)

*Expenditure from federal budget (Smith-Lever 3 b,c,d) in FY 2001 was 22.8% of total Cooperative Extension budget (state and federal). Multi-state (total) and multi-function (total) dollars multiplied by .228 to determine share of Smith-Lever funds attributed to multi-state and multi-function work.

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

Institution:LSU Agricultural Center
State: Louisiana

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

Title of Planned Program/Activity	**Actual Expenditures* FY2002**
Leadership Training and Development	71988
Louisiana Master Farmer Program	388258
Louisiana Rice Verification Program	30823
Nematode Control	2740
Ornamental/Green Agriculture	913
Pasture, Forage, and Small Grains	46087
Portions and Health	101130
Poultry	46043
Soybean and Grain Production	41566
Water Quality	22839
Water Resources Development	18271
Weed Science Education Program	357563
Total	2619594

_____ _____
Paul Coreil, Director 03/01/03

Expenditure from federal budget (Smith-Lever 3 b,c,d) in FY 2001 was 22.8% of total Cooperative Extension budget (state and federal). Multi-state (total) and multi-function (total) dollars multiplied by .228 to determine share of Smith-Lever funds attributed to multi-state and multi-function work.

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

Institution:LSU Agricultural Center
State: Louisiana

Check one: ____ Multistate Extension Activities
__X__ Integrated Activities (Hatch Act Funds)
_____ Integrated Activities (Smith-Lever Act Funds)

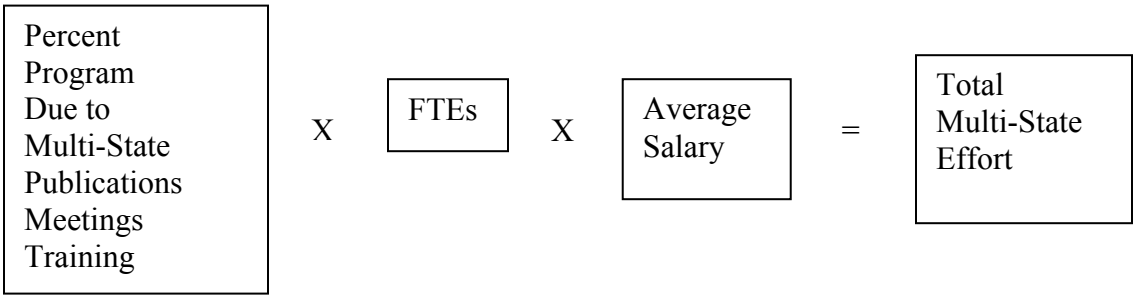
Title of Planned Program/Activity	**Actual Expenditures FY2002**
Farm Production Budgets/Market Economics	169,952
Crop Genetics/Variety Trials/Variety Recommendations	240,024
Insecticide Efficacy/Insecticide Recommendations	278,872
Herbicide Efficacy/Herbicide Recommendations	102,597
Plant Health/Treatment Recommendations	270,841
Food Processing/Packaging/Safety	45,832
Animal Health/Treatment Recommendations	49,911
Soil Testing/Fertility Recommendations	48,321
Animal Waste Management	37,110
Total	1,243,460

_____ _____
William H. Brown, Director 03/01/03

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 program 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.



This calculation indicates the total multi-state effort. The federal expenditure on multi-state programs is the actual amount of federal funds devoted to the faculty delivering the program. A similar logic model and calculation was used for integrated activities.

The reports for multi-state and integrated activities are included in the body of the report. The total multi-state and integrated activity and the federal funds accounted for are listed below.

	Total	Federal Portion Accounted For
Multi-State Activity	8,452,205	1,924,216
Integrated Activity	10,984,568	2,619,594