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FY 2004  
ANNUAL REPORT OF  
ACCOMPLISHMENTS

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CLEMSON UNIVERSITY  
SOUTH CAROLINA STATE UNIVERSITY

CERTIFICATION:

This Annual Report for the Joint Plan of Work for the period October 1, 2003 to September 30, 2004 for Research and Extension in South Carolina is respectfully submitted April 1, 2005 by:

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# TABLE OF CONTENTS

A. PLANNED PROGRAMS.....	4
Goal 1: <b>An agricultural system that is highly competitive in the global economy.</b>	
Key Themes.....	4
Goal 2: <b>A safe and secure food and fiber system.</b>	
Key Themes.....	30
Goal 3: <b>A healthy, well-nourished population.</b>	
Key Themes.....	36
Goal 4: <b>Greater harmony between agriculture and the environment.</b>	
Key Themes.....	47
Goal 5: <b>Enhanced economic opportunity and quality of life for Americans.</b>	
Key Themes.....	68
B. STAKEHOLDER INPUT PROCESS .....	110
C. PROGRAM REVIEW PROCESS.....	112
D. EVALUATION OF THE SUCCESS OF MULTI AND JOINT ACTIVITIES.....	112
E. MULTISTATE EXTENSION ACTIVITIES.....	121
F. INTEGRATED RESEARCH AND EXTENSION ACTIVITIES.....	123

## **A. PLANNED PROGRAMS**

### **National Goals**

#### **GOAL 1 AN AGRICULTURAL SYSTEM THAT IS HIGHLY COMPETITIVE IN THE GLOBAL ENVIRONMENT**

**Key Theme:** Enhancing Competitive Ag Production Systems

The objective of the Sustainable Agriculture Program is to reduce off-farm input and integrate natural processes such as nutrient cycling, nitrogen fixation, and pest-predator relationships into agriculture production processes. Farmers have access to three program initiatives that include: Soil Sampling and Nutrient Management, Integrated Pest Management and the Small Farm Association. The programs focus on management training in the area of small family farm sustainability, risk management education and farm land preservation. The success of the program is dependent upon full participation of farmers and other rural people to ensure a profitable operation. The 1890 Extension Program implemented activities and programs that promote sustainable agriculture practices.

The effects of air pollutants such as carbon monoxide (CO) nitrogen dioxide (NO<sub>2</sub>) and sulfur dioxide (SO<sub>2</sub>) at a concentration of 24ppm (parts per million) each were studied in sealed glass chambers on germination, water absorption and visible injury in ten commonly grown vegetable seed species of South Carolina. The vegetables were collards, black-eyed peas, mustards, tomatoes, pumpkins, spinaches, lima beans, yellow squashes, eggplants and bell peppers. The maximum germination of 94% was observed in collards, black-eye peas and mustards in CO and SO<sub>2</sub> environment. Fifty-five percent germination was the highest in spinach species for NO<sub>2</sub> environment. Nitrogen Dioxide and SO<sub>2</sub> showed noticeable visible injury on seeds by their change in color, but CO showed little or no change in color. The highest water absorption among all experimental seed species was between 330-335% after ten hours of soaking treatment. The collard green seed species showed the highest water absorption at 160% after 6-10 hours of soaking treatments in the CO and NO<sub>2</sub> atmosphere. The research attempts to study the effects of air pollutants on the lipid content of germinating seeds as well. The study of seed lipid is important for the oil that is produced for consumers. Observations received as of yet exhibit that the lipid content is promoted in bell pepper seed species by nitrogen dioxide; in black-eyed peas and mustards by carbon monoxide; in bell peppers by sulfur dioxide and in lima beans and spinaches by the control. Results indicated that the lipid percentage ranged from 0.40 to 33.70% in all seed species.

Polycyclic aromatic hydrocarbons (PAH) – degrading genes will be disrupted by conjugating the Sphingomonas strains with Escherichia coli harbouring the suicide conjugal plasmid, pUTKmluxAB. The ene lesion will be located and identified as caused by mini-Tn5 in Sphingomonas mutants through Southern blot analysis. The transcriptional control of PAH-degrading genes will be assessed by inducing the expression of promoterless luxAB genes

contained within the gene of interest; and, the metabolic activity of bacterial strains will be accessed by developing a probe to track presence of bacteria in situ.

## Program Components

### Sustainable Agricultural Production

#### Animal Production Systems

Integrated Crop Management, Agronomic Crops

Integrated Crop Management, Horticultural Crops

#### Organic Production Systems

Farm Safety

Collard IPM

Peach IPM

Cotton IPM

Landscape and Ornamental Plant Pest Management

Small and Minority Farms

### Risk Management for Agricultural Firms

#### Agricultural Market Risk Assessment

Economic analysis of Enterprises and Technologies

Business Systems and Financial Risk Management

### Agricultural Program Information and Performance

Management System (APIPMS)

## **Key Theme: Enhancing Competitive Ag Production Systems: Animal Production Systems**

- a) The beef cattle production program of the Sustainable Agriculture Production Systems Center at the Edisto Research & Education Center is an extension integrated resource management demonstration program. It is both an educational and an evaluation tool for integrating recommended crop and beef production practices. The Center is a featured stop of the educational programs for annual field days. In-service training of extension agents about commercial application of integrated resource management for sustainable profitability is a major component of this project.

The Sustainable Ag Systems Production Center is designed for environmentally friendly crop and beef production. Sustainable practices on demonstration include conservation tillage, use of crop production by-products such as cottonseed are used as supplemental feed during the winter, and feed from crop rotation crops like corn will be used to winter the cowherd, precondition calves and develop replacement heifers.

Research continues to enhance the scope of animal disease epidemiology, reporting, surveillance, and emergency response preparedness. Animal disease reporting currently has no geospatial satellite coordinates to link disease outbreaks to location or premise. Procedures and practices are being devised to compile animal related data, and use it through ArcGIS 8.1 to speed information access, sharing and allow maximum animal emergency preparedness and response efforts in SC. Rapid use of animal data is critical in order to carry out credible response, minimize damage and speed recovery of agricultural industry and companion animals.

Research has begun to learn more about a specific population of cells in the mammary gland that are likely critical in controlling mammary development. The IRM Beef Production Systems project is evaluating the productivity and profitability of integrating EPD's, breeds, crossbreeding, and breed complementarily with available management, feed, forages, herd health, etc. resources into a total conception to consumer production system for South Carolina's Coastal Plains that maximizes genetic and phenotypic uniformity. Several different aspects of maximizing profitability from low-input or organic dairies are being evaluated.

b) Impacts

The Animal Production Systems Project reported that 311 educational programs and activities were conducted for stakeholders, with 13,110 people participating. Of these, 11,151 said that they increased their knowledge and 8,032 indicated that the plan to adopt recommended practices and/or technologies. 1,104 program participants indicated that they actually have adopted practices or technologies that they learned about during educational programs. Specifically 71 producers indicated that they are currently implementing recommended sustainable grazing management practices. In addition, 33 producers reported improved livestock breeding programs as a result of adopting recommended breeding and reproduction methods, and 118 young people participated in educational activities focused on youth training in sustainable animal production.

Technical Contributions: 30

Patent Disclosures

\* Tissue Composite Teat Sealant for Mastitis Prevention

\* Feed Supplement Delivery System

c. Source of Federal Funds: Smith Lever 3b&c and Hatch

d. Scope of Impact: State and multi-state

## **Key Theme: Enhancing Competitive Ag Production Systems:– Horticultural Crops**

- a. The horticultural production systems project focused on programs and activities related to integrated crop management. The areas of concern were improving profitability and reducing the negative environmental impacts of horticultural cropping systems. Programs related to the adoption of new horticultural production systems were also a major thrust of this project.
- b. Impacts  
The ICM – Horticultural Crops Project reported 169 educational activities conducted, with 5,858 people completing educational programs. 4,744 participants reported increased knowledge, 3,364 indicated that they plan to adopt learned practices, and 233 people said that they have adopted the practices. Horticulture extension personnel reported that recommended Horticulture ICM practices have been adopted on over 285,000 acres in South Carolina, and that over 21,000 acres have been planted to new, alternative and high value horticultural crops.

Highlights of Peach ICM Activities: Long-term peach system trials at the Musser Research Farm demonstrated that substantial improvements in tree growth and yield can be achieved with supplemental irrigation, and that rank tree growth can be controlled by reducing the amount of nitrogen fertilizer applied through drip irrigation. Reduced fertilizer application also minimized canopy shading, improved fruit quality and return bloom, and also reduced dormant pruning costs. Other field trials are underway to compare the use of raised beds, root collar excavation and mycorrhizal root dips to reduce the incidence of Armillaria root rot disease. Laboratory experiments are also underway to genetically engineer a rootstock for peach with a gene that confers resistance to this serious peach disease.

A large-scale peach variety evaluation program provides growers with comprehensive and updated information on variety performance so that they can make informed decisions about the selection of profitable peach varieties for new plantings ([www.clemson.edu/hort/Peach/index.php?p=73](http://www.clemson.edu/hort/Peach/index.php?p=73)). A new regional peach grower handbook has been published with comprehensive information on best management practices for peach ([entomology.ent.uga.edu/Peach/peach\\_handbook/hbk.htm](http://entomology.ent.uga.edu/Peach/peach_handbook/hbk.htm)) with much info relative to ICM.

- Oak root rot disease is the single greatest soil-borne threat to the SC peach industry. Labor and production costs are increasing for peach growers. New systems and cultivars need to be developed to ensure grower profitability. Research to address this problem has three components: 1, to develop strategies to manage oak root rot disease in peach orchards; 2, to compare profitability of various orchard management systems; and 3, to evaluate new germplasm for the SC peach industry.
- Viral diseases of peaches, ornamentals, *Rubus* spp, and cucurbits (cantalopes) are causing significant economic losses in SC. Researchers are characterizing 'novel' viruses isolated from these crops. Data on the incidence of these previously uncharacterized

viruses, and other characterized viruses that infect the crops, will be used to provide virus-tested sources of propagation material, to identify sources of infection, and to evaluate and implement IPM procedures for the control of these viral diseases.

- c. Source of Federal Funds: Smith Lever 3b&c and Hatch
- d. Scope of Impact: State and Regional

**Key Theme: Enhancing Competitive Ag Production Systems: Integrated Crop Management (ICM) – Agronomic Crops**

- a. The agronomic production systems project focused on programs and activities related to integrated crop management. The areas of concern were improving profitability and reducing the negative environmental impacts of agronomic cropping systems. Programs related to the adoption of new agronomic production systems were also a major thrust of this project. In addition, programs dealing with the adoption of alternative methods of nutrient and pest management were conducted.

- b. Impact

The Agronomic Crop ICM Program organized 270 educational programs and activities during 2004, with 9,604 participants attending. Of these, 6,831 reported increased knowledge, 3,585 indicated that they plan to adopt recommended agronomic practices, and 721 said that they actually have adopted agronomic production practices that they learned about during educational events. Agronomic Crop ICM extension personnel reported that 116,427 acres of South Carolina row crops are currently grown using recommended ICM practices, and over 20,000 new acres have been planted in new agronomic crops (i.e., peanut; see success story below).

Success Story: Personnel involved with the Clemson University Agronomic Crops ICM Program have developed and led the implementation of a comprehensive production and marketing plan to expand peanut production in the state. As a direct result, peanut acreage has more than tripled over the past three years. (10,000 in 2002; 19,000 in 2003; 33,000 in 2004). This growth represents an annual increase of over \$ 17 million in crop value alone in some of South Carolina's poorest rural counties. The opening of 5 new buying points in these counties also represents an infrastructure investment of millions of private sector dollars and jobs. The introduction of peanut into cotton and corn rotations also has improved profitability of these non-legume commodities.

- Research is underway to increase the understanding of how to extend asparagus and strawberry production into the holiday season. Research will determine how to produce organic vegetables and herbs and will develop environmentally adapted medicinal plants with high marker compounds for the dietary supplement industry.
- Traditional plant breeding has limitations to crop improvement and the chromosomes of crop plants must be examined to facilitate crop improvement using recombinant DNA techniques. Scientists will develop DNA blueprints (physical frameworks) of the genomes of crop plants that can be used by plant geneticists for crop improvement.



- Work continues to develop the technologies, principles, and concepts of site-specific management of soil compaction, nematodes, weeds, and irrigation in coastal plain soils.
- The soybean cyst nematode is one of the most devastating pests of soybeans. Resistance to many soybean pests has been found in primitive germplasm.
- Genetic engineering will be used to exploit the genome of the primitive germplasm with broad resistance to soybean cyst nematodes to identify how the plant deals swiftly with stress, and to devise more lasting protection against the nematode in modern cultivars.
- Scientists are developing and testing effective integrated weed management strategies that will minimize herbicide usage while ensuring adequate season-long weed control.
- Abiotic and biotic stresses on the soybean plant combine to decrease seed yields and limit grower profits. Research is in progress to enhance understanding of the genetics of resistance to these stress factors and develop soybean germplasm and cultivars having improved seed yield, improved pest resistance traits, and the desired seed composition traits.
- New IPM strategies are being developed to effectively utilize new technologies such as transgenic cottons while solving problems such as insecticide resistance. Beneficial insects, transgenic cotton varieties and new safe insecticides that allow farmers to control pests in profitable production systems will be considered in developing these new strategies.
- Research is underway to accelerate the development and implementation of cost-effective, environmentally safe alternatives to chemical pesticides for insect control.
- A new system has been developed to mechanically remove tobacco flowers without spreading bacterial wilt, a major disease in flue-cured tobacco
- Management systems are being developed using new advances in DNA based pathogen identification, for control of root knot and bacterial wilt of tobacco.
- Scientists are examining the effect of tillage systems on pest management inputs
- Piercing/sucking insects are anticipated to be the major problem in Bollgard II cotton which adequately controls lepidopterous pests. It is thought that aphids may be a potential pest as Bollgard cotton varieties do not control them. Research will define treatment thresholds for piercing/sucking insect pests in Bollgard cotton and if aphids in fact cause economic yield loss in cotton.
- Small grain variety/strain performance is critical to an agricultural enterprise that uses small grains. An unbiased source of small grain variety/strain performance in S.C. is being developed for growers, seedsmen, and Extension personnel.
- Work is underway to learn more about the effective use of natural enemies by understanding their ecology and that of the target pests, their interactions with production practices, and the most effective means for utilizing them.

#### Patent Disclosures

- \* Gossypol Monoclonal Antibody & its Applications
- \* Genes Controlling Winter Dormancy in Woody Perennials

#### Patents:

- \* Intermittent Immersion Bioreactor for Plant Propagation

Technical Contributions: 40

- c. Source of Federal Funds Smith Lever 3b&c and Hatch
- d. Scope of Impact State

**Key Theme: Enhancing Competitive Ag Production Systems: Organic Production Systems**

- a. The organic production project focused on extension and outreach programs focused on organic production, marketing and certification. A highlight of this years educational programs was the South Carolina Organic Grower's School held at Clemson University on September 25 with 90 participants in attendance. In addition, workshops, on-farm demonstrations and field trips were organized for extension agents, farmer-educators and Master Gardeners. Resources were also made available to provide travel scholarships for extension agents, farmer educators, and sustainable agriculture students to take advantage of sustainable/organic agriculture training opportunities in the region.
- b. Impacts: Extension personnel working in Organic Production Systems reported 42 educational programs and activities conducted with 784 participants. Of these, 765 reported increased knowledge of organic production, 564 plan to adopt practices that they learned, and 92 reported that they actually have adopted recommended organic production practices.

Specific educational activities conducted during 2004:

- 90 farmers, home gardeners and extension agents participated in the South Carolina Organic Growers School in September
- 28 extension agents and farmers attended a "Compost Workshop" in March where they received hands-on training in on-farm compost and compost tea production, and in vermin-composting.
- 5 extension agents participated in a 3-day "Precision Agriculture" field trip to Alabama where they viewed precision agriculture equipment and applications to reduce fertilizer and pesticide inputs. With this knowledge the agents are enthusiastic about conducting outreach programs and extending the technology to growers in their counties.
- 3 extension agents and 33 producers participated in a workshop on "Opportunities for Organic Christmas Tree Production".
- 28 Master Gardeners learned about strategies to enhance garden habitat to attract beneficial insects and to reduce reliance on pesticides.
- 3 extension agents and 38 home gardeners learned about organic gardening techniques, with a focus on soil quality and use of organic soil amendments.
- 8 extension agents and 130 landscape managers participated in a workshop on "Sustainable Pest Management for the Landscape" where they learned techniques to implement cultural practices that reduce the need for pesticide applications.
- 22 farmers and one extension agent participated in a poultry processing workshop where they received hands-on experience with processing chickens for direct market sales.

- Travel scholarships were awarded to approximately 40 farmers, agents and sustainable agriculture students to take advantage of education and training opportunities in sustainable agriculture.
  - The Calhoun Field Laboratory Project site at Clemson ([www.clemson.edu/scg/sust/calhounfieldlab\\_main.html](http://www.clemson.edu/scg/sust/calhounfieldlab_main.html)) continues to serve as a resource for teaching and demonstration of sustainable/organic vegetable production practices.
- c. Source of Federal Funds Smith Lever 3b&c and Hatch
- d. Scope of Impact State and Regional

**Key Theme: Integrated Pest Management – (1890)**

**Program Components**

**Integrated Pest Management (IPM)**

The objective of the IPM program is to rid crops of unwanted pests and reduce the use of pesticide and herbicide applications that are harmful to the environment. The purpose of the project is to train farmers how to decrease their off-farm input application through IPM practices, while still achieving their production goals using environmentally safe measures. The majority of the participants learned to identify beneficial insects and their contributions to the environment. The farmers learned how to control harmful insects using biological controls rather than hazardous pesticide sprays and general chemical application. As a result of the training, farmers were able to save on their production input cost.

**Small Farm Associations**

Small Farm Associations are helpful to small producers who normally lack knowledge of USDA agencies and their resources. Farmers meet monthly to promote learning and sharing. The small producers conducted training sessions, farm tours and demonstrations. In addition, the small farmers assisted one another with the operation of their individual enterprises. Overall, the organization promoted cooperativeness among small, limited resource farmers and producers.

**Research 1:**

**Germination Physiology of Vegetable Crop Seeds as Affected by Air Pollutants (SCX-420-22-02)**

To determine the percent germination and visible injury to seeds when exposed to polluted atmospheres by separate treatments of carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>) and sulfur dioxide (SO<sub>2</sub>) gases.

To determine which tissues, e.g. seed coat, embryo or endosperm is affected most in polluted atmosphere.

To measure rate of water absorption and respiration by the seed species exposed to pollutants.

To determine if differences exist in the total amounts of carbohydrates, proteins, lipids, DNA and RNA in the polluted and control environments.

**Higher Education 1:**

The key program components of the B. S. degree in biology and chemistry are the specific courses which make up the degree programs.

**Research 2:****Identifying Genes Involved in Degrading Aromatic Hydrocarbons from Two Novel Sphingomonas Strains (SCX-420-23-04)**

- 1) To construct PAH-degrading mutants of Sphingomonas strains BFP and BPH using a system of random transpositional mutagenesis;
- 2) To identify genes involved in PAH degradation;
- 3) To characterize expression of newly identified genes involved in PAH degradation;
- 4) To determine the viability and activity of wildtype and mutant Sphingomonas strains for in situ bioremediation efforts.

**Output Indicators - IPM**

The 1890 Extension Pest Management project conducted three workshops, two demonstrations, and one training session with farmers and home gardeners in the area of pest management. The workshops focused on insect identification, recognizing the beneficial insects and their predators and estate planning. Demonstrations were conducted on sites where crops were grown for the purpose of hands-on insect and disease control using sustainable practices. A training session was held to encourage sustainable practices that highlight protection of the environment, low input application for commercial crops, soil sampling, and nutrient management. A hands-on demonstration was conducted to support environmental protection and farm land preservation. It is anticipated that 22 farmers and five home gardeners who participated in the workshops, demonstrations, and trainings gained knowledge and increased their skills in pest control and production techniques using sustainable practices.

**Outcome Indicators - IPM**

Eight technical assistance trainings were provided to 16 producers in soil sampling and soil nutrient management. The participants included organic farmers, commercial vegetable producers and home gardeners. Fifty-five percent of the participants reported making progress toward retention of their farms and 72 percent adopted insect scouting and identification of beneficial insects as a management practice.

**Output Indicators - Small Farm Association**

The 1890 Extension agriculture program collaborated with the Center for Cooperation in the SCSU School of Business to assist farmers in Greenwood, Saluda, Edgefield, McCormick and Abbeville counties to organize small farm associations. The purpose of the small farm association is to increase the knowledge of small farmers; to enhance their agricultural resources and information; and to increase their farm leadership skills. Ten monthly meetings were held during the year. The meetings included scheduled farm tours, trainings and demonstrations. Small farmers provided leadership for the association. The association officers are also members of other local agricultural groups and the 1890 Extension Program Statewide Advisory Council.

### **Outcome Indicators -Small Farm Association**

The SCSU Center for Cooperation assisted 60 farmers from Greenwood, Saluda, Edgefield, McCormick and Abbeville counties to organize a farm association charter under the Piedmont Farmers Association. The purpose of the Small Farm Association is to enhance the farmers' network and increase their bargaining power. The 16 farmers that participated in small farm association meetings gained knowledge and increased their skills in utilizing USDA programs and resources. The farmers also improved their knowledge of other farm enterprises and increased their spirit of cooperativeness among each other. Because of the organization, the farmers planned and conducted two programs, six tours and two field demonstrations. They have also begun a statewide networking process with other 1890 Extension farmers and producers.

### **Output Indicators 1890 Research 1: (Germination Physiology of Vegetable Crop Seeds as Affected by Air)**

Four (4) paper presentations were prepared for conferences and meetings.

**Higher Education 1:** Eight undergraduate student assistants majoring in biology and chemistry.

### **Research 2: (Identifying Genes Involved in Degrading Aromatic Hydrocarbons from Two Novel Sphingomonas Strains)**

To date, no presentations, publications or trainings have been attended/conducted.

**Higher Education 2:** There is one undergraduate student majoring in biological sciences

### **Outcome Indicators 1890 Research 2: (Germination Physiology of Vegetable Crop Seeds as Affected by Air)**

A final research performance report will be published at the end of the project period.

### **Research 2: (Identifying Genes Involved in Degrading Aromatic Hydrocarbons from Two Novel Sphingomonas Strains)**

A final research performance report will be published at the end of the project period.

### **Internal and External Linkages**

While working to retain small, limited-resource farmers and assist farmers in increasing their productivity, the 1890 Extension Program keeps farmers abreast of resources available from other agencies. The program also provided farmers with Integrated Pest Management training and assisted with the development of Small Farm Associations. The Agriculture and Natural Resources program collaborated with Natural Resources and Conservation Service, USDA Rural Development, Farm Service Agency, Clemson University, North Carolina State University and North Carolina A&T State University. Other partners were a non-profit organization, a

foundation, and agribusiness firm. The 1890 Extension Agriculture Program collaborated with the health department and social service agencies to address health issues and encourage fresh fruit and vegetable consumption.

**RES1: (Germination Physiology of Vegetable Crop Seeds as Affected by Air Pollutants)**

This project involves internal linkages with 1890 Extension and the Department of Physical Science to promote student practical training and opportunities to develop papers and make presentations. An external linkage is established with the United States Department of Agriculture Liason Officer housed at South Carolina State University.

**RES2: (Identifying Genes Involved in Degrading Aromatic Hydrocarbons from Two Novel Sphingomonas Strains)**

Internally, linkages have been established with 1890 Research and Extension and the Biological Sciences Department at South Carolina State University. Externally, no collaborations have been established. The research project recently began its investigation.

**Target Audiences**

**RES1: (Germination Physiology of Vegetable Crop Seeds as Affected by Air Pollutants)**

Farmers

**RES2: (Identifying Genes Involved in Degrading Aromatic Hydrocarbons from Two Novel Sphingomonas Strains)**

Farmers

**Program Duration**

**RES1: (Germination Physiology of Vegetable Crop Seeds as Affected by Air Pollutants)**

Short Term: Expiration Date – October 1, 2002 - September 30, 2005

**RES2: (Identifying Genes Involved in Degrading Aromatic Hydrocarbons from Two Novel Sphingomonas Strains)**

Short Term: Expiration Date – May 16, 2004 – May 15, 2007

**Impact**

**Small Farm Association**

Ninety-two small, part-time, limited resource farmers are enrolled in five small farm associations. The participating farmers are from Greenwood, Saluda, Edgefield, McCormick, Hampton, Allendale, Jasper, Beaufort and Colleton counties. The associations allow farmers to purchase bulk farm supplies and share knowledge and experiences during a collaborative environment. By working together, the farmers have improved their small farm leadership skills, created a cooperative spirit and improved the overall management of their farms. Through

participation in the Small Farm Associations, 60 percent of the farmers increased the number of highly marketable animals that they produced; and 75 percent of the farmers improved their cash flow. In addition, 90 percent of the farmers have improved the quality of their herd and 50 percent improved their pasture production.

## **Scope of Impact: State**

### **Hampton Cluster Small Farm Leadership**

Bennie L. Manuel is a natural born leader in every sense of the word. He came through the ranks of small farm leadership to serve as president of the Hampton, Allendale, and Jasper Counties Young Farmers Association and the 1890 Extension Program's statewide Agriculture Advisory Committee. Manuel is well-known and respected by small farmers across the state.

Manuel became a client in 1984 and has since guided a number of small farm participants towards success. His leadership skills were sharpened with his participation in the 1890 Extension Agriculture programs. He was managing a small beef cattle herd on 20 acres of land when he became involved in the Beef Cattle Improvement Project. Receiving a pure bred bull and two bred heifers through the Heifer International Program, he began improving the blood line of his herd. Today his herd size has doubled and his animals are of high quality. He has stated that he is making more money off of cows now than he has ever made.

Manuel also participated in the 1890 Meat Goat Project. Excited over the new enterprise, he wanted to help everyone get started. During the weekend he traveled from farm to farm offering technical assistance and physical labor. He became a leader for both beef cattle and meat goat programs.

The Hampton, Allendale, and Jasper Counties Young Farmers Association is representative of a diverse group of farmers from the South Carolina low country counties. Extension agents from both South Carolina State University and Clemson University and a vocational agriculture teacher from a local high school served as advisors to the group. The group is farmer led and promotes small farm leadership. USDA representatives frequently visit the group to keep them abreast of USDA programs, eligibility requirements and available resources. Association members plan events that include farm tours, farm demonstrations, training sessions on specific enterprises, meetings and community activities. Under the direction of Manuel, group membership and influence in the community has grown.

The 1890 Extension Program encourages and promotes the development of small farm associations and small farm leadership. The groups learned about resources and services available through USDA agencies, learn to use them and provide assistance to others. The activities expanded 1890 Extension's efforts.

### **Hampton County Farmers' Market**

Alphonso Tyler has grown and sold fresh vegetables in Jasper County for the past 20 years. Many Jasper county residents know him for his fresh grown produce.

In 2003, Tyler was involved in the Integrated Pest Management, food handling and safety, and food voucher certification. One training, "How to display vegetables at local farmers markets," inspired Tyler the most. He took the training seriously and became very creative in produce display. He said that he gained important information from the training and it increased his sales and profit.

Tyler has expanded his marketing service area and sells high quality produce at the newly

organized Hampton and Jasper Counties Farmers' Market.

### **Impact**

#### **RES1: (Germination Physiology of Vegetable Crop Seeds as Affected by Air Pollutants)**

The impact of this project is far-reaching. The farmers are not able to determine the loss in seeds and seedlings of vegetable species unless research of this magnitude can reveal such a loss. Pollutants such as NO<sub>2</sub> and SO<sub>2</sub> damaged the seeds more drastically during germination compared to CO. About twenty students have been exposed to the research techniques with pollutants since the project had started. Three students presented papers and posters at professional meetings such as 1890 Biennial ARD Symposium, Annual SCAMP meetings, etc. The economy in farming maybe enhanced by the results of the current research by controlling loss in seeds and seedlings as effected by air pollutants.

Every now and then we face the pollution in the atmosphere through toxic chemical leaks through collisions made by transporting tankers as it currently happened in Aiken, South Carolina. It is well known that chemical leak in Bhopal, India killed thousands of people and polluted the atmosphere. The current research may lead to investigate the effects of other chemicals that are polluting the atmosphere. It will be of interest to observe if the other toxic chemicals such as fluorine in the atmosphere has similar effects on vegetation as observed in our current research.

**Scope of the Impact:** Small –scale minority farmers

#### **RES2: (Identifying Genes Involved in Degrading Aromatic Hydrocarbons from Two Novel Sphingomonas Strains)**

Polycyclic aromatic hydrocarbons (PAHs) are environmental pollutants that are a worldwide problem. The PAH phenanthrene consists of three fused benzene rings and is a contaminant located on the EPA's list of priority pollutants. The project focuses on the identification and characterization of PAH-degrading genes in two new strains of Sphingomonas. Determining how the genes function and regulate is imperative to the process of effectively applying the bacteria for land restoration.

**Scope of the Impact:** Statewide farmers

### **Success Story**

#### **RES1: (Germination Physiology of Vegetable Crop Seeds as Affected by Air Pollutants)**

Eight students registered in a Senior Research course at South Carolina State University where the training was offered by the current investigation. The students performed extremely well in Power Point presentations at professional meetings. Students presented papers at the Annual meetings of the SC Academy of Sciences. The scientific techniques used in the research demonstrated to the science teachers of South Carolina at the Annual Meetings of South Carolina Science Conference to be adopted in the Applied Courses. Approximately thirty students have been exposed to the research techniques with pollutants, since the project had started. Three students presented papers and posters in professional meetings such as 1890 Biennial ARD



Symposium, Annual SCAMP meetings, etc. The techniques to which the students were exposed assisted them in the admission to professional schools and seeking research-oriented employment. Also, carbon monoxide appeared to have less drastic effects as compared to NO<sub>2</sub> and SO<sub>2</sub>.

### **Allocated Resources**

#### **RES1: (Germination Physiology of Vegetable Crop Seeds as Affected by Air Pollutants)**

Evans-Allen (\$79,009)

State Appropriations (\$52,679)

#### **RES2: (Identifying Genes Involved in Degrading Aromatic Hydrocarbons from Two Novel Sphingomonas Strains)**

Evans-Allen (\$59,593)

State Appropriations (\$39,728)

### **Key Theme: Enhancing Competitive Ag Production Systems - Farm Safety (1862)**

- a. The farm safety project focused on programs and activities designed to reduce on-farm injuries and fatalities. The major areas of concern were safer tractor and equipment operation.
- b. Impact:  
Forty-eight activities/programs were reported to this project with 1,172 people completing both formal and non-formal educational programs. Of these 306 people reported increased knowledge and 164 planned to adopt recommended practices. An additional 64 individuals received information through “non-program” contacts. Of these contacts, 368 were youth.
- c. Source of Federal Funds: Smith Lever 3b&c
- d. Scope of Impact: State

### **Key Theme: Retention of Small/Minority Farms (1890)**

Small, limited resource, and socially disadvantaged farmers in South Carolina have experienced serious economic decline with their farm enterprises. The small scale producers typically earn less than \$10,000 annually. The South Carolina Census data indicates a decline in income for small farmers between 1992 and 1997.

According to the South Carolina 2000 Census data, the number of small and limited resource farmers dropped dramatically in 1997 versus the number of small farmers in 1992. Between 1992 and 1997, there was a decrease in the number of small and limited resource farmers. The number of small, limited resource farmers with an annual farm income less than \$2,500 decreased by 29 percent; farmers with an annual income between \$2,500-\$9,900 decreased by 27 percent; and the number of farms earning more than \$10,000 per year decreased by 19 percent.

There has been a dramatic decline in the number of small farmers, minority farmers and minority landowners. According to the 1997 Census of Agriculture, South Carolina has approximately 1,488 African-American operated farms compared to the 20,000 African-American operated farms in 1964. In 1992, there were 1,819 African-American owned farms. However, during the five-year period between 1991-1997, the number of owned farms declined by 331 farms. The depressing state of the economy contributed to the decline. More than 90 percent of small farm operators are part-time farmers with full-time off-farm jobs. The majority of the small farms lack adequate income to successfully operate their farms; basic skills and knowledge to produce alternative crops; and the ability to successfully market their produce.

The decline of socially disadvantaged minority farmers can be attributed to various social, economic, and political conditions within the current agricultural environment. Changes in agricultural policies, farm regulations, and agricultural technology have made it difficult for the traditional farmer to find a niche and remain competitive. Today's small farm operators are faced with low market prices, high interest rates, high production costs, and a lack of market outlets. In addition, the economy scale of large farmers has made it difficult for the small farmer to compete for market share. Changes in the economy, new technology, biotechnology, urban sprawl, globalization, tax structure, environmental policy, and the weather cycle, all add to the complexity and the risk factors affecting small, limited resource farmers.

The risk factors associated with farming has made small farmers more vulnerable, and many of them lack the capital and resources to assure their financial security. Despite their diversity, small farmers are more defenseless and less empowered than any other social group. Small farmers are taught risk management education and sustainable agriculture practices through participation in the Agriculture and Natural Resources Program. The knowledge and practices received are tools to assist small farmers to diversify, network, and implement farming techniques to retain their farm land.

The objective of the 1890 Extension Agriculture and Natural Resources program is to reverse the trend of economic decline of small, minority farmers and assist them with the retention of their land. The 1890 Extension Agriculture and Natural Resources Program provided educational workshops, training, and farm tours to farmers in the area of production, marketing, community leadership, cooperative development, risk management, and enterprise management. Small disadvantaged farmers participating in the Beef Cattle Improvement Project, the Meat Goat Project, and Commercial Vegetable and Home Gardening Project learned to manage their farm enterprise successfully. Through the provided services and activities, producers were able to reduce farm operation cost and enhance access to agriculture programs. Farmers were allowed to increase their contributions to the local economy.

In 1890 Research, a representative farm model developed at the South Carolina State University's School of Business was used to evaluate the impacts of NAFTA and other international trade policy on local farmers in South Carolina. The State of South Carolina was divided into three distinct geographical areas: Piedmont, Northern Coastal Plains, and Southern Coastal Plains. To build the model, farms were divided, in each region, by size into: large, medium and small farms based on planted acreage of the four major South Carolina crops: cotton, soybeans, wheat and corn, according to the USDA (1997). The findings suggested that large and medium size farms were expected to perform well under NAFTA based on both the forecasted optimistic and economic pessimistic scenarios. The conditions were incorporate in the model using national average price forecasted by the Food and Agricultural Policy Research Institute of Missouri (FAPRI). The results for the average representative small farm model

clearly suggested that the average small farms were negatively affected by free trade under both optimistic and/or pessimistic scenarios. For example, the average net small representative farm income is expected to decrease from a level of \$9,384.00 in 1999 to a level of \$7,256.00 in 2009, which is a decrease of nearly 23% in 10 years under the most optimistic scenario. While land prices for the average small farm exhibits a slight increase over the 10- year period under optimistic conditions, the ending land prices are lower than beginning prices under the pessimistic scenario. Cash rent behavior is similar to the land price behavior. Debt asset ratios edge up higher than their relative beginning levels under the most optimistic scenario. The overall findings predict the average small farms are at competing disadvantage in the globalization.

### **Output Indicators (Beef Cattle Improvement Project)**

The 1890 Extension Beef Cattle Improvement Project provided educational training activities in Hampton, Greenwood, Marlboro, Orangeburg, and Williamsburg counties. The outreach efforts assisted 206 small-scale, limited resource families and beef cattle producers. The training topics were beef cattle production, herd quality, forage selection, pasture management, record-keeping, herd health, marketing, land loss prevention, and risk management education. A total of 127 or 61 percent of the farmers attended 38 workshops, trainings, meetings, tours, and demonstrations. The following subjects were discussed: record-keeping, herd health practices, basic veterinary skills, soil sampling, and soil nutrient management. Twelve participating farmers had an opportunity to attend the Southern Sustainable Agriculture Working Group (SSAWG) Conference in Florida and a conference highlighting farm credit and farm loans sponsored by the South Carolina State Department of Agriculture. Eighteen revised copies of educational materials were produced for utilization by limited resource farmers. The Beef Cattle Improvement Project collaborated with Natural Resources Conservation Service, Farm Service Agency, Rural Development, Clemson University, North Carolina A&T State University, and Vigortone Ag Products.

The Beef Cattle Improvement Project has an ongoing partnership with Heifer International to assist small farmers to improve the quality of their existing herd. The joint efforts of the Beef Cattle Improvement Project and Heifer International afforded small farmers a chance to network and pass on high quality animals. Over the duration of the program, 135 farmers realized an improved breed of heifers. Also, 20 high quality performance bulls were placed on limited resource family farms to support the control breeding concept. Out of the 206 enrolled farmers, 79 farm families were actively engaged in project activities. Sixty-six families have received 79 pass-on heifers and two bulls. Beef Cattle Improvement Project participants were 87 percent African-American, eight percent Caucasian, and five percent other. 1890 Extension agents made a total of 290 farm visits to 22 counties during the fiscal year October 1, 2003 - September 30, 2004.

### **Outcome Indicators**

The beef cattle production workshops such as herd quality, forage and pasture management, land loss prevention, herd health practices, basic veterinary skills demonstrations, record-keeping, and risk management education training have provided small, limited resource farm owners with quality information and decision making skills. Sixty-two percent of the 127 farmers that participated in the beef cattle project educational activities said they gained knowledge as a result of attending the workshops, meetings and/or training sessions. Eighty

percent of the farmers adopted the recommended practices to improve their production management, marketing, and farm enterprise management skills through the risk management education training. Seventy percent are making progress toward retention of their small farm; 60 percent adopted educational information and integrated it into their farming operation; and 22 percent reported an increase in their farm income. Sixty percent of the farmers are producing a calf annually per cow and 40 percent have medium production, averaging a calf every 13 to 18 months.

### **Output Indicators (Meat Goat Project)**

The 1890 Extension Meat Goat Project conducted 48 technical assistance trainings for 49 small-scale, limited resource meat goat producers in the area of production, herd quality veterinary skills, marketing, and risk management education. A total of 17 participants or 35 percent of the farmers have participated in one-on-one technical assistance training activities. The activities included herd selection, off-spring management, nutrition, and forage management. Agents conducted 18 workshops on enterprise management, marketing strategies, niche marketing, and risk management education. Six hands-on demonstrations focused on animal handling and herd selection. The farmers attended farm tours where they learned various livestock practices, obtained information on farming techniques, and financial resources during USDA sponsored conferences. Ten educational handouts were revised and distributed for utilization by the meat goat producers. The Meat Goat Project engaged in collaborations with Natural Resources Conservation Services, Farm Service Agency, Rural Development, South Carolina Agriculture Department, Clemson University, Fort Valley State University, Florida A&M University, North Carolina A&T State University, Tuskegee University, and Southern University and A&M College to provide producers enterprise management training. The project also worked with non-profit organizations and foundations such as the Penn Center, Heifer International and agribusiness firms, which donated products and services to assist farmers in improving their farm management.

The racial composition of the farmers participating with the 1890 Extension Meat Goat Project was 80 percent African-American, 15 percent Caucasian, and five percent Native-American. A total of 92 farm visits were made during the 2003- 2004 fiscal year.

### **Outcome Indicators (Meat Goat Project)**

The Meat Goat Project partnered with 1890 land-grant institutions in the Initiative for Future Agriculture Food System. Tuskegee University is the lead partner for the USDA sponsored grant project. Through the project, participating farmers attended 18 workshops, six farm demonstrations and hands-on trainings, and 48 technical assistance trainings. The educational activities translated into 65 percent of the participants adopting knowledge transfer. Fifty-six percent of the participants adopted the recommended practices, 80 percent made progress toward retention of their small farm, 48 percent adopted information and integrated it into their farming operation, 25 percent increased their knowledge, and 14 percent reported an increase in their farm income.

### **Output Indicator (Commercial Vegetable and Home Gardening Project)**

The 1890 Extension Program promoted Commercial Vegetable Production and Marketing activities for the benefit of 42 small-scale producers and large home gardeners. Forty-two farmers received training in select commodity mixes, nutrient management, improved vegetable

varieties, post harvest handling, food safety, nutritional value and marketing strategies. To enhance small farmer access to additional income avenues, 48 vegetable producers participated in the farmers' market certification training and safe food handling activities. With the marketing certification, farmers are eligible to accept food vouchers. Eighteen producers participated in a tour to observe select commodity mixes and nutrient management. Twenty-seven producers attended an on-site demonstration to highlight displaying of vegetables in a market setting. Twelve technical assistance projects were held to demonstrate soil sampling and eight handouts were prepared as educational material for limited resource producers. Four USDA and state government agencies collaborated with 1890 Extension to promote vegetable production and the farmers' market program.

### **Outcome Indicators (Commercial Vegetable Production and Marketing)**

Commercial vegetable producers and home gardeners participated in demonstration trainings, tours, and production meetings. Forty-eight producers attended trainings, 18 participated in farm tours, 27 participated in demonstrations and 12 were assisted with technical assistance projects.

Two farmers markets were established to serve as marketing outlets for 33 small vegetable producers. The markets are located in Hampton and Jasper counties. Vendors were trained to accept food vouchers from the Department of Health and Environmental Control (DHEC), Department of Social Services (DSS) and the South Carolina Department of Agriculture. Farmers participating with the farmers' market said they realized an increase in income as a result of accepting food vouchers. Also, three food demonstrations were held at the Hampton County Farmers' Market to introduce healthy eating to residents.

DHEC made three educational presentations on health issues, specifically on cardio-vascular disease and other sources of nutritious foods. 1890 Extension distributed handouts on food safety and handling.

### **Output Indicators: (Comparative Study on the Impacts on NAFTA on South Carolina and the Southeast Region)**

**RES 1:** The NAFTA research project report one publication accepted for presentation at an Annual Conference in Las Vegas

**HE1:** Students were able to write term papers, theses and technical papers in fulfillment of their course requirements for graduation.

### **Beef Cattle Improvement Project**

The 1890 Extension Beef Cattle Improvement Project is designed to provide the small-scale, limited-resource farmers hands-on trainings that demonstrate herd health practices such as vaccinating animals and deworming. Farmers improved their niche marketing, direct and group marketing in order to obtain higher prices for their herd. The skills enhanced small farm enterprise management, decision-making, and low-production cost concepts. In order to accomplish the strategies, the Beef Cattle Improvement Project in collaboration with Heifer International, provided a select group of farmers access to a pure bred bull. Through the Beef

Cattle Improvement Project, farmers have access to training that can increase their herd management skills and enable them to make more informed business decisions.

### **Meat Goat Project**

#### **Initiative for Future Agriculture Food System (IFAFS) -\$20,000 grant**

The 1890 Extension Meat Goat Project is designed to assist small, limited resource farmers to utilize agriculture and natural resources to develop an alternative livestock enterprise compatible with their farm size and farming systems. The project concentrates on production management and marketing strategies, rural community leadership, and efficiencies for small-scale farmers. The Meat Goat Project partnered with 1890 land-grant institutions in the Initiative for Future Agriculture Food System (IFAFS) to establish two demonstration farms that will serve as model farms for meat goat producers as specified in the IFAFS agreement. The IFAFS project provided animals and training to support the establishment of model farms at the Penn Center in Beaufort County and on the farm of Bennie Manuel in Allendale County. The farms received 25 nannies each (female goats) and the Meat Goat Project has two bucks available for use by the farmers. IFAFS agreed to assist with the meat processing and promote marketing of the meat.

In addition to the IFAFS project, the Meat Goat Project collaborated with Heifer International to provide qualified farmers five nannies and one buck. In return, the farmers donated seven does and one buck to the project. Using the pass-on the gift process, farmers have an opportunity to enhance their farm cash flow, enterprise diversity and production practices.

### **Commercial Vegetable and Home Gardening Project**

The Commercial Vegetable and Home Gardening Project is designed to provide additional income to farmers by offsetting the collapse in the price of products and the higher cost of production in the traditional row crop farm enterprise. Farmers from Allendale, Beaufort, Colleton, Hampton, and Williamsburg counties attended the marketing products display training at North Carolina A&T State University. The training provided farmers strategies to improve their marketing skills. Also, the South Carolina Department of Agriculture provided promotional techniques for marketing fresh fruits and vegetables. The project also collaborated with the South Carolina Farmers Market Nutrition Program, which conducted certification training so that farmers could accept food vouchers. As a result of the project, rural farmers and gardeners with small acreage can grow and sell fresh vegetables, make a profit and provide food for local residents. Interested farmers gain assistance with production strategies, product selection, marketing outlets, risk management education, sustainability, and community agriculture. Participating farmers demonstrated a knowledge increase and improved their production practices. The creation of the local farmers market has provided the home gardener a marketing outlet and a place for the community to purchase fresh fruits and vegetables, as well as a source of better nutrition value.

In Research, the US import demand of Mexican vegetables and fruits was estimated for melons, tomatoes, cabbage, frozen vegetables, beans, peas, berries and strawberries. The removal of all tariff barriers from among NAFTA countries increased NAFTA countries' trade to an estimated tone of about \$11.9 million from commodity groups studied. The estimated trade expansion would occur differently across industries. Some industries would experience trade increases and others would experience trade contraction, notwithstanding the trade area's overall

trade increase. Mexico is a developing country with less advanced technologies, but it has a large internal market. Thus, the documented price and income elasticity estimates suggest that the US will benefit the most from initial trade increases attributable to NAFTA, while Mexico will benefit the least. This outcome is also consistent with the fact that US tariffs against Mexican products were already low compared to Mexican tariffs on US products.

As the results suggest, some industries in each country will experience expansion. Others will experience contraction or limited expansion when there are more imports from one NAFTA country than domestic substitutes that are demanded domestically. The income and/or import price elasticity of individual industries suggest directional impacts of NAFTA that each examined industry should expect. For instance, among the commodities analyzed, the removal of tariff barriers will have greater effects on US imports of melons, berries and tomatoes from Mexico than other examined imports from the other countries. NAFTA effects will be greatest on the melons from Mexico. Furthermore, it has been documented that NAFTA elicits more trade creation than trade diversion.

**HE1:** A total of two (2) MS graduate assistants from the School of Agribusiness and Economics during the reporting period.

### **External and Internal Linkages**

While working to retain small, limited-resource farmers and to assist farmers increase productivity, the 1890 Extension Program is keeping farmers abreast of resources available from other agencies. To assist farmers with beef cattle, meat goat and vegetable production, collaborations were established with Natural Resources and Conservation Service, USDA Rural Development, Farm Service Agency, South Carolina Cattleman's Associations, Forestry Commission, Clemson University, North Carolina State University, North Carolina A&T University, Fort Valley State University, Florida A&M University and Tuskegee University. The programs also worked with non-profit organizations, foundations, and agribusiness firms to advance farmer knowledge and access to resources. The 1890 Extension Agriculture Program collaborated with the local health department and social services to encourage healthy eating, food preparation, and fresh fruit and vegetable consumption.

### **RES1:**

The project involved internal linkages with the Department of Agribusiness and Economics, faculty development, curriculum development in international trade, graduate student practical training and outreach and opportunities to promote thesis development at the graduate level. The external linkages with the South Carolina Department of Agriculture, in the area of the impacts of NAFTA on South Carolina food products and specialty crops and support endorsed through collaboration with state agricultural departmental personnel in the areas of marketing and promotion and export.

### **Target Audiences**

**RES1:** Farmers

### **Program Duration**

**RES1:** Project expired December 2003

## **Impact**

The majority of the farmers who participated with the Beef Cattle Improvement Project reported an increase in their farm income following the implementation of low-cost production practices learned from the workshops, hands-on training they received. Select farmers have reported an improvement in their production and management. Some farmers have integrated meat goat production with beef cattle production.

## **Scope of Impact: State**

### **Impact**

#### **RES1:**

The results suggest that the average large and medium size farmers of wheat, soybeans, corn, and cotton in South Carolina are expected to benefit from international trade agreements. However, the findings reveal that the average small size farmers of the same crops are adversely affected by the agreements even under the most optimistic economic scenario.

The results showed among the commodities analyzed, the removal of tariff barriers may have greater effects on US imports of melons, berries and tomatoes from Mexico than other examined vegetables and fruits imported from Mexico. NAFTA effects will be greatest on the melons from Mexico. Furthermore, it was documented that NAFTA elicited more trade creation than trade diversion.

Gravity models were used to determine economic and non-economic factors enhancing or resisting trade in vegetables and fruits. The study demonstrated the gravity model can be effectively parameterized to identify determinants of specific commodity trade. The results revealed that state farm income, importer income as well as import prices were significant determinants of vegetable trade from the southeast region.

It was found that trade creation effects were larger than trade diversion effects. Furthermore, in general, the significant positive trade creation effects of NAFTA, APEC are greater than the EU trade creation effects. The Pacific Rim region is found to be a significant destination for many vegetables and fruits from US states. The impact is expected to increase under full effect of complete removal of all barriers to trade following the various region economic integrations.

## **Scope of Impact: South Carolina, North Carolina and Georgia**

### **Success story**

#### **Land preservation**

Charles McDuffie is heir to a family owned farm that has been out of production for more than 15 years. Considering the number of deceased family members, the age of the remaining family members, and the lack of interest by younger members who either move away or totally abandon the farm, McDuffie feared that the family farm would eventually be lost.

McDuffie, who moved north some years ago to find gainful employment, has since retired. He recently returned home to reclaim the family farm. He soon realized the monumental task which he had before him. With limited resources and very little knowledge of farm operations and management, he was referred to the 1890 Extension agent in Marlboro County for assistance. After reviewing his land resources, equipment and labor, the Extension Agent recommended that a small scale beef cattle operation was an option.



McDuffie obtained assistance from the small farm program, which included attending educational training workshops and receiving technical assistance in the area of livestock. He gained knowledge of USDA programs, especially the National Resources Conservation Service. With assistance from the Extension Agent, McDuffie managed to get the farm operational within a year.

Through workshops and demonstrations, he learned how to put up fencing, cross fencing and how to renovate pasture land. Based on the hands-on activities, he gained the skills to select breeding stock and herd management practices he could implement on the farm.

After enrolling in the SCSU Beef Cattle Improvement Project, he attended training sessions on livestock management practices and became eligible for placement of animals through Heifer International. Heifer International is a non-profit organization that donates high quality animals to limited resource livestock producers. McDuffie received two Senepal heifers and access to a pure bred Angus bull. The animals helped to improve the bloodline of his existing herd.

With assistance from 1890 Extension, McDuffie has managed to get the farm land back into production, thereby preserving the family farm and starting a gainful enterprise.

## **Success Story**

### **Transformation Life Center**

The Transformation Life Center in Anderson County provides services to recovering alcoholics and drug abusers 20 to 50 years of age. Their facility is housed on a 100-acre farm where daily activities include productive work sessions. The one-year program includes a six months confinement at the facility and six months of off-farm public work for wages.

The Extension Agent in Anderson County coordinates a gardening program for the Transformation Life Center. Clients are taught gardening techniques and production methods. The vegetables grown are consumed at the facility.

Four years ago the project began with a small temporary greenhouse and a quarter acre garden. Today, two 50' by 20' permanent greenhouses are located on the site including a one-acre garden. During the past growing season, the project produced a large number of transplants, enough to support the life center operations and sell the remainder to local stores. Surplus mature vegetables from the farm were sold at the Anderson County Farmers' Market, providing additional income for participating gardening clients.

The project has been so successful over the past four years, that the center plans to double the resident capacity, add a third green house, and increase the gardening area from one to three acres. The gardening program sponsored by 1890 Extension will continue to provide services for incoming clients desiring vegetable production training. Clients leave the program with an income producing skill, perhaps for life. Income gained from vegetable sales assisted to offset the cost of building additional facilities.

### **RES1:**

A gravity model of international trade was used to evaluate bilateral trade flows of commodity between pairs of states and countries. The study demonstrated that the gravity models can be effectively parameterized to identify the determinants of single commodity trade flows and perform comparative static of the effects of various factors affecting the single commodity trade flows.

The model was applied to trade between US states and world countries using ten vegetable

commodities and a period ranging from 1996 to 2002. The traditional gravity model as modified, showed that the included factors affecting trade flows have expected signs and are consistent in most cases with results from aggregate trade flow models.

In general, the significant positive trade creation effects of NAFTA, APEC that is greater than the EU trade creation effects were found. The Pacific Rim region was found to be a significant source of destination for many vegetables and fruits from the US states. The gravity models revealed that South Carolina is seen as an insignificant source of vegetable trade, while the SER as a region is found to be a significant origin of selected vegetable trade with the rest of the world.

Traditional gravity factors such as state farm income, importer purchasing power are significant determinants of trade flows in most vegetables. Vegetables and fruits are essentially staple commodities. Thus, the results show that increases in population in receiving countries lead to increased imports, while increase in population in sending states lead to decreased commodity exports. Comparable data of various types of export promotion programs and import restriction policies are not readily available for all countries. Their effects on vegetable exports provide a fruitful agenda for future research.

### **Allocated Resources**

Evans-Allen (\$30,026)

State Appropriations (\$20,017)

### **Key Theme - Enhancing Competitive Ag Production Systems - (Risk Management)**

- a. Response to educational demands in the area of risk management from South Carolina agribusinesses were to be through: 1) provision of current situation, outlook and management strategy information to the industry; 2) provision of increased training for front-line agents and state specialists; 3) provision of educational programs on market risk management tools available for use by primary producers and agribusinesses; and 4) development, distribution and training on microcomputer-based market risk management decision aids.

- b. Impact --

Situation, outlook and management strategy information was developed for SC Agricultural industry. Developed and delivered market management information through the SC Agricultural Outlook Conference (SC Agricultural Expo) February 2004. Materials were provided to County Agriculture Agents for county or cluster commodity programs in the region.

Training for county agents and state specialists: An in-service training for agricultural agents on market risk management techniques and the 2002 Farm Act was incorporated in the Southern Extension Outlook Conference in Atlanta in September 2004. Agents were exposed to advancements in market risk management including developed software for decision analysis developed for firms facing agricultural market risk educational programs on risk management tools and products available for use by primary producers

and agribusinesses: Six multi-state workshops were offered on tactical market risk management procedures with a focus on the current agricultural environment.

Educational programs on risk management tools and products available for use by primary producers and agribusiness: A regional (TN, NC, SC, GA, and FL), in-depth training on beef cattle market risk management was developed and offered to agricultural producers, lenders and other agribusinesses under the auspices of the Southeastern Beef Cattle Marketing School.

Development and distribution of market risk management decision aids and data access: Spreadsheet-based software that reviews the existing marketing alternatives and calculates the potential performance of the strategies under varying market scenarios was improved and further developed. Further, a module on the probability of ex-ante price change derived from current market conditions was incorporated along with portfolio.

A total of 51 programs and activities were conducted in the area of risk management with 1,412 participants. Of those participants, 1,178 indicated an increase in knowledge and 352 adopted or increased the use of recommended practices.

- c. Source of Federal Funds – Smith Lever 3b&c
- d. Scope of Impact – State

### **Key Theme – Enhancing Competitive Ag Production Systems - (Economic Analysis of Enterprises and Technologies)**

- a. Production decisions are no longer based mainly on government commodity program guidelines. Rather they are based on comparative profit potential of feasible alternative enterprises. Additionally, new production technologies are being introduced at a rapid rate. There is increased demand to evaluate new technologies. Extension faculty will be called upon to educate farm managers and others on financial risks – this begins with knowledge of basic enterprise budgeting. From this knowledge base, agribusinesses will be in an improved position to make better production decisions. This, in turn should increase long-term profitability and sustainability.
- b. Impact --  
Provision of current enterprise analysis information to SC Ag Industry: Approximately 100 enterprise budgets were developed and distributed including on the World Wide Web departmental site. These materials were provided to County Ag Agents for county or cluster commodity programs. Training for county agents and state specialists: training for agricultural agents on enterprise analysis decision aids and techniques was held. Agents were exposed to advancements in enterprise budgeting tools including developed budgets for decision analysis for firms facing agricultural risk. Educational programs on risk management tools and products available for use by primary producers and

agribusinesses: County or Cluster workshops were offered on enterprise analysis procedures and issues. Computer-based breakeven spreadsheets were developed and distributed.

A total of 31 programs and activities were conducted which dealt with the area of economic analysis of enterprises and technologies with 469 participants. Of those participants, 295 indicated an increase in knowledge and/or adopted or increased the use of recommended practices.

c. Source of Federal Funds – Smith Lever 3b&c

d. Scope of Impact – State

### **Key Theme – Enhancing Competitive Ag Production Systems - (Business and Financial Management Systems)**

a. The farm business environment demands greater entrepreneurial leadership abilities of farm businessmen. The change in government programs, rapid change in technology, trends toward larger and more sophisticated farm businesses has made it critical that farm managers learn how to develop a successful management system for their farm. It is also critical for Extension to develop these “management/ leadership/entrepreneurial” programs if we are to continue to be viewed by commercial farmers as an effective educational and informational provider. Extension has historically and is currently putting the huge majority of its resources into production-oriented programs. Farmers have found that high production does not guarantee a successful business and continually express their need for management and marketing programs

b. Impact --

Executive Farmer Program - This program focuses on how to develop a systematic approach to problem solving and strategic planning. The end product is an Action Business Plan developed with the use of the farm firm’s own financial information. The emphasis is on analyzing the business records; setting business goals and developing an action plan that participants can take home and implement. Two workshops were conducted in FY 03-04.

A total of 13 programs and activities were conducted which dealt with the area of business and financial management systems with 277 participants. Of those participants, 180 indicated an increase in knowledge. Eighty-eight persons reported that they either adopted or planned to use of recommended practices.

SC farmers historically make little use of crop revenue coverage (CRC) insurance relative to farmers in other states. Research is underway to determine why CRC insurance is little used in SC.

c. Source of Federal Funds – Smith Lever 3b&c

d. Scope of Impact – State

**Key Theme: Expanding Innovative Agricultural Industries**

Turfgrass  
Nutraceuticals

a. Turfgrass and Nutraceuticals

Diseases of bentgrass and ultradwarf bermudagrass greens and overseedings limit success culture for putting green use in the southeastern United States. Research will focus on determining the identification and best management of diseases of importance with the objective of limiting their damage to acceptable levels.

Research will establish invitro cultures of various medicinal plants, investigate their active ingredients and conduct preliminary bioassays to assess biological activity of medicinal plant products or extracts.

Recent interest in plant antioxidants in human health has stimulated the interest in functional phytochemicals of food crops and increased awareness of importance of fresh produce in daily diet. If functional properties can be enhanced, profitability for the producer and health benefits for the consumer can be enhanced.

Research will identify harvesting and postharvest handling protocols and optimize the active principle content of medicinal plants that may be utilized as botanical dietary supplements or as functional foods. Such information is essential for the development of standards and regulations for the industry.

b. Impacts:

New turfgrass cultivars are being released with limited research on their suitability and best management strategies for central and coastal South Carolina. Researchers will investigate the suitability of new turfgrass cultivars and develop environmentally sensitive management practices for central and coastal South Carolina.

c. Source of Federal Funds – Hatch

d. Scope of Impact – State

**GOAL 2: A SAFE AND SECURE FOOD AND FIBER SYSTEM**

**Key Theme: Food Safety**

Foodborne illness is recognized as a significant health problem in the United States. While the food supply in the United States is one of the safest in the world, the Centers for Disease Control

estimates that 76 million people get sick, more than 300,000 are hospitalized, and 5,000 Americans die each year from foodborne illnesses. Most cases of foodborne illness can be prevented. Proper cooking or processing of food destroys bacteria. In terms of medical costs and productivity losses, foodborne illnesses cost the nation between \$7 billion and \$37 billion, according to estimates from the U.S. Department of Agriculture's Food Safety Inspection Service. Knowledge of safe food handling is needed to help families stay healthy. The best prevention is understanding the safeguards necessary to remain free from foodborne illness.

Sanitation is the process of handling food in ways that are clean and healthy. Using basic sanitation practices when handling food can help prevent bacteria from entering food, which leads to contamination. Food quality and safety involves purchasing, preparing, and storing food using procedures that prevent the spread of bacteria and reduce the risk of foodborne illness. Sanitation and safety are two important aspects of food and nutrition. Foodborne illnesses are a major health and wellness problem. Safe food storage practices prevent foodborne illnesses, reduce food waste, and saves time and money. Control is the key to food safety. Food safety in the home involves three main functions: food handling, food storage, and food preparation.

- a. Counties have made great progress in reaching food service employees with ServSafe employee training. This is a 6- or 10-hour training on how to safely handle food in a food service operation. In addition, media continues to be an important way to reach consumers with food safety and nutrition information. Counties have a wide variety of media opportunities including radio spots, development of press packets on specific nutrition subjects, new articles, and TV programs.

Nanotechnology will be used to develop rapid and simple biosensors to detect the presence of intentional and ubiquitous toxic agents in food and water. Additionally, active films will be developed to reduce the risk from these toxic agents by using natural materials. Researchers are seeking out new antimicrobials that can be used to control harmful microbes in foods and to look for DNA sequences that can be used to construct genetic transfer systems for gene delivery.

Marination, irradiation and packaging systems will be examined for enhancing the safety and shelf life of raw and further processed poultry products.

- b. Impact --

A total of 451 food handlers participated in a 10-hour certification course in food handling and passed an exam to receive a certificate. An additional 513 people were reached with food safety information by volunteers who participated in an Extension training program. Counties report that while teaching ServSafe \$2,320 was generated in program support. Counties conducted 80 food safety education programs reaching 957 people. Of this number, 787 reported an increase in knowledge and 611 adopted a recommended practice.

Counties reported the distribution of 415 press kits, with 14,046 column inches appearing in the printed media, 628 minutes of television air time, and 1,799 minutes of radio air time in the areas of food safety and nutrition.

Counties conducted 61 food handling educational programs reaching 509 people. Of this number, 349 reported an increase in knowledge and 279 adopted or planned to adopt a recommended practice. There were 165 new or value-added food products or packages entering the market as a result of the program.

Food Safety can be enhanced by presenting information on the transmission of bacteria from surfaces to food consumers as safe food handling is supported by applied research results. These results from research will be useful in assessing the contribution of ceftiofur treatment of food animals to the acquisition and dissemination of ceftriaxone-resistant Salmonella, and the impact of antibiotic use on the microbiological safety of food.

Patent Disclosures:

Detection of Small Molecular Chemicals Using Nanoparticle-based  
Radioim  
Liquid Pipette Extraction

Technical Contributions: 10

c. Source of Federal Funds - Smith Lever 3b&c and Hatch

d. Scope of Impact – State and Regional

**Key Theme: Food Safety (1890)**

1890 Extension is addressing food safety issues by providing food safety workshops to clients in Bamberg, Calhoun, Marlboro, Hampton, and Orangeburg counties. The 1890 Extension Food Stamp Program has worked for the past 30 years to end hunger and improve the health of low-income families by helping them buy nutritious food. The Families First-Nutrition Education and Wellness Systems (FF: NEWS) is a nutrition education intervention program to help food stamp recipients and low-income individuals (based on the poverty guidelines provided by the Federal government) improve their health. The intervention encourages recognition and adoption of practices recommended by the United States Dietary Guidelines for Americans and the Food Guide Pyramid to foster a healthy diet, while improving the participants overall quality of life. Participants are learning how to improve safe food handling practices when preparing and storing food in the home and enhancing their thrifty food shopping skills in preparing healthy low cost meals. The Families First: Nutrition Education and Wellness Systems (FF: NEWS) curriculum was developed by a multi-state collaboration involving Texas, Oklahoma, Arkansas, and Louisiana.

## **1890 Research 1: Genetic Evaluation of Insect Responses to Integrated Pest Management Techniques Phase II**

The goal of the project was to identify and characterize short chromosomal regions that contribute to variation in the production and perception of male pheromones in the fruitfly, *Drosophila melanogaster*. In this species, as in other Dipterans, cuticular hydrocarbons act as pheromones. The study allowed an assessment of the complexity of the genetic system regulating the characters in flies and indicate the likely strength of evolution to resistance to integrated pest management (IPM) techniques that involve pheromones. The crosses designed to isolate segments of the X and 3rd chromosomes have been completed and these stocks have been analyzed. One segment of the X chromosome, a short region located between *forked* bristles (56.7) and *carnation* eyes (62.5) contains at least one gene that affects pheromone production. Another segment of the 3rd chromosome, between *hairy* wings (26.5) and *scarlet* eyes (44.0) also affects pheromone regulation. Both of the genes increased by about two-fold the amount of one of the two major cuticular pheromone components of males, but have no effect on the other. The genes in the chromosomal segments interact, so the combined effect is greater than would be expected from the sum of the two segments.

### **Output Indicators**

- One hundred clients participated in 24 workshops and educational programs about food safety, using the FF-NEWS curriculum at the Orangeburg and Calhoun County Council on Aging sites. Eighty percent were African-American and 20 percent were Caucasian. Seventy-two percent surveyed were female while 28 were percent males.
- In the Marlboro Cluster, 75 clients participated in eight food safety workshops presented by one full-time employee. The FF: NEWS curriculum was utilized to teach meal planning, safe food handling, and recipe revisions. The workshops were conducted at Mt. Tabor Baptist Church. Eighty percent of the participants were African-American, while 20 percent of the participants were Native American. Of the participants, 73 percent were females and 27 percent males.
- The mission of the Hampton County Farmers' Market is to provide fresh, wholesome foods to encourage proper eating habits and reduce the incidence of cardiovascular disease. The farmers market serves as an outlet for residents to purchase fresh, locally grown produce. By providing access to fresh produce, the market is encouraging healthier lifestyles. In collaboration with the South Carolina Department of Health and Environmental Control (DHEC), the South Carolina Area Health Education Consortium (AHEC), and the market vendors, a food demonstration and food safety and handling presentation was held at the farmers' market. A total of 45 clients participated in the event. Ninety-one percent were females and nine percent were males. Eighty-seven percent were African-American and 13 percent were Caucasian.
- Seventeen clients participated in a workshop about food safety, using the FF-NEWS curriculum at the Orangeburg Consolidated School District Five Positive Opportunities for Parents Conference. One hundred percent of the participants were African-American females.



### **Outcome Indicators**

- Eighty-six percent of participants increased their knowledge of basic sanitation and food safety preparation techniques. One hundred percent of the participants surveyed stated that they would use information that was taught in their daily lives.
- Sixty-seven percent of the participants stated that they learned new information about food safety. Eighty-three percent of the participants said that they understood the importance of hand washing.
- The participants gained knowledge on how to prepare salads using fresh fruits and vegetables, as well as, how to stir-fry vegetables. The food demonstrations are designed to promote healthy eating and good nutrition.
- Every participant stated that they learned new information about food safety. Seventy-six percent of participants said that they would use the information that was taught to promote safe handling of food and prevent the spread of foodborne illness.

### **Key 1890 Research Program Components**

#### **RES1: “Mapping and Isolating Genes in *Drosophila Melanogaster* to Regulate Cuticular Hydrocarbons: Phase II” (SCX-420-18-04)**

- 1) Genomic segments from Tai-Y X and 3<sup>rd</sup> chromosomes have already been introgressed into a Canton-S background. The work will be extended by constructing a series of introgression lines that cover the 2<sup>nd</sup> chromosome. A total of at least 6 different introgression lines will be constructed and each tested to determine the general location of loci controlling pheromone production.
- 2) The genetic analysis of pheromone production by males will be expanded to include, where possible, recombination and deletion mapping of autosomal loci and recombination mapping of loci on the X.
- 3) Females from all introgression lines will be tested to determine the extent to which they discriminate between Canton-S and Tai-Y females and, thus, identify chromosomal regions that affect pheromone perception.
- 4) To conduct DNA microarray analysis of males to identify specific DNA sequences associated with variation in pheromone production. If specific chromosomal intervals can be identified that affect female perception of the pheromones, the microarray analysis will be broadened to include females. Polymerase Chain Reaction (PCR) amplification and sequencing of sequences identified by microarray analysis will be used to confirm differences between lines.

### **Output Indicators**

#### **RES1: Mapping and Isolating Genes in *Drosophila Melanogaster* to Regulate Cuticular Hydrocarbons: Phase II**

There have been no publications or presentations made during the present reporting period.

**HE1:** The project had two B.S. students in biology and one M.S. biology graduate assistant.

### **Outcome Indicators**

#### **RES1: Mapping and Isolating Genes in *Drosophila Melanogaster* to Regulate Cuticular Hydrocarbons: Phase II**

The researcher will prepare a final research performance report and provide programmatic recommendations for development in Extension Outreach Activity for farmers statewide.

### **Internal/External Linkages**

There have been several partnerships developed to assist in providing programs to adults and seniors in Orangeburg, Calhoun, Hampton and Marlboro counties. Collaborations were established with Orangeburg County Council on Aging, Calhoun County Council on Aging, Orangeburg Consolidated School District Five Positive Opportunities for Parents program, Mt. Tabor Baptist Church, Hampton County Farmers' Market, South Carolina Department of Health and Environmental Control (DHEC), and South Carolina Area Health Education Consortium (AHEC). The partners offered citizens access to food safety education and awareness through workshops and hands-on trainings. As a result, citizens were more informed and can practice food safety techniques.

RES1: The project involves internal linkage with the Department of Biological Sciences.

### **Target Audiences**

EXT1: Adults (55 and over)  
Adults (ages 18 - 54)

RES1: Farmers

### **Program Duration**

RES1: Short Term: Expiration Date – May 15, 2008

### **Allocated Resources**

RES1: Evans-Allen - \$37,306  
State Appropriations - \$24,871

### **Impact**

Senior citizens are living longer and healthier lives. Factors that contribute to their longevity include eating healthier foods, getting regular exercise and reducing stress. Based on a needs assessment, senior citizens have articulated their concerns about issues such as nutrition, health, and safety. They want to maintain their independence; they do not want to become a burden to family and friends, so good health and well-being is essential to their lives.

Participants expressed an increased knowledge of food safety. Participants stated that they were not aware of the harmful bacteria that resulted from improper food handling practices. Many seniors stated that they were not aware of the two-hour rule for cooked foods before preparation and after preparation. Most participants stated that they left their food on the stove for hours. Participants stated that the information about cross contamination would be helpful while shopping for groceries. They said that they would ask for their raw meats to be kept separate from their other grocery items. Some participants also said that they did not know that placing hot foods in the refrigerator would not spoil other foods in the refrigerator.

**Scope of Impact:** State

### **Impact**

#### **RES1: “Mapping and Isolating Genes in *Drosophila Melanogaster* to Regulate Cuticular Hydrocarbons: Phase II” (SCX-420-18-04)**

Pheromone production in fruitfly males is complex, but single genes have significant effects. Should appropriate genetic variation exist in a natural population, pheromones could evolve rapidly. Whether evolution to resistance of IPM occurred would depend on the sensitivity of females to pheromone variation. Our behavioral assays indicate that pheromone perception by females is not particularly sensitive in this species, so evolution of resistance to IPM in pest species might be avoided by periodically varying the pheromones used for IPM.

### **Success Story**

Proper food handling techniques can reduce the occurrence of cross contamination. Two food demonstrations were conducted at the Hampton County Farmers’ Market. Radio and newspaper advertisements were used to publicize the event. The demonstrations included the importance of washing fruits and vegetables before use. A vegetable stir-fry recipe was prepared for the participants. The participants also sampled a salad made with lettuce, tomatoes, cucumbers, radishes, carrots, green peppers and celery. Student interns from the Medical University of South Carolina and South Carolina State University volunteered to assist with the event.

## **GOAL 3: A HEALTHY, WELL NURISHED POPULATION**

### **Key Theme: Nutrition and Health**

#### Program Components

Food and Nutrition Education  
Nutrition, Education, Diet and Health

- a. The nutrition education programs focused on the topic of preventing chronic disease through eating according to the Food Guide Pyramid and Dietary Guidelines for Americans. A variety of methods were used including day camp, demonstration contest, workshop, health fair, school enrichment, food demonstrations, exhibits and media.
  
- b. Impact -  
*EFNEP* Nutrition Educator Assistants (NEAs) conducted 4,222 educational programs in nutrition and health reaching 15,991 adults; 12,890 of these reported gaining knowledge, 6,773 planned to adopt a recommended practice, and 3,537 reported adopting a recommended practice. There were 1,461 hours of volunteer time contributed to *EFNEP*.

During FY 04, when the adult participants entered the program, only 11 percent reported diets that contained foods from all five food groups. This percentage increased to almost 35 percent by the time participants graduated from the program. A positive change in at least one food group was noted in 90 percent of participants graduating from the program. *EFNEP* participants also show behavior changes that translate into significant improvements in daily living skills.

Results from a survey taken at the beginning and at the end of the program show that 93 percent of participants showed improvement in one or more nutrition practices (i.e., planning meals, making healthy food choices, preparing meals without adding salt, reading nutrition labels, or having children eat breakfast); 93 percent of participants showed improvement in one or more food resource management practices (i.e., planning meals, comparing prices, using grocery lists, or not running out of food); and 75 percent of participants showed improvement in one or more food safety practices (i.e., thawing and storing foods properly). When participants first enrolled in the program, only 3 percent followed the acceptable practices for all indicators. At the end of the program 36 percent had achieved the goal.

NEAs and Agents with Food Stamp Nutrition Education (FSNE) responsibilities conducted 2,550 programs in nutrition and health reaching 24,941 adults. As a result of these programs, 18,300 participants reported an increase in knowledge, 8,810 planned to adopt a recommended practice, and 3,341 reported adopting a recommended practice. As well as those completing the program, 1,190 persons were reported as non-program contacts (phone calls, office visits, farm visits, etc.). There were 1,110 hours of volunteer time contributed to FSNE adults.

During FY 04, when the adult participants entered the program, only 24 percent reported diets that contained foods from all five food groups. This percentage increased to almost 41 percent by the time participants graduated from the program. A positive change in at least one food group was noted in 95 percent of participants graduating from the program. FSNE participants also show behavior changes that translate into significant improvements in daily living skills.

Results from a survey taken at the beginning and at the end of the program show that 92 percent of participants showed improvement in one or more nutrition practices (i.e., planning meals, making healthy food choices, preparing meals without adding salt, reading nutrition labels, or having children eat breakfast); 90 percent of participants showed improvement in one or more food resource management practices (i.e., planning meals, comparing prices, using grocery lists, or not running out of food); and 72 percent of participants showed improvement in one or more food safety practices (i.e., thawing and storing foods properly). When participants first enrolled in the program, only 3 percent followed the acceptable practices for all indicators. At the end of the program 36 percent had achieved the goal.

Impacts for Food and Nutrition Education for Youth include:

EFNEP Nutrition Educator Assistants (NEAs) conducted 2,084 educational programs in nutrition and health reaching 28,559 children and youth. There were 2,756 hours of volunteer time contributed to 4H EFNEP.

NEAs and Agents with Food Stamp Nutrition Education (FSNE) responsibilities conducted 379 educational programs in nutrition and health reaching 4,377 4-H age children and youth. There were 404 hours of volunteer time contributed to educational programs for the FSNE children and youth. NEAs and Agents with Food Stamp Nutrition Education (FSNE) responsibilities conducted 352 educational programs in nutrition reaching 9,036 preschool children. There were 775 hours of volunteer time contributed to educational programs for preschool children in FSNE.

c. Source of Federal Funds - Smith Lever 3b&c

d. Scope of Impact – State

### **Key Theme: Nutrition and Health - Nutrition, Education, Diet and Health**

Good nutrition is important not only because it promotes a feeling of well-being, but also because it has an important role in disease prevention. According to Vanderbilt Medical Center, five of the 10 leading causes of death in the United States (coronary heart disease, atherosclerosis, stroke, diabetes, and approximately one-third of all cancers) are diseases in which diet plays a part. In addition, the prolonged illness and disability associated with many chronic diseases decreases the quality of life for millions of Americans. Much of the chronic disease burden is preventable. People who avoid behaviors that increase their risk for chronic diseases can expect to live healthier and longer lives. The Food Guide Pyramid is a simple tool to help people plan varied meals. The best diet is one, which includes a variety of foods. A healthful diet is limited in fat, saturated fat, and cholesterol. Adults should keep their weight as close as possible to the weight that is recommended for their heights. The way you eat has a lot to do with how healthy you are and how healthy you remain. There is abundant evidence to show that an optimal level of nutrition can extend the lifespan and improve the quality of life. Good eating habits throughout life can help to promote physical and

mental well-being. For older people, eating right can help to minimize the symptoms of age-related changes that, for some, can cause discomfort or inconvenience.

Obesity is caused by a complex and interrelated set of individual and community factors. According to the Centers for Disease Control, following dramatic increase in overweight and obesity among US adults between 1976-1980 and 1999-2000, obesity has reached epidemic proportions. Today nearly 59 million adults are obese. Moreover, the epidemic is not limited to adults. The percentage of young people who are overweight has more than doubled in the last 20 years. Of children and adolescents aged 6-19 years, about nine million are considered overweight. The estimated annual cost of obesity and overweight in the United States in 2000 was about \$117 billion for illnesses that are directly related to obesity such as high blood pressure, heart disease and diabetes. Promoting regular physical activity and healthy eating habits are essential to reducing obesity.

The Center for Disease Control and Prevention reports that a large gap remains between recommended dietary patterns and what Americans actually eat. Only about one-fourth of U.S. adults eat the recommended five or more servings of fruits and vegetables each day. In addition, in the last 30 years, caloric intake has increased for both men and women. Poor eating habits are often established during childhood. Only about 21 percent of young people eat the recommended five or more servings of fruits and

Good nutrition should be part of an overall healthy lifestyle, which also includes regular physical activity and stress management. People who practice good nutrition, hygiene and exercise patterns develop a lifetime of habits that will keep them healthy for many years. Research has shown that eating healthier reduces stress, prevents malnutrition and can correct some health problems. Regular physical activity provides short-term benefits and reduces long-term risks for disability and premature death.

## **Performance Goal**

### **Food Stamp Nutrition Education Program (FF-NEWS)**

#### **FF-NEWS (Families First-Nutrition Education and Wellness Systems)**

The Families First – Nutrition Education and Wellness Systems (FF: NEWS) is a nutrition education intervention program that is designed to help food stamp recipients and low-income individuals (based on the poverty guidelines provided by the Federal government) improve their health. The FF: NEWS curriculum is the cornerstone of nutrition education programs for 1890 land-grant institutions. Participants are taught to plan, select, and prepare meals consistent with their cultural traditions and family resources, while improving their overall health and that of their family members. The program modules include topics such as health, food quality, food safety, food preparation, resource management, and budgeting. The information contained in the curriculum is based on recent results of scientific and educational research, observation, and clinical trials. The curriculum was developed by a multi-state collaboration involving Texas, Oklahoma, Arkansas, and Louisiana.

### **Output Indicators**

Obesity is on the rise in young children. Food and nutrition education programs were provided by two full-time employees to 273 Head Start clients who participated in workshops in Orangeburg, Calhoun, Allendale, and Bamberg counties, using the FF: NEWS curriculum. Twenty-two workshops were held and 2,073 educational handouts were distributed to clients. Sixty-one percent of the participants surveyed were females and 39 percent males. Of the total participants, 256 were African-American, nine Caucasian and eight Hispanic. The primary sites of intervention included the Orangeburg-Calhoun-Bamberg-Allendale Head Start sites in Allendale, Bamberg, Bowman, Elloree, Holly Hill, Santee, and St. Matthews. The target audience consisted of children 3-5 years of age.

### **Outcome Indicators**

The data analysis from Orangeburg, Calhoun, Allendale, and Bamberg counties using the FF: NEWS program showed that 100 percent of the participants were able to identify the Food Guide Pyramid, 74 percent of the participants were able to identify all of the food groups; and 57 percent were able to place foods in the correct food group.

### **Output Indicators**

Lifestyle changes can be promoted through education and training to reduce hypertension, high blood sugar levels, high cholesterol, and obesity. In Orangeburg County, 27 clients participated in three workshops presented by one full-time employee using the FF: NEWS curriculum. The program was conducted with clients at Orangeburg Area Mental Health. The FF: NEWS program allowed the clients to learn information about eating healthier foods. The importance of purchasing and preparing food was also discussed. Attending the workshops were 23 African-Americans and four Caucasians. Seventy-four percent surveyed were females and 26 percent were males.

### **Outcome Indicators**

An analysis of the evaluations determined that 100 percent of the participants surveyed were able to identify the Food Guide Pyramid. The clients developed a poster to display an understanding of the Food Guide Pyramid and identified foods that were represented in each food group.

### **Output Indicators**

As a part of the compliance standards for education in South Carolina, teachers are required to incorporate life application activities such as health, safety, and nutrition that enhance the learning process into their lesson plan. In Dorchester County, 60 clients participated in eight workshops presented by one full-time employee at Woodland High School. The workshops addressed issues such as infant feeding and prenatal health. The target audience consisted of youth ages 14-17. Of the total participants, 78 percent were African-American and 22 percent Caucasian. Eighty-four percent surveyed were females and 16 percent males.

### **Outcome Indicators**

Seventy percent of the participants surveyed understood the importance of food preparation for infant feeding. Sixty-three percent of the participants understood the need for folic acid during pregnancy to prevent birth defects.

### **Output Indicators**

In South Carolina, teachers are required to incorporate life application activities such as health, safety, and nutrition that enhance the learning process into their lesson plan in order to meet state education standards. In Orangeburg County 55 clients participated in nine workshops presented by one full-time employee at William J. Clark Middle School. The workshops included food demonstrations with low-fat dips. Students learned how to purchase low cost items. The target audience consisted of youth ages 11-13. Of the total participants, 47 were African American, seven Caucasian and one Other.

### **Outcome Indicators**

Seventy-one percent of the participants stated that they understood the benefit of unit pricing and wholesale food purchasing. Fifty-eight percent of the participants said that they would eat healthier. One hundred percent of the participants stated that they learned new information.

### **Output Indicators**

Healthy eating habits must begin in the early stages of life. In Orangeburg County, 38 clients participated in a workshop presented by one full-time employee at the Orangeburg Consolidated School District Four Parenting and Literacy Center. The workshop discussed the introduction of new foods into children's diet and offering healthy snacks to children. Fifty-five percent of the participants surveyed were African-American and 45 percent Caucasian. One hundred percent of the participants were female.

### **Outcome Indicators**

One hundred percent of the participants stated that they learned new information. Ninety-three percent of the participants said that they would use the information that was taught about making snacks.

### **Output Indicators**

A multi-generational workshop entitled, "Cooking in the Kitchen with Grand Maw and Grand Paw," was conducted to teach cooking skills and discuss family recipes. Twelve clients participated in a workshop presented by one full-time employee at the Santee Literacy Center using the FF-NEWS curriculum in Orangeburg County. Ninety-two percent surveyed were females and eight percent males. All participants were African-American.

### **Outcome Indicators**

Eighty-three percent of the participants said that they learned new information. Seventy-five percent of the participants said that they would use the information that was taught about cooking.



### **Output Indicators**

Students enrolled in the Bowman Elementary After School Program and the Children of Today Club participated in the Kitchen Science Program presented by two full-time employees. The structure, content, and design of the lessons were intended to promote scientific thinking among youth while promoting healthy lifestyle choices. Lessons were entitled, “The Powerful Pyramid,” “The Power of Plants,” and “Fat Detectives.” There were 15 females and 10 males enrolled in the program from the Children of Today Club and 14 students enrolled from the Bowman Elementary After School Program. All of the participants were African-American.

### **Outcome Indicators**

The 39 participants from the Kitchen Science Program increased their scientific knowledge about nutrition and adopted healthy nutrition choices. One hundred percent of the participants stated that they learned new information.

### **Output Indicators**

Exercise decreases the risk of most of the health concerns that threaten people with excess body fat. Regular exercise has psychological benefits as well, it helps to reduce stress, and strengthen willpower. Staff members of the Literacy Center in Bowman, SC discussed the need for exercise classes in Bowman to assist residents with improving their health. An exercise center does not exist in Bowman and many of the residents are incapable of traveling to exercise classes outside of the community. Two aerobics classes were conducted by one full-time employee for faculty, staff, and students of the Literacy Center at Bowman Elementary School and members of the community. A total of sixteen clients participated in the classes. Seventy-five percent of the participants were female and 25 percent males. All of the participants were African-American.

### **Outcome Indicators**

Participants stated that they wanted additional classes. They also said that they wanted to learn other exercise techniques such as breathing and stretching.

### **Output Indicators**

In the Marlboro Cluster, eight food, nutrition, and health workshops were presented by two full-time employees. The workshops included food demonstrations and the use of chicken broth as a seasoning for vegetables. The workshops were held once a month at Mt. Tabor Baptist Church with an average of 75 participants. The FF: NEWS curriculum was utilized during the workshops. A total of 619 clients participated from the Clio, McColl, Bennettsville, and Tatum communities. Ninety-three percent of the participants were African-American, six percent were Native American, and one percent were Caucasian. Sixty-two percent of the participants were females and thirty-eight percent were males. Two African-American male and two African-American female volunteers from the church assisted with the program.

### **Outcome Indicators**

Eighty-five percent of the participants surveyed showed an increase in their knowledge about food preparation.

### **Output Indicators**

Two community nutrition and health olympic field days were held in the Malboro Cluster with members of the Berea Association and the Malboro County Council on Aging. The Berea Association includes Pleasant Hill Baptist Church, New Hope Baptist Church, Minturn Grove Baptist Church, Pee Dee Baptist Church, Cedar Fall Baptist Church, Sandy Grove Baptist Church, Ebenezer Baptist Church, Mt. Pleasant Baptist Church, Mt. Tabor Baptist Church, New St. Mark-Dillon Baptist Church, and St. Matthew Baptist Church. A total of 118 clients participated in the annual Health and Nutrition Olympic Day. Ninety-seven percent of the participants were African-American, two percent Native American and one percent were Caucasian. Ninety-one percent of the participants were female and nine percent were males.

### **Outcome Indicators**

The eleven community churches from the Berea Association and the participants from the Malboro County Council on Aging received educational handouts. Marlboro County participants received a total of 455 handouts and Dillon County participants received 155 handouts.

### **Output Indicators**

In the Hampton Cluster, twenty-two workshops were conducted in collaboration with the Allendale Department of Health and Environmental Control with clients from the Women, Infant and Children (WIC) classes. The participants learned about nutrients, meal planning and the Food Guide Pyramid. A total of 278 clients participated in the workshops. Seventy-five percent of the participants were African-American, 23 percent Caucasian and two percent Hispanic. One hundred percent of the participants were female.

### **Outcome Indicators**

An analysis of evaluations determined that 90 percent of the participants knew the importance of eating healthy meals. Seventy-four percent of the participants stated that they are reading food labels before purchasing products. Sixty-three percent of the participants said that they use the Food Guide Pyramid for meal planning.

### **Impact**

A healthy lifestyle will assist with the physical and psychological demands of daily living. Utilizing the FF: NEWS curriculum, the 1890 Extension Program provided workshops and educational handouts to over 1000 participants across the state of South Carolina. The workshops addressed issues such as meal planning and preparation, safe food handling practices and the importance of physical activity. Participants were taught the three main principles of weight management: food selection, exercise, and behavioral changes.

Grandparents shared their knowledge of cooking with youth during a multigenerational project at the Santee Literacy Center. Youth learned the details of family style meal service. Youth also learned how to set the table and basic safety rules to practice in the kitchen. The workshop was an excellent opportunity for people of different generations to share ideas.

Clients from a mental health institution also learned skills to assist them with achieving their goal to live independent lives. The mental health counselor stated that the workshop taught clients and their families alternatives to junk foods. The counselor said that clients will be able to use the information that was taught to assist with daily activities such as meal preparation

and ingredients for healthy snacks. The 1890 Extension Program provided additional programs and workshops to support all clients in their efforts to lead healthier lives.

### **Internal/External Linkages**

Memorandums of Understanding have been established between the 1890 Research and Extension, Division of Family Life and Orangeburg-Calhoun-Bamberg-Allendale Head Start Program, Orangeburg Area Mental Health, Woodland High School, William J. Clark Middle School, Orangeburg Consolidated School District Four Parenting and Literacy Center, Santee Literacy Center, Bowman Elementary After School Program, Allendale Department of Health and Environmental Control, Malboro County Council on Aging, the Berea Association and Mt. Tabor Baptist Church.

### **Target Audience**

Youth (3-5)

Youth (12-17)

Adults (18-54)

Adults (55 and over)

### **Scope of Impact: State**

### **Success Story**

#### **Community Nutrition and Health Day**

Living in a rural community provides few pleasurable outlets for residents. The community does not provide activities for the family. Offering the nutrition education program has provided an opportunity for residents to engage in discussions with their community members and learn new information about nutrition. The audience consisted of participants 35 to 80 years of age. Approximately 80 percent of the community members enthusiastically attended all of the sessions. The nutrition education program introduced fun and competitive activities to the community and fostered a sense of togetherness. The participants stated that they had fun with the activities and would like to do outdoor activities every month. The participants acknowledged that learning about foods and its' components was fun and the lessons have helped them make wise choices when selecting and preparing food. They also learned how to use one vegetable or meat in several different recipes. They stated that coming to the program gave them constructive evening activities and that they looked forward to coming each month.

### **Key Program Components**

#### **FF-NEWS (Families First-Nutrition Education and Wellness Systems)**

The Families First – Nutrition Education and Wellness Systems (FF: NEWS) is a nutrition education intervention program to help food stamp recipients and low-income individuals (based on the poverty guidelines provided by the Federal government) improve their health. The FF: NEWS curriculum is the cornerstone of nutrition education programs for 1890 land-grant institutions. Participants are taught to plan, select, and prepare meals consistent with their cultural traditions and family resources, while improving their overall health and that of their family members. The program modules include topics such as health, food quality, food safety, food preparation, resource management, and budgeting. The

information contained in the curriculum was based on recent results of scientific and educational research, observation, and clinical trials. The curriculum was developed by a multi-state collaboration involving Texas, Oklahoma, Arkansas, and Louisiana.

### **Project EXPORT (Excellence in Partnership for Community Outreach, Research, and Training)**

A health and economic crisis facing African Americans in South Carolina is being addressed by a joint project with South Carolina State University in Orangeburg and the Medical University of South Carolina in Charleston. The schools have launched a multipronged attack on metabolic syndrome, a cluster of conditions that include obesity, elevated blood pressure and lipid abnormalities. Individuals with metabolic syndrome are at risk for diabetes, heart disease, stroke, kidney failure and some cancers. The metabolic syndrome is growing in epidemic proportions nationally and particularly in South Carolina's African-American communities. Funded by the National Center on Minority Health and Health Disparities, Project EXPORT at South Carolina State University was awarded 2.2 million dollars over a five year period.

### **Kitchen Science**

Kitchen Science is a curriculum used to support activities combining food science and nutrition for youth ages eleven through thirteen that are enrolled in the Children Youth and Families at Risk (CYFAR) program. Activities in the Kitchen Science Club, have been developed into a 15 lesson curriculum with topics such as: Dairy Delights, The Powerful Pyramid, The Power of Plants, Bacteria Beware, Eggstravaganza, Pickling to Pasteurization and Fat Detectives. The intent of the lessons is to introduce nutrition, food safety and food science concepts in an exciting, hands-on manner. The structure, content and design of the lessons are intended to promote scientific thinking among youth, while promoting healthy lifestyle choices. The curriculum is a Maryland Cooperative Extension publication that has been used with a variety of diverse youth audiences in both formal and informal settings.

### **Community Nutrition**

The goal of community nutrition is to educate the community on the growth, development, and the health advantages of eating fresh vegetables. The project has enabled families to work together to make wise food choices. The project has brought the community together by sharing the responsibilities of garden care and vegetable preparation. The project will continue throughout the duration of the five-year plan of work.

### **Key Theme: Human Nutrition and Obesity**

### **Project EXPORT (Excellence in Partnership for Community Outreach, Research, and Training)**

A health and economic crisis facing African-Americans in South Carolina is being addressed by a joint project of South Carolina State University in Orangeburg and the Medical University of South Carolina in Charleston. The schools have launched a multi-pronged attack on the metabolic syndrome, a cluster of conditions that include obesity, elevated blood

pressure and lipid abnormalities. Individuals with metabolic syndrome are at risk for diabetes, heart disease, stroke, kidney failure and some cancers. The syndrome is growing in epidemic proportions nationally and particularly in South Carolina's African-American communities.

Staying healthy throughout one's life span is a major key to living a long and vigorous life. Watching one's dietary intake, exercising regularly, and regular health check-ups will aid in maintaining a healthy life. By offering programs that provide health and nutrition education, communities can empower and partner in improving their livelihood. Many African-American communities are taking advantage of health and nutritional education programs.

### **Output Indicators**

In Orangeburg County, four sessions were conducted on Type Two Diabetes at Zion AME Church in Branchville. The extension agent discussed the three levels of intervention entitled, "Home Management," "Initial Management of Diabetes," and "Improvement of Lifestyle." Four workshops were presented by one full-time employee and educational handouts were distributed to clients. A total of 12 clients participated in the workshops. All of the participants were African-American females.

### **Outcome Indicators**

One hundred percent of the participants defined diabetes and identified at least one way to lower their blood sugar levels.

### **Output Indicators**

In Sumter County, sessions were conducted on Type Two Diabetes at the North and South Hope Centers. Participants learned and discussed normal blood sugar levels, the effect of alcohol on the body, and the role of insulin in the body. Four workshops, presented by one full-time employee, were provided and educational handouts were distributed. A total of 12 clients participated in the workshops. All of the participants were African-American females.

### **Outcome Indicators**

One hundred percent of the participants could state one way that alcohol affects people with diabetes. One hundred percent of the participants understood how soluble and insoluble fibers affect blood sugar levels.

### **Output Indicators**

A health and wellness activity, presented by three full-time employees, was conducted for 400 participants at Safe Kids Super Saturday in Orangeburg.

### **Outcome Indicators**

African-American, Caucasian, and Hispanic children prepared a healthy snack, which consisted of pretzels, raisins, wheat chex and low-sugar fruit loops. The physical activity component consisted of a song and dance. Educational handouts about the Food Guide Pyramid and recipes for healthy snacks were also distributed.

### **Output Indicators**

In collaboration with the Medical University of South Carolina, the SC Department of Alcohol and Other Drug Abuse Services, the Low Country Community Action Agency Head Start Program, the Low Country Health CARES System and the Department of Health and Environmental Control, two health fairs were held in the Hampton Cluster to provide participants with information on health issues such as diabetes, heart disease and high blood pressure. Participants were given information on disease prevention measures such as physical activity and food selection. A total of 210 clients participated in the event. Eighty-three percent of the participants were African-American, 16 percent Caucasian, and one percent Hispanic. Seventy percent of the clients were females and 27 percent males.

### **Outcome Indicators**

One hundred percent of the participants stated that they learned new information about disease prevention. One hundred percent of the participants said that they would use the information that was taught.

### **Output Indicators**

Lifestyle is one of the most important factors affecting health. In alliance with the Marlboro County Council on Aging, six workshops were presented about meal planning, food preparation, the function of nutrients, and the importance of physical activity. The program was designed to enhance self-care skills among the senior citizen population. A total of 83 clients participated in the workshops. Eighty-six percent of the participants were African-American, 16 percent Caucasian and two percent Native American. Eighty-two percent of the participants were female and 18 percent were males.

### **Impact**

According to the SC Department of Health and Environmental Control, in 2002, the leading causes of death among South Carolinians were heart disease, cancer, strokes, and diabetes. The 1890 Extension Program and Project EXPORT, in collaboration with other agencies, addressed the issues by conducting workshops and health fairs that reached over 700 hundred clients in the state of South Carolina. The participants at the North and South Hope Centers learned the importance of physical activity in diabetes management. After attending the workshops, participants at Zion AME Church stated that healthy food choices are a major component of healthy lifestyles. All participants said that they gained the knowledge that weight management and healthy lifestyles cannot be achieved in a short period of time; the goals require long-term lifestyle changes.

### **Internal/External Linkages**

Memorandums of Understanding have been established between 1890 Research and Extension (the Division of Family Life) and Zion AME Church, North and South Hope Centers, Safe Kids Super Saturday, Orangeburg Department of Public Safety, the Department of Health and Environmental Control, Orangeburg Consolidated School District Five, First Steps, Medical University of South Carolina, SC Department of Alcohol and Other Drug Abuse

Services, Low Country Community Action Agency Head Start Program, Low Country Health CARES System and the Kiwanis Club.

**Scope of Impact:** State

**Target Audience**

Youth (3-17)

Adults (18-54)

Adults (55 and over)

a. In 1862 Research, work continues to enhance food safety through control of food borne disease agents, the production of antimicrobial and antioxidant films from acid whey and soy protein films from membrane processed soy protein concentrate

b. Impacts:

Patent Disclosures:

Bile Acid & Steroid Binding Properties of Insulin AT  
Ex Vivo Tissue Engineered Test System for Breast

Technical Contributions: 11

**GOAL 4: GREATER HARMONY BETWEEN AGRICULTURE AND THE ENVIRONMENT**

**Key Theme: Creating Sustainable Environment**

All living things must have water to survive. Water is one of the most important substances that the body can consume. Drinking water helps to cleanse the body of various toxic chemicals. Therefore, its cleanliness and purity from toxic materials is of utmost consideration. The research project, "A Thorough Assessment of Toxic Chemical and Remediation of Drinking Groundwater Sources in Rural Areas", is interested in improving the productivity and well being of the citizens in South Carolina. In rural areas of South Carolina, particularly in Orangeburg and vicinities, well water is used as a major source of drinking water. The Department of Health and Environmental Control has reported and documented many cases of groundwater contamination in Orangeburg County area. Local wells are fed by local ground streams or ground rivers passing throughout the sites. The ground water reserves are interconnected, consequently any contamination could easily be transported from one site to other places. As a result, a neighborhood far away from a contaminated place may have contaminated ground water. The research project will address a toxical review of the handling and disposal of the various types of non-hazardous and hazardous waste. Although the waste volumes may vary, the ways in which contamination has impacted the groundwater will be assessed.

The characteristics of the contaminants vary from source to source. Some wastes contain radioactive elements, others are corrosive, some are flammable or volatile, and others have disease-bearing organisms (hospitals and labs wastes). The main water toxic chemicals are radioactive elements, heavy metals, nitrates, organic volatile and organic aromatics.

Important sources of ground water contamination include landfills, surface impoundment, mining activities, oil and gas exploration, waste injection wells, pesticide and herbicide use, underground storage tanks, and septic tanks. In 1980, the EPA estimated that up to ninety thousand land disposal sites were contaminating ground water and surface waters.

Another research project entitled, "Chemical Standardization and Preparation of Biosubstances" investigates the chemical standardization of biosubstances in Echinacea preparations and all herbs will contribute to the safe use of herbs for medicinal purposes by consumers. The project studies the chemical standardization of Echinacea and its biosubstances for medicinal use and development in commercial health products.

#### Program Components

- Water Quality
- Natural Resources and the Environment
- Alternative Income Opportunities for Landowners
- Horticulture and Home Based Plant Health Management
- Reducing Impact of Animal Agriculture on the Environment
- Pesticide Safety Education
- Household and Structural Pest Control
- Sustainable Forest Management and Environmental Enhancement
- Longleaf Pine
- Master Tree Farmer/Master Woodland Owner
- Forest Resource Management

#### **Key Theme: Creating Sustainable Environment -Water Quality**

- a. In 2003, programs such as Home A Syst, Enviroscape, Water Wise, and Project Wet were conducted with youth and adult audiences. Train the trainer sessions were conducted for volunteer groups and greenhouse growers. In addition conducted programs at the University of Georgia, attracting growers from Florida, Georgia, and Alabama. Assisted in the coordination of the Beach/River Sweep. In 2004, programs such as Carolina Yards and Neighborhoods Program, Stormwater Management Camp, and Envirothon were conducted.
- b. Impacts  
In 2003, a total of 383 programs conducted, with 4, 926 people completing these programs. Of the number who completed programs, 3,079 people reported an increase in knowledge. Over 2,000 people received information through phone, farm or office visits. 4H20 Day Campers assisted with water quality testing project on the Edisto River for



National Water Quality Monitoring Day. Youth learned to test water, make and learned to use a secci disk, calculate water clarity, and learned about the water cycle.

In 2004, 495 programs were conducted, with 6,028 people completing programs. Of the persons completing programs, 3,883 reported gaining new knowledge. Over 1,000 people received information through phone, farm or office visits.

Developed and made commercially feasible specifically designed constructed wetland treatment systems that remove toxic elements from waste water streams such as Mercury, Selenium, and Arsenic to levels of 97 to 99%. This removal is unprecedented by current chemical or physical treatments (50 to 80% removal).

The constructed wetland treatment systems designed to remove copper and mercury for Savannah River site have resulted in greater than \$10 million savings and restored life in the receiving streams. This work won a DOE award.

A new publication “Life at the Water’s Edge” a guide for water quality protection on lakeshores and streams was released.

c. Source of Federal Funds - Smith Lever 3b&c and Hatch

Scope of Impact – State

**1890 Research goals were:**

**RES 1:**

The purpose of the research is to collect and test ground water used as drinking water by rural residents for any trace of toxic and hazardous chemicals. The project will test for contamination in the targeted rural areas and identify the contaminants. A methodology to clean up and restore ground water and drinking water resources to an acceptable level will be developed. In addition, rural residents will be trained and educated on prevention methods to ensure that drinking water is clean and toxic-free.

All drinking water testing methods will be in compliance with the federal regulations and the South Carolina Department of Health and Environmental Control (DHEC) drinking water regulations and standards. The methodology for remediation ground water will be incorporated where needed to provide safe and clean drinking water. In addition, methods of pollution prevention, ground water sampling and testing will be made available to the residents.

## **RES 2:**

Herbal remedies are becoming increasingly popular in the USA. Perhaps the most popular of all are preparations from Echinacea, many species of which grow wild and now farmers are growing them. Echinacea products are claimed to raise opsonic index, the antibody that renders bacteria and other cells susceptible to phagocytosis, thus demonstrating antiviral and antibiotic properties. In addition, it is thought that the preparations are side reactions free. However, there are problems with Echinacea preparations displayed on the shelves of the drug stores. The labels on the bottles do not provide the names and amounts of bioactive materials and do not list possible side effects. Obviously, chemical standardization of biosubstances in Echinacea preparations should be done for the benefit of the consumers, growers, processors and medical practitioners. In the project, three species of Echinacea (popular in the USA and also investigated by some researchers) will be grown under controlled conditions. Biosubstances will be isolated from various parts of the plant. Standardization method for the biosubstances will be developed using the state-of-the-art instrumentation. In addition, the project will develop conditions for growing 2-4 liters scale Echinacea cell culture, isolate biosubstances from the cells and standardize them. The isolation of biosubstances from cell culture will have fewer complexities, than the final products having consistent composition. Information for cultivation of the Echinacea will be disseminated to farmers.

### **Output Indicators**

- RES1:**
- 1) One publication has been submitted to the Journal of Environmental Monitoring and Restoration entitled "Assessment of Volatile Toxic Organic Chemicals in Drinking Groundwater Sources" for the 2003-2004 reporting period.
  - 2) One oral presentation was made by the principal investigator at an International Conference on Safe Water.
  - 3) Training was provided for two undergraduate students.
- RES2:**
- 1) One manuscript was submitted for publication during the 2003-2004 reporting period.
  - 2) Two research poster presentations were prepared and delivered for the reporting period.
  - 3) Two undergraduate students were recruited to work on the research project.

### **Outcome Indicators**

- RES1:**
- 1) Forty-five samples were randomly taken from wells, located at various regions, in Orangeburg County and vicinity.
  - 2) A final research performance report will be prepared identifying the project results.
- RES2:**
- 1) A final research performance report will be published at the end of the project period.

## Key Program Components

### **RES1: “A Thorough Assessment of Toxic Chemical and Remediation of Drinking Groundwater Sources in Rural Areas” (SCX-420-18-04)**

- 1) Identifying sources of contamination  
Testing drinking water in targeted rural counties for contamination  
Develop a clean up methodology  
Train and educate rural residents on prevention

### **RES2: “Chemical Standardization and Preparation of Biosubstances” (SCX-420-20-00)**

- 1) Preparation of freeze dried extracts of the root, leaf and flower of Echinacea plants of different age, grown in greenhouse conditions and/or by farmers, harvested at different times of the year, with water and 80% alcohol.
- 2) Determine the presence and amount of alkamides, ferulic acid, quercetin, niacin, verbacoside, rutin, rutoside, chlorogenic acid, isochlorogenic acid, luteolin, luteolin-7-glucoside, apigenin, ascorbic acid, beta-carotene, beta-sitosterol, caffeic acid, cichoric acid, echinocside, echinolone, limonene, myrcene, and inulin chemicals with HPLC, GC-MS or LCC-MS and minerals by AAS.
- 3) Determine the presence of common herbicides and pesticides in the extracts.
- 4) Determine the previously mentioned chemicals from commercial Echinacea products for medicinal use.
- 5) Isolate and characterize the bioactive chemicals from cell culture of Echinacea.

## Internal and External Linkages

**RES1:** The project involves internal linkages with the Department of Physical Sciences and 1890 Research and Extension at South Carolina State University. Externally, the research involves the Environmental Protection Agency (EPA), National Institute for Occupational Safety and Health (NIOSH), Department of Fish and Game (DFG) and International Agency for Research on Cancer (IARC).

**RES2:** The project involves internal linkages with the Department of Physical Sciences and 1890 Research and Extension at South Carolina State University. Externally, collaboration was established with Clemson University Extension. It is anticipated to establish collaboration with industries with the purchase of a LC-MS.

## **Target Audiences**

**RES1:** Rural residents of South Carolina with wells

**RES2:** Farmers statewide

## **Program Duration**

**RES1:** The research project period was October 1, 2000 – September 30, 2004.

However, the project was granted a one year extension until September 30, 2005.

**RES2:** The research project period was February 1, 2001 – February 2, 2005

## **Key Theme: Creating Sustainable Environment - Natural Resources and the Environment**

- a. Master Wildlifer was a short course presented by wildlife and natural resources experts. It was broadcast live over satellite and delivered to sites across the Southeastern US in seven three-hour weekly sessions from February 4 to March 18, 2003. 39 landowners graduated from the course. In addition, 72 Master Wildlifer/Master Naturalist programs and activities were conducted in 2003. 1,311 people completed these programs

In 2004, 18 Master Wildlifer/Master Naturalist programs and activities were reported. 520 people completed these programs.

- b. Impact

The participants in the Satellite course owned and managed 52,763 acres of land. Participants in the Master Satellite Course indicated that the knowledge gained would help them save \$99,000 and earn \$301,000 in the future when managing wildlife on their property. We now have the course available as online video along with the slides shown during the production.

Of the 1,311 persons completing programs in 2003, 1,055 reported an increase in knowledge. An additional 1,552 persons received information by phone, office, or farm visits. In 2004, of the 520 persons completing programs, 510 reported an increase in knowledge. 139 persons received information by phone, office, or farm visits in 2004.

In addition, the following impacts were made in research:

Determined the amount of tree canopy changes in the Interstate 85 corridor over the last 20 years and quantified the impact on air pollution.

Confirmed that a complex of hydrilla (water weed) and blue-green algae causes AVM, a deadly brain disease, in bald eagles and waterfowl.

Growth and control research began for Beach Vitex, a plant species that may become a problem for the SC coast

When point or nonpoint source pollutants resulting from agricultural or urban activities enter soils and/or other subsurface systems, their concentrations can often be diminished by several naturally-occurring mechanisms including biological, physical, and/or chemical processes. It is necessary to gain a better understanding of the contribution made by abiotic electron-mediated reduction reactions in the overall natural attenuation of selected organic and inorganic point/non-point source pollutants.

- c. Source of Federal Funds - Smith Lever 3b&c and Hatch
- d. Scope of Impact – State

1890 Research goals and impacts were:

**RES1: “A Thorough Assessment of Toxic Chemical and Remediation of Drinking Groundwater Sources in Rural Areas” (SCX-420-18-04)**

- a) The goal of the project is to systematically assay samples randomly taken from the drinking well water in Orangeburg County and vicinities to insure the safety of drinking water of the citizens. The test being conducted is to determine if the water is clean, safe and consumerable for the residents to drink. Samples are analyzed for any contaminants that are more likely to be present because of chemical usage. The populace are informed of any potential hazards that may affect the primary drinking water sources.
- b) Impact – Rural residents are better informed about the quality of their drinking water and obtain training and education to ensure that their water quality is clean and safe. Economically, the research would have great impact by helping prevent illnesses, diseases and disabilities by providing a better managed economy for the residents. Also, the project would provide a reasonable chance for the students to pursue their career with better understanding of environment, pollution and management.
- c) Source of Federal Funds – Evans-Allen (\$44,811)
- d) Scope of Impact – South Carolina

**RES 2: “Chemical Standardization and Preparation of Biosubstances” (SCX-420-20-00)**

- a) Three species of Echinacea was analyzed: (1) Echinacea Angustiflora, (2) Echinacea purpurea and (3) Echinacea Pallida. The plant species procured from reputed growers as well as being grown in a controlled greenhouse environment. The root, leaves, flowers and fruits of the species was separated and dried at room temperature at reduced pressure and then extracted with water and 80% ethanol. The extracts were freeze dried, stored and refrigerated for further studies. An MS

data bank was created for all the biosubstances. GC-MS and LC-MS data was carefully analyzed to identify the presence of common herbicides and pesticides. Chemical profiles for biosubstances of major commercial Echinacea preparations purchased from drug stores were made using LC-MS. The data was compared with the biosubstance profile of the three Echinacea species.

- b) Impact – Small farmers were able to grow Echinacea and sell them to companies that manufacture herbal preparations at much higher prices than they earn by selling traditional products. Instead of corn or soybean, the farmers were able to raise many herbal plants that were useful for consumption at home, but also exportable to other nations. The project provided label information for herbal products, so they could eventually be used as prescription drugs with none or a lot fewer side effects and perhaps less habit forming to users. With proper content information available, meaningful clinical research may be conducted for future development of herbal medicine.
- c) Source of Federal Funds – Evans-Allen (\$ 69,933.00)  
State Appropriations (\$27,933.00)
- d) Scope of Impact – South Carolina

**Key Theme: Creating Sustainable Environment-Alternative Income Opportunities for Landowners**

- a. Conducted programs in 2003 and in 2004 such as Wildlife Planting Budgets, Alternative Income from Wildlife, and Growing Pines in Trying Times. Over 106 programs were conducted, with 4,926 people completing programs in 2003. In 2004, conducted 20 programs with 809 people participating.

b. Impacts:

Of the number of persons completing programs in 2003, 3,079 reported an increase in knowledge. Over 2,000 people received information through phone, office visits, and farm visits.

In 2004, 787 people of the 809 people completing programs, also reported that they gained knowledge. 595 reported that they either adopted or planned to adopt a practice. 230 persons received information by phone, office, or farm visits in 2004.

- c. Source of Federal Funds - Smith Lever 3b&c

- d. Scope of Impact – State

## **Key Theme: Creating Sustainable Environment - Horticulture and Home Based Plant Health Management**

a. The plant health area focused on three major projects during FY 2004. These projects were Environmental Horticulture Education for Horticulture Professionals, Master Gardener Education and Impact, and Consumer Education in Environmental Horticulture. Urban landscapes should be aesthetically pleasing, diverse, sustainable and environmentally friendly. This initiative is providing education to horticulture service providers (i.e. arborists, landscape designers, private and public grounds workers, urban foresters, and employees of landscape maintenance companies, landscape installation companies, tree service companies, and garden centers), Master Gardeners, and consumers on environmentally sound horticultural practices (i.e. plant identification, selection, culture, pest identification, and integrated pest management) to improve the economic value of their homes and neighborhoods in a socially acceptable manner that does not contaminate the environment with excess fertilizer, inappropriate pesticides, or exotic plants that would place human and environmental health at risk.

Accomplishments that were reported to the Clemson University Information Management System (CUMIS) show 1,152 total educational programs and activities conducted in this initiative. There were a total of 17,661 participants who completed these educational programs. Of those individuals completing these programs, 13,608 reported increased knowledge as a result of their participation. Of those participants who reported increased knowledge, 6,428 indicated that they planned to adopt the recommended practices while 643 reported that they actually adopted or increased the use of recommended practices as a result of the programs. In addition, there were a total of 41,812 non-program consumer contacts through telephone calls and office visits.

b. Impacts in Environmental Horticulture Education for Horticulture Professionals include:

154 total educational programs and activities conducted in this project area. There were a total of 2,554 participants who completed these educational programs. Of those individuals completing these programs, 1,040 reported increased knowledge as a result of their participation. Of those participants who reported increased knowledge, 344 indicated that they planned to adopt the recommended practices while 66 reported that they actually adopted or increased the use of recommended practices as a result of the programs. There were 93 newsletters or trade journal articles prepared. There were also 1,584 non-program contacts through telephone calls and office visits.

b. Impacts in Master Gardener Education include:

415 total educational programs and activities conducted in this project area. There were a total of 6,857 participants who completed these educational programs. Of those individuals completing these programs, 5,429 reported increased knowledge as a result of their participation. Of those participants who reported increased knowledge, 1,630 indicated that they planned to adopt the recommended practices while 340 reported that

they actually adopted or increased the use of recommended practices as a result of the programs.

There were 2,902 Master Gardeners conducting 398 programs and activities such as oral presentations, newsletters, radio programs, and TV appearances. These trained Master Gardeners contacted 30,940 individuals and contributed 38,108 hours of service. Master Gardener volunteers contributed 153,373 miles of travel. This year, 1,782 residents completed the requirements to become a SC Master Gardener.

b. Impacts in Consumer Education in Environmental Horticulture include:

583 total educational programs and activities conducted in this project area. There were a total of 8,250 participants who completed these educational programs. Of those individuals completing these programs, 7,139 reported increased knowledge as a result of their participation. Of those participants who reported increased knowledge, 4,454 indicated that they planned to adopt the recommended practices while 237 reported that they actually adopted or increased the use of recommended practices as a result of the programs. There were 783 mass media activities reported.

In addition, there were 40,228 non-program contacts through telephone calls and office visits. Consumer received additional information through 8,644 visits to demonstration sites, 25,603 telephone calls to the Home & Garden Information Center and the Urban Horticulture Center, and by nearly 6,000,000 visits to university horticulture websites.

c. Source of Federal Funds □ Smith Lever 3b&c

d. Scope of Impact -State

**Key Theme: Creating Sustainable Environment -Reducing the Impact of Animal Agricultural on the Environment Management**

- a. A total of 347 staff member days were devoted to increasing the adoption of environmentally sound animal waste handling and utilization systems. Programs were also developed and presented to train producers of confined animals in manure management, and to certify that these producers have achieved the required level of training by testing knowledge levels. All poultry and livestock producers are required to obtain 2 hours of continuing education credit per year to maintain certification. Several seminars and field days were developed and presented by the team to provide re-certification credits for poultry and swine producers.

In research, animal waste will be treated with the strong oxidizing agent ozone. Before and after samples will be collected and analyzed for differences in microbiological and chemical parameters of pollution.



- b. Impact - Increase the adoption of Environmentally Sound Animal Waste Handling and Utilization Practices.

By law, all livestock and poultry producers are required to attend the Confined Animal Manure Managers Program (CAMM). In 2003-2004 the CAMM team trained 190 poultry producers and 82 swine producers. In addition, the dairy version of the CAMM manual was completed and 112 dairy producers were trained. The new manual for dairy producers was published on the Confined Animal Manure Management Program web site.

Forty-five field days, demonstration projects, and educational seminars were offered to provide opportunities for livestock and poultry producers to earn continuing education credit. Approximately 1,756 individuals participated in continuing education field days and seminars.

A description of the major activities is given below.

2004. On-Farm Demonstration of a New Type of Machine for Land Application of Swine Manure, April 7, Horry Co., SC. (Clemson Extension in cooperation with Brock Equipment Co., USDA-NRCS).

This on-farm demonstration and field day allowed about 80 individuals to learn about the operation of a newly developed drag-hose, splash-plate applicator. The topics covered included: demonstration of manure spreader calibration, estimation of ammonia volatilization losses, a review of procedures used to estimate plant available nitrogen, reduction of odor from land application, overview of continuing education requirements for animal waste permit holders, and a regulatory update. This field day provided each attendee 2 hours of continuing education credit for waste permit recertification.

2003-2004. Demonstration Project: Composting Turkey Brooder Litter in South Carolina: A Case Study.

Turkey production involves two phases of production. The first phase occurs on brooder farms where young turkeys are placed at a few days of age and are kept in brooder barns until they are about 35 days old. The young turkeys are then transported to a grow-out farm where they are raised to market weight. Litter is removed from brooder barns after each flock of young turkeys. Turkey brooder litter has less fertilizer value as compared to grow-out litter due to low nutrient content (N, P, and K). Therefore, traditional land application is often undesirable if significant transportation distances are required.

Composting poultry litter has been suggested as a utilization alternative for years. One of the main deterrents for composting poultry litter is the large amounts of additional carbon needed to raise the carbon to nitrogen ratio (C:N) from about 12 to the desirable range of 20 to 40. It was believed that brooder litter would have a higher C:N ratio than broiler or turkey grow-out litter, and as a result, could be successfully composted without amendment.

A composting trial was conducted on a turkey brooder farm in South Carolina. It was determined that turkey brooder could be composted without amendment and a high-quality, stable product was obtained.

This information has been used in continuing education seminars.

2003- 2006. Demonstration Project: Fertilization of Longleaf Pine: A Comparison of the benefits of using poultry litter versus commercial fertilizer.

This 3-year demonstration project is being conducted on private land in Kershaw County. Three plots have been established and individual trees have been tagged and measured (diameters and total heights). The demonstration site was developed to observe the tree growth and pine straw production benefits of fertilizing longleaf pine at the rate of 80 lb N/ac. One plot received 17-17-17 fertilizer at the 80 lb N/ac rate. The second plot received 80 lb N/ac from litter, and the third was an unfertilized control.

Soil sampling has been conducted to observe the release of N, P, and K from both fertilizers. Initial pine straw yield measurements have been taken. This project will continue for 2 more years. The information will be used for seminars and trainings for poultry producers and forest land owners.

Hundreds of producers received one-on-one assistance on issues related to animal manure management.

Patent Disclosures:

Process for Ozonating & Converting Organic Materials Into Useful Products

Research Publications: 12

Extension Publications: 11

- c. Source of Federal Funds - Smith Lever 3b&c and Hatch
- d. Scope of Impact – State and Region

**Key Theme: Creating Sustainable Environment -Pesticide Safety Education**

- a. Pesticide applicators are trained by the Cooperative Extension Service to become Private Pesticide Applicators (Initial Certification Training). Pesticide applicators are trained to interpret and use the pesticide label and other information, especially when handling Restricted Use Pesticides, to protect themselves, agricultural workers and others, the public, water quality, and wildlife, and endangered species.

Certified Private Pesticide Applicators are required to be recertified every five (5) years. There is not a way to verify numbers because not all Recertification credits are obtained at one time, in one training, however, virtually all Private Pesticide Applicators receive all of their five (5) required Recertification credits through the County Extension offices. Commercial applicators also receive some of their Recertification credits through the County Extension offices, and many receive credits through other Extension sponsored or partnered programs. (Numerous commercial applicator programs are not Federally funded and not included here.)

Private Applicators get Recertification training in one or more of 16 topics, including worker safety, integrated pest management, transport and disposal of pesticides and rinsates, calibration and maintenance of application equipment, water quality and drift prevention.

b. Impact

Initial Certification Training of pesticide applicators was given by County Pesticide Training Coordinators at a minimum of 47 trainings. A minimum of 359 pesticide applicators was trained. Based on an average of individual training averages, trainees, pre-test / posttest scores showed that they increased their knowledge of how to handle pesticides safely by 20% as a result of the training (21% in FY 2001, 2002). In FY 2003 in South Carolina, 57% of the trainees answering the use question said they apply Restricted Use Pesticides in traditional agricultural crops, 13% in forestry, 17% in nurseries and on ornamentals, and 27% in greenhouses and 20% other (totals more than 100% because individual apply pesticides in more than one area). The proportion of trainees would planned to apply Restricted Use Pesticides showed a numerical increase in traditional agriculture and decline in forestry, and a decrease in ornamentals/nurseries and greenhouses from FY2002

In FY 2004, County Extension offices conducted a minimum of 89 programs for Recertification. 1,832 people completed these programs. Of those completing programs, 1,505 reported an increase in knowledge. 1,014 reported that they either adopted or planned to adopt a practice learned. \*

\*Based on applicator attendance in early Recertification time blocks, the number of scheduled Extension Recertification trainings vary in number across the five year Recertification block, increasing in frequency towards the end of the block. Numbers of Private Applicators becoming recertified varies among years because Recertification is based on a five-year cycle. Few Private Applicators are Recertified in the initial years of the cycle, most are Recertified in the last two years and especially the last year. Also, not all Extension partnered trainings are recorded on the Pesticide Information Program web site (<http://entweb.clemson.edu/pesticid>) because of sponsorship. Additionally, many Private Applicators obtain some or all of their Recertification credits through self-study using material supplied by the County Extension offices.

c. Source of Federal Funds - EPA pass-through funds to the USDA Pesticide Safety

## Education Program

- d. Scope of Impact – State specific

### **Key Theme: Creating Sustainable Environment Household and Structural Pest Control**

- a. Cooperative Extension Service provides other educational opportunities for applicators (and Recertification credits usually may be obtained at these as well). Numbers of pesticide safety education programs conducted without Federal funding far exceed those funded via federal program funds; numerous commercial applicator programs are not federally funded and not included here.

- b. Impact

In 2004, 46 pesticide safety education and training programs were conducted, reaching 2,466 persons (presumed to be mostly Private Applicators and P.A. trainees. There were 559 who reported that they adopted practices or planned to adopt new practices. A minimum of 868 persons received information through “non-program” contacts (very much under-reported category).

- c. Source of Federal Funds – EPA pass-through to the USDA Pesticide Safety Education Program
- d. Scope of Impact – State Specific

### **Key Theme: Creating Sustainable Environment Sustainable Forest Management and Environmental Enhancement (Forest Crops)**

- a. Many landowners fail to manage their forestland because they object to clear cutting or other conventional intensive practices that focus primarily on timber production. The purpose of this project is to encourage these landowners to develop management plans by providing them with alternative silvicultural systems and methods that are suitable for their individual objectives. Alternative systems include uneven-age management, mixed pine/hardwood management and natural regeneration systems.

Educational efforts have been focused on both professional resource managers and landowners. Most landowners are unaware that alternative silvicultural systems are available and professional foresters are generally biased in favor of clear cutting and intensive management methods. Our objective is to provide landowners with an understanding of how these systems can be used to meet their desired management goals and to make trained, professional foresters available to service their needs. A proposal to fund intensive training on uneven-age management was completed in 2002 for funding in 2003 to expand formal training to a meaningful levels within the state.

In 2003 a major, regional workshop on invasive species was delivered to more than 200 participants and reported under this project. Attendees received training on identification and control methods for the more than 30 problem plant species in the southeast. A South Carolina Exotic Pest Plant Control chapter was established as a result of the workshop.

b. Impact --

During the year 2000--01 most efforts on this project were conducted at the county level. Forty-eight programs and activities were reported by county agents. Approximately 700 people completed non-formal programs with approximately 80 % reporting increased knowledge of the subject. Sixteen percent have reported adopting or increasing use of practices discussed during the training.

County activity declined somewhat in 2002 with 16 educational programs delivered to a total of 509 people. Three hundred and four people reported increased knowledge and 30% or 153 landowners plan to adopt new management practices as a result of the programs. No formal, statewide training programs were conducted during the report period. The number of FTE's devoted to this project was 1.4.

During 2002-03 thirty-two activities were delivered to 977 people with 38 % reporting increased knowledge and 82 landowners adopting practices learned at the training sessions.

In 2004 a total of 1,142 landowner contacts were reported for this project. Approximately 12 % were limited resource landowners. The number completing educational programs was 346. A formal program on forestry herbicides was conducted for professional natural resource managers. The content covered technological updates of research on forestry herbicides and training on identifying and controlling invasive species. The initial program review indicated that the program was attended by 50 professionals and program materials would potentially have a positive impact on 888,250 acres of forests and natural areas.

Calculated the number of intensively managed (chemical and fertilizer use) pine plantation acreage. Data will be used in long term timber supply projections for economic development.

Performed locational analysis to determine best locations for mill development sites for industries using small diameter timber. This has been and will continue to be a heavily used economic development tool.

A major grant was received from the Doris Duke Foundation to further forest management practices and conservation in the coastal plain

Research has quantified the carbon removed from the atmosphere by pine plantations growing on depleted Piedmont soils in SC. Plantations stored more than 90 tons/ha of atmospheric carbon in their biomass during their 50 years of growing and the soil

accumulated 25 tons/ha of C. The research team was the first to demonstrate that decomposing root systems of harvested trees, carbon-rich sties in depleted Piedmont soils, help sustain productivity.

Patent Disclosures:

\*Utilization of Biomaterial waste from Biodiesel Production for Growth of Micro

c. Source of Federal Funds - Smith Lever 3b&c and Hatch

d. Scope of Impact - State

**Key Theme: Creating Sustainable Environment Longleaf Pine**

a. Longleaf pine is a highly desirable species because of its superior growth form, wood properties and the diversity of plant and animal species associated with the ecotype. Unfortunately, only a small fraction of the longleaf forest remains within its natural range. Renewed interest in the species has developed because of its ecological significance as well as financial reasons. Because of land ownership patterns, the majority of longleaf restoration efforts will require regeneration on non-industrial private lands. The objective of this project is to provide landowners and professional foresters with background and technical information necessary to expand longleaf production within its natural range.

In 2002-03 a proposal, “Low-Country Forest Conservation Partnership”, was developed and funded through the Doris Duke Foundation. The objective of the project is to protect and sustain endangered forests in the South Carolina low-country. The project will cover an area of 2.9 million acres and will be funded with a total of \$4 million of which \$685,000 is targeted for outreach programs.

b. Impact

A total of 17 activities and programs were reported by county agents in 2000-01. These included, but were not limited to a workshop in Columbia, SC – “Restoring Longleaf Pine in the Sandhills”. The workshop was attended by 84 foresters and landowners. Altogether, a total of 832 people completed non-formal educational programs on Longleaf Pine. Approximately 70 % reported increased knowledge as a result of the activities and programs and 28% indicated that they have or will adopt practices discussed during the training. Approximately 8,000 additional acres of longleaf pine were planted during the 2000 – 01 reporting period. The number of FTE’s devoted to this project was 0.4.

In 2001-02, fifteen programs were delivered to a total of 219 landowners. Eighty % of participants reported increased knowledge of longleaf pine silviculture and 32 % plan to

adopt practices. During the year 3,000 acres of additional longleaf pine regeneration were attributed to extension programming.

In 2002-03, thirteen programs were delivered to 236 landowners with 116 people increased knowledge from the programs. Twenty-eight landowners reported potential earnings of \$275,000 from information gained at pine thinning training sessions.

Activities under the Low-country Conservation project for 2004 are described in the following list of accomplishments as provided in the first annual report:

	First Year Goal	Actual
Prospective landowners identified:	200	670
Landowners determined to be interested:	100	310
Landowners receive conservation forestry education:	50	72
Landowners developing a written conservation forestry mgt plan:	10	12
Landowners are implementing conservation management:	5	9
Demonstrations under development:	4	3
Loggers exposed to conservation forestry practices:	20	???
Foresters exposed to conservation forestry practices	40	152
Acres managed with conservation forestry practices:	1000	7300

-Fire ecology graduate student started in August; economics graduate student starts in January.

- Companion project for \$176,000 funded by US Fish & Wildlife to implement conservation forestry practices awarded in September.

- Development of a multipurpose low country Forest web site for the public and for partners.

- Development and initiation of access data base to inform participants and track progress.

- Eight grant partners visit Anderson-Tully Company for tour of bottomland hardwood operations and discussion of how they manage bottomland hardwood forests.

- Five grant partners and six landowners and landowner representatives visited Joseph W. Jones Ecological Research Center to tour ecological longleaf pine management on area properties and to discuss the Stoddard-Neel system.

- Developed pre-participation landowner form to establish baseline for future evaluations.
- Selection of Deer Hill, Ravenwood, and Rose Hill properties as bottomland hardwood demonstration sites. Evaluation of sites by Dr. John Hodges of Mississippi State University.
- Selection of Quinby, Deer Hill, Ravenwood and Cypress Bay properties as upland pine demonstration sites. McIntyre and Mitchell of the Joseph W. Jones Ecological Research Center have developed a management plan for the Quinby property.
- Two workshops, one on bottomland hardwoods (supported by a SC Forest Stewardship Grant) and another on forested wetlands held for resource professionals.
- Three programs held to acquaint landowners with conservation forestry practices.
- Newspaper releases, a meeting poster, partner newsletters such as the LOLT Landscape Legacy (Circulation 800) and the CU Extension Answers (Circulation 8000) and a brochure are being used to generate interest.
- Personal contacts of over 1000 landowners and 200 natural resource professions concerning the Lowcountry Forest Conservation Partnership conservation forestry initiatives.
- Filmed Leon Neel at various sites discussing the Stoddard-Neel management system.

In 2004 most impacts on longleaf pine restoration are related to landowner requests for technical information where 278 landowner contacts are reported. Formal evaluations were not reported. Impacts of the Low-country Conservation program have not been reported as the majority of efforts were directed at organization and planning.

- c. Source of Federal Funds - Smith Lever 3b&c
- d. Scope of Impact - State

**Key Theme: Creating Sustainable Environment Master Tree Farmer/Master Woodland Owner**

- a. The Master Tree Farmer/Master Woodland Owner program provides intensive forestry and wildlife training to landowners in return for 25 hours of volunteer time promoting forestry and the Tree Farm program in South Carolina. In 2000 - 2001 Master Tree Farmer continued as a flagship program for Extension Forest Resources. In Spring of 2001 the program was broadcast from Clemson University via videoconference to 14 states and 132 down-link sites across the south and to 4 states in the fall. Graduates received a total of 28 contact hours of instruction in forestry topics such as Forestry as an Investment, Pine Management, Hardwood Management, Marketing and Harvesting, and Wildlife Management.

Master Tree Farmer II, a more advanced level of training than MTF I, was delivered to 1700 attendees in 10 states in 2002. Twelve county programs were conducted in 2003, reaching 1,329 persons. Master Tree Farmer graduates attended a variety of related trainings, tours and landowner association meetings.



A seven-week Master Tree Farmer introductory shortcourse in forest management is currently being broadcast live from Clemson University and will continue on through March 16. Although primarily designed for forest landowners, the course also attracted County agents, forestry professionals, prospective forest owners, heirs of landowners and many others. The program is being delivered to nine states and approximately 1,500 participants.

b. Impact --

Using video conference technology, the program was delivered to 2,875 forest landowners in 2001. Landowners representing 748,277 acres of forest land completed the course. Approximately 47 percent of the landowners were under 50 years of age and 20 percent were female. The Master Tree Farmer Program utilized 21 volunteers. The number of FTE's devoted to this project was 0.6. The following impacts were derived from analysis of evaluation data collected after landowners completed the training:

1. Ninety-eight percent of the participants would recommend the program to other landowners.
2. Ninety-four percent feel that the program will save them money when practicing forestry on their property.
3. Ninety-five percent of the landowners report that they will earn money by using knowledge they gained from the program for an estimated total gain of \$16 million.
4. Based on increased knowledge, eighty-eight percent of the landowners completing the course plan changes in the management of their forest property.
5. Ninety percent of the graduates indicated that they would attend a more advanced training program if it were offered.

A follow-up survey was conducted one-year after the program. Forty-three percent of 545 surveys were returned. They report the following updated impacts:

1. Eighty-one percent report their forest management level at good to excellent compared to twenty one percent prior to the program.
2. Ninety-four percent plan changes in forest management practices.
3. Eighty-two percent have made changes as a result of the training.
4. Sixty-six percent plan to make additional changes to forest management practices.
5. Respondents indicate that the course will save landowners more than \$13 million and earn them a total of \$6 million.

The number of impacted forest acres was 4,580 for programs conducted in 2003. Thirteen county programs were conducted in 2003-04 with 138 people completing programs. 116 of the 138 reported knowledge gained and 102 reported adopting a practice learned. The number of impacted forest acres was 4,250 for programs conducted in 2004. Example of programs included:

- Low country Master Tree Farmer Tour with 34 participating. All reported an increase in knowledge and planned on implementing practices learned. Participants owned more than 10,800 acres of land.

- 15 people participated in a Master Tree Farmer course, who owned a total of 3,146 acres of land, of which 2,750 acres were forest land. Participants indicated that the knowledge gained would help them save \$158,000 and earn \$332,000 in future activities.

Follow-up evaluations have not yet been completed on the 2004 statewide programs. Impacts will likely parallel those from 2001.

- c. Source of Federal Funds - Smith Lever 3b&c
- d. Scope of Impact - Multi-state

### **Key Theme: Creating Sustainable Environment Forest Resource Management**

- a. The objectives of this project are to: (1) Encourage landowners who sell timber to reforest following harvest; (2) inform landowners of the economic and environmental benefits of using Best Management Practices (BMP's) in all forest management operations; (3) develop and conduct training programs that improve the professionalism of logging and other timber operations businesses, and that promote sustainable forestry principles; and (4) work with established groups within the forestry community to support and promote appropriate training and outreach programs related to sustainable forest management. Some significant activities for 2001 included: (1) continued implementation of the South Carolina Timber Operations Professional (TOP) training program, (2) initiation of a Streamside Management Zone training program, and (3) completion of the publications – *U.S. Forests Facts & Figures 2001* and *Historical Overview of the Southern Forest Landscape and Associated Resources*.

In 2002, twenty-one, three-day TOP programs were conducted. In addition, 105 programs were reported at the county level.

In 2003 17 TOP programs were delivered to 598 loggers. Other non-TOP activities included programs on pine straw management, pine thinning, and wood biomass recovery from harvested sites.

In 2004 16 TOP programs were delivered to 396 loggers.

- b. Impact --  
This program generated considerable activity at the county level in 2000-01. Counties reported 43 activities with 1267 landowners completing educational programs and 1038 or approximately 80 % reporting increased knowledge as a result of the programs. Eight-five landowners reported the application of BMP's to their forest property. Major efforts within this project were directed at logger training and education under the Timber Operations Professional (TOP) program. The program is jointly administered by Clemson Extension Forestry and the South Carolina Forestry Association. During this reporting period 635 loggers and foresters attended 17 programs conducted across the

state. The program has had a significant beneficial effect on forest practices. Eighty-nine percent of the wood delivered to mills in South Carolina is delivered by loggers that have completed the TOP training. The percentage of acceptable overall Best Management Practices conducted on forest lands within the state, and reported by the South Carolina Forestry Commission has increased from 86.4 % in 1996 to 91.5 % in 1999. The TOP training program is supported with 15 volunteers.

The following impacts were reported for 2001-02:

1. More than 700 loggers, foresters, contractors and landowners earned TOP certificates.
2. The number of people completing educational programs was 1,869.
3. The number reporting increased knowledge was 1,307.
4. Twenty-nine percent of landowners have adopted practices due to training.
5. Ninety-five percent of all wood harvested and delivered was done so by loggers trained through this program.
6. Best Management Practices compliance in South Carolina is reported at 93%.

Impacts for 2003 are as follows:

1. TOP programs were delivered to 598 loggers, foresters and contractors.
2. Total number of people (including TOP) completing programs was 2,899.
3. Number of people reporting increased knowledge was 2,746.
4. Number of people adopting practices was 1,559.
5. Ninety-eight percent of wood delivered was delivered by loggers that have completed the TOP training.
6. Attendees of non-TOP programs reported savings of \$818,000 and potential earnings of \$1,462,000 from knowledge gained at the programs.

Although evaluations for 2004 are incomplete, the overall impact of the TOP programs from 2000 to 2003 has shown an increase in Best Management Compliance from 91% to 94%.

Other non-TOP activities included forestry landowner association meetings work with Horry Georgetown Technical College student monitoring trees and soil in burning plots, and the SC Tree Farmer of the Year Tour. In total, these meetings were attended by approximately 250 landowners who impact management of over 500,000 acres of forest land. Counties reported conducting 61 programs with 1,193 persons completing programs. Of those completing programs 885 gained knowledge and 451 reported adopting practices learned.

- c. Source of Federal Funds - Smith Lever 3b&c, SMZ project – EPA & DEHEC
- d. Scope of Impact - State

## **GOAL 5: ENHANCED ECONOMIC OPPORTUNITY AND QUALITY OF LIFE FOR AMERICANS**

**Key Theme:** Community, Leadership and Economic Development

Program Components

Leadership Development  
Economic Development

### **Key Theme - Community Leadership and Economic Development-Community Service**

- a. This project addresses the need for increased leadership training and development in South Carolina's rural, suburban, inner-city, and transitional areas. Transitional areas include counties and communities at the fringes of metropolitan sprawl or changing neighborhoods. The state has undergone significant job losses from plant closings and relocation of textile manufacturing to plants outside the US. The Palmetto Leadership program is designed to assist leaders with local planning to find new revenue sources in rural counties that have a low tax base and relatively few income producing resources. These target areas often lack progressive leadership that looks beyond local political boundaries. Palmetto Leadership fosters teamwork, planning, and regionalism to address effectively the locale's economic and quality of life concerns. The community leadership program provides a facilitated and constructive forum where conflicting interests and policies can be addressed through the action plans of established and emerging leaders. Palmetto Leadership helps create the next generation of informed leaders.

Citizen led committees increase leadership skills and effective use of planning tools to address community issues, concerns, and policies. Components include a community asset inventory process, priority setting, socio-economic trend analysis, change management, planning, statistical analysis of local and regional socio-economic profile data, leadership and human capacity development, conflict negotiation and consensus building.

Topical issues addressed include economic development, education improvement, local government, public safety, health care, land use planning, growth management, recreation, tourism, and local cultural appreciation. The flexible curriculum is designed to fit the audience. The leadership curriculum template is similar from county to county, but local advisory groups have significant influence in shaping the actual program as presented. Web resources are identified to assist local leaders and program participants with task force planning and community issues. News releases publicize task force activities in local newspapers and electronic media. Local elected leaders and their councils utilize information and foster citizen participation and civic responsibility. In addition to community leadership program, nonprofit organization board and staff training was offered in the state. Eleven CD agents have received nonprofit board training and have the capability to present programs to local nonprofit and voluntary

organizations on board effectiveness, board governance, risk management, by-laws, board structure and function, public relations, motivation of volunteers, financial management, legal responsibilities, and other related board management and process issues. Clemson Extension partnered with the South Carolina Association of Nonprofit Organizations to provide this training to the state and continues to make the training notebooks and materials available to the 13 state southern region of the U.S.

b. Impacts -

A total of approximately 4,500 local leaders have participated in leadership programs sponsored and supported by Palmetto Leadership during the past 14 years. The program has been offered in 40 of South Carolina's 46 counties. Virtually all "less-developed" counties have had the program. During the past year, 15 programs were offered in 14 counties. Palmetto Leadership graduated 268 leaders in these counties: Allendale, Anderson (Pendleton), Bamberg, Barnwell, Beaufort (Beaufort, Bluffton), Berkeley, Colleton, Dorchester, Fairfield, Jasper, Lexington, Marion, Marlboro, Pickens, and Williamsburg.

This year 4,200 persons participated in 294 Community Leadership programs. The number of participants reporting increased knowledge was 3,786. The number of individuals planning to adopt or increase the use of suggested practices was 2,821.

4,252 persons participated in 67 Economic Development programs. The number of participants reporting increased knowledge was 3,809. The number of individuals planning to adopt or increase the use of suggested practices was 3,369.

1,434 persons participated in 289 Public Issues Education programs. The number of participants reporting increased knowledge was 1,036. The number of individuals planning to adopt or increase the use of suggested practices was 794.

3,973 persons participated in 260 Community Enhancement and Improvement programs. The number of participants reporting increased knowledge was 2,145. The number of individuals planning to adopt or increase the use of suggested practices was 1,385.

### **Key Theme - Community Leadership and Economic Development Leadership Development**

In Leadership Development individuals assumed leadership positions in committees, elective offices, and task groups to accomplish community-based goals. They assumed leadership positions and accomplished community-based results as a direct result of involvement in the leadership program. They were involved in one of the 2.1 task groups per leadership program. Individual capacity development may be more singular or result in voluntary involvement in pre-existing community activities. In Palmetto Leadership task groups address youth leadership, economic development, business appreciation,

educational system support, county promotion materials, tourism plans, human services, and leadership programs. The key outcomes include the formation of strategic and tactical plans to address local concerns noted above.

The number of people who received information through “non-program” contacts such as telephone, office, and site visits in Leadership Development was 1,483. The number of individuals completing leadership programs who collaborated with others in the region to address an issue or concern was 766. The Palmetto Leadership program values partnerships and collaboration. The program beneficiary appreciates the modeling of teamwork and support to address their needs.

The number of nonprofit organization board members trained was 548.

An additional 502 youth were engaged in Intergenerational-Service Learning or Community Development projects.

Four Youth Leadership Dropout Prevention Programs were held with 44 persons participating.

A sample of Palmetto Leadership Program and Task Force Outcomes:

- The Palmetto Leadership Marion County program has offered the leadership program to local leaders consistently in the past 11 years. The program had produced a widely-distributed newsletter, and sponsored a Palmetto Youth Leadership for academic credit. Col. List, a graduate of Palmetto Leadership directs the effort and graduated several classes of young leaders. This collaborative program includes two key groups: Clemson Extension and Mullins High School in Marion County District Two. Other partners include The Sixth Marine Corps District ROTC, Mullins Chamber of Commerce, Marion County Council, Marion County Medical Center, and the City of Mullins. The class had 7 young leaders participate.
- Blufton Leadership graduated 9.
- Jasper Leadership graduated 15.
- Beaufort Leadership graduated 25.
- Youth and adults in Sumter worked to remodel a building to open a new arts center near Harmony Court Public Housing.
- Richland County 101 Course was offered.
- The Citadel Senior Scholars Program
- A leadership retreat for the Board of the SC Assoc of Volunteer Administrators was conducted.
- Colleton County Youth and Adult Leadership Boards were trained.
- The Action Fatherhood Board Training was held in Florence.
- CLED promotional presentations were presented to county leaders in Georgetown and Horry Counties.
- Conducted National Issues Forum for State Association of College and University

Presidents.

- Facilitated public issues forum on Home Land Security Intergenerational Dialogue.
- Conducted the Tri-County Leadership Program and formed a task group on literacy.
- Conducted nonprofit organization board trainings and strategic planning sessions held in Darlington, Florence, Chesterfield, and Kershaw, Barnwell Counties.
- Conducted leadership classes with the Williamsburg County Enterprise Zone in Williamsburg County.
- Conducted youth leadership programs through the Williamsburg County Library in Williamsburg County as a summer program.
- Provided leadership to the 4-H Leadership program in Clarendon County.
- Coordinated the Junior Palmetto Leadership program for 30 eighth graders in Newberry County. The program participants visited nursing homes and participated in inter-generational programs.
- Coordinated the Junior Palmetto Leadership program for 45 11<sup>th</sup> graders. These participants planted flowers for the Department of Parks, Recreation, and Tourism.
- Coordinated the Junior Palmetto Leadership program for 24 10<sup>th</sup> graders who participated in litter pick-up programs as part of an on-going adult Palmetto Leadership program.
- Palmetto Leadership graduate serves as director of Edgefield County Habitat for Humanity program. Plans call for three new homes to be built.
- A Palmetto Leadership graduate was elected as Edgefield County Treasurer.
- A Palmetto Leadership graduate was elected to the Edgefield County School Board.
- Leadership Newberry County introduced movies on Saturday mornings at the downtown Newberry Opera House for children. The movies are cartoons, westerns, and general audience movies.
- Edisto Valley Palmetto Leadership graduates have applied for 501c3 status to continue operating the Edisto Development Council. The purpose of the Council is to promote the region's villages and towns in Aiken County.
- Midland Valley Palmetto Leadership graduates formed a Task Group to offer a Building Family Strengths Program in the Valley in Aiken County.
- A Palmetto Leadership Task Force in Edgefield County formed a Palmetto Leadership Youth Program. A project undertaken by the youth program graduates is the creation of a Landscape for Learning Project.
- Conducted Junior Palmetto Leadership in York, Chester, and Lancaster Counties.
- Conducted Mini-Society Youth Program for Cherokee County.
- Conducted Professional Development Training for Secretaries Association in York County.
- Conducted DIRECTIONS training for nonprofit organizations in Chester County.
- Conducted Leadership Marlboro
- Conducted Board Training for Sumter Citizen's Coalition

- c. Source of Federal Funds - Smith Lever 3b&c
- d. Scope of Impact – State

**Key Theme - Community Leadership and Economic Development -Economic Development  
-Promoting Business Programs**

- a. This project addresses the need for increased expertise regarding economic development methods and strategies in South Carolina’s communities using business retention and expansion (BR&E) models. BR&E accounts for 40-80% of job growth in a community. Locally owned small businesses are growth opportunities for South Carolina. Extension professionals must increase their knowledge and understanding of economic development principles and become an important part of local and regional economic development. As the BR&E credentials of extension staff improve the focus can shift from agent training to BR&E program implementation. Twelve CD agents, extension associates, and specialists are certified in economic development and BR&E programming.

In the past six years, 20 extension agents with community development responsibility graduated from the SC Economic Developers’ School and were certified as Economic Developers. Seventeen agents became BR&E Certified Consultants and are qualified to coordinate local BR&E Programs. In the past years several of these highly qualified personnel have retired. The remaining Extension staff members are expected to become an active and engaged resource to local and regional economic development officials. With the reduction of staffing, the number of BR&E programs has been reduced considerably. This has caused a shift to the use of BR&E Focus Groups for data collection and short surveys. The special emphasis during the past year has been placed on antique retailers and dealers in communities within the Heritage Corridor. This survey work is on-going.

- b. Impacts –  
To date the most successful BR&E Visitation Program was conducted in Beaufort County during the past four years. The findings of this study continue to be a benchmark for planning in the county and region. The Beaufort County Council, the Economic Development Board of Beaufort County, and the Palmetto Electric Cooperative provided significant financial support to the program. The report has influenced public policy and the public officials’ agenda. Media exposure of the BR&E Report provided an important role in educating public officials and the public about business development opportunities and obstacles in Beaufort County. The report is based on interviews and survey responses from 66 randomly selected business operators in the county. The businesses are engaged in building, manufacturing, and tourism industries. The other key program in BR&E was the Barnwell County study using focus groups with a cross-section of businesses, job-related agencies, educational institutions, and job displaced personnel. Loss of staff at the state level has made it difficult to continue support for the program’s research and report preparation phase.



1. There were 67 economic development programs were reported for the year.
  2. The number of individuals completing education programs was 4,252. Of this number, 3,809 individuals reported increased knowledge. The number of individuals who adopted or planned to adopt economic development practices was 3,369.
  3. The number of individuals who received information through “non-program” contacts such as telephone, office and site visits was 775.
  4. The number of community leaders who participated in BR&E task groups was 362.
  5. The number of collaborative efforts to enhance BR&E totaled 28 linkages.
  6. Charleston County Agent secured a \$5.6 million federal grant for the Economic Assistance to commercial shrimp boat owners for the SC Shrimp Industry.
- c. Source of Federal Funds - Smith Lever 3b&c
- d. Scope of Impact - State

**Key Theme - Community Leadership and Economic Development  
Leadership Development (Public Issues Education)**

- a. This project promotes public issues education and the understanding of the process of shaping unified public policy. South Carolina is a state in transition from an agricultural and textile intensive economy with a large rural presence to a state with diversified economic development, a tourist and migrating retiree destination, and global markets. The state faces challenges regarding coastal and lake area development, environmental sustainability, urban sprawl, and the transition of rural areas and a way of life to an urban-orientation. Public disputes are inevitable in such a changing economic, political, and social setting.

Public issues education includes a wide range of topics that must be managed and resolved effectively. Following the best practices of community development can lead to informed decision making and policy development to enhance continued sustainable development and economic development in this state. Extension’s role is to provide the public including key leaders at the state and local level with the most up-to-date knowledge and research findings regarding important public issues. Extension agents are trained as group facilitators. The Public Issues Management School served as a facilitation training forum for a large number of agents in community development, natural resources, and agricultural fields. The role of the facilitator is to remain neutral in the face of sometimes heated public meeting discussions regarding critical issues. The Kettering Foundation has provided important educational material and case study practices to enhance the ability of extension agents and specialists to facilitate groups addressing human issues and environmental concerns. Agents and specialists have gained an excellent reputation for successfully facilitating group forums and panels that address a wide variety of controversial issues. These include natural resource issues and public issues related to education, housing, zoning, “smart growth,” land use planning,

multiple uses of constructed and natural resources such as lake, forest land, nuisance deer, use of pesticides and herbicides, rural-urban interface, urban encroachment on agricultural regions, and other related subjects.

Rural, suburban, and urban South Carolina each has separate issues that need thoughtful consideration. This state's population is increasing by 50,000 annually. The state is becoming more diverse in terms of retiree in-migration as well as that of the Hispanic workforce. Extension is addressing the coastal retiree population, and it will have to increase its program for the Hispanic population in the near future.

This project provides an opportunity to educate audiences about alternative dispute resolution techniques and other conflict management skills are presented to promote effective comprehensive planning and issue management. Public Issues Management School trains participants to become certified facilitators using facilitation, negotiation, and mediation conflict resolution strategies. The curriculum is a 30-hour program that can be customized to meet specific agency or special audience needs.

The program offers models and practice to refine conflict management skills. Public Issues Education also calls for review and interpretation of federal and state legislation with particular emphasis on the Farm Bill and related agricultural and environmental statutes. Formulating public policy that impacts agricultural profitability and production, sustainable regional economic development, land use, public health, and environmental concerns is a complex process that requires careful facilitation and management. The application of scientific land grant-based information during the public policy decision process has far reaching implications for future generations.

b. Impacts –

The number of public issues educational programs conducted was 289 during the past fiscal year.

The number of individuals completing public issues education programs was 1,434, of which 1,036 increased knowledge. Of those who increased knowledge, 794 individuals adopted or planned to adopt practices.

The number of individuals receiving information through “non-program” contacts such as telephone, office, and site visits was 553.

The number of facilitated public meetings addressing public issues was 24.

The number of public appearances used to promote understanding of public issues was 36. (Programs included a health care issues forum, Collaborative Colloquium, Globalization issue during College and University Presidents Annual Meeting, Pathways to Prosperity Health Care, American Immigration,

The number of printed materials used to promote understanding of public issues was 284.

21 National Issues Forums were convened or moderated.

c. Source of Federal Funds - Smith Lever 3b&c

d. Scope of Impact - State

**Key Theme - Community Leadership and Economic Development**  
– Community Enhancement (Tourism)

- a. Community Enhancement includes efforts to address the quality of life and the sustainable development of communities through volunteer and collaborative efforts. Litter programs, beautification, historic preservation, and related efforts that enhance the image and appearance of communities are addressed in the project area. Quality of life concerns and tourism development are significant components of community enhancement. The Heritage Corridor is a four-region area of the state that has placed special emphasis on local asset management and promotion for tourism. This regional designation is recognized by Federal agencies. The Heritage Corridor was created in South Carolina to attract tourism dollars to the band of counties from the foothills to the coast with many historic and cultural features. Rural areas of the state have experienced a shift of jobs and population to urban areas. Many rural areas must rely on tourism, recreation, and non-manufacturing activities for survival.

The South Carolina Design Arts Partnership is a special community enhancement effort. It facilitates a community-based process that results in goal setting to achieve desired improvements in architectural, landscape, historical, and preservation designs. Many of the state's rural communities are losing tax base. This is reflected in the deteriorating physical appearance of streetscapes, parks, public places, landmarks, and historical sites. This partnership functions in concert with the SC Downtown Development Association, the S.C. Arts Commission, Clemson Extension, historical groups, preservationists, and local government and business leaders to improve and rehabilitate local communities.

The methodology for the Design Arts Partnership includes the use of City and Regional Planning faculty, student interns, and planning class projects through a case study approach. Activities follow a consulting model strategy. Students are graded in terms of their contribution to the project. Community leaders provide continuous input and evaluations of the on-going project. The evaluation process is based on costs, visual features, and collaboration.

Work is in progress to develop production systems and management practices that maintain or increase yields and fiber quality while increasing earliness and reducing production costs of South Carolina cotton producers.

- b. Impacts

The design and landscape projects (SC Design Arts Partnership) involving an average of 15 participants per site. This effort includes over 380 activities, festivals, and special programs related to community improvement and enhancement. It appears that many individuals are indirectly involved in these community enhancement projects as volunteers and do not attend actual educational programs. Some unofficial

reports indicate that between 150-200 community members volunteered for activities that planned and managed the SCDAP landscape, redesign, and rehabilitation programs. The number of educational programs and activities conducted was 260. The number of individuals completing education programs in this area was 3,973. Of this number, 2,145 reported increased knowledge. The number of individuals who adopted or planned to adopt practices associated with community enhancement and improvement was 1,385. The number of individuals who received information through “non-program” contacts such as telephone, office or site visits was 1,120. 309 groups or agencies reported collaborating on a task. The number of collaborating agencies in the task groups was 293 in the state. The amount of funds raised to support local programs and collaborative efforts was \$28,772 for the past fiscal year.

In Region 1, 2, and 3, regional centers with office staff have been established to enhance programs, cultural interpretation, and marketing efforts throughout the region. The Heritage Corridor project has a blacksmith in Region 2 construct artistic ironworks for sale. The Interpretation Center is operational in the Foothills Region. The Heritage Corridor Passport Project educates public school teachers about the Corridor, an African American Trail has been identified; an Agricultural Heritage Center Farm-City Day was scheduled, the Dorn Grist and Flour Mill restoration project was planned, and many brochures and news articles were prepared. Other projects included Communities That Care, Beach/River Sweep, tree planting along Riverwalk, and pruning project. \$15,000 was raised toward the signage project for Community Beautification Project.

Technical Contributions: 8

- c. Source of Federal Funds - Smith Lever 3b&c and Hatch
- d. Scope of Impact - State

### **Community, Leadership and Economic Development programs for 1890 include:**

**Funding:** USDA/RBS Cooperative Agreement No. RBS 03 –17 (\$125,000)  
SC Housing Finance and Development Authority (\$60,000)

### **Statement of the Issue**

The South Carolina Office of Research in 2000 reported that African-Americans in South Carolina had the highest percentage of unemployment. Unemployment was 6.4 percent for African-Americans 16 years and older, compared with 2.5 percent of the White population and 4.5 percent of the Hispanic population and 2.5 percent of the other race.

Historically, limited-resource clients and underserved communities have relied on government assistance, but this is only a temporary solution. In South Carolina, rural communities are confronted with a lack of employment opportunities, additionally, they are not afforded access to the training and resources required to develop jobs or locate funding sources needed to organize community service programs like those in large urban areas.

Because of the obstacles, limited-resource clients and underserved communities have lost their resolve to become self-sustainable. In rural business, the best way to change community attitudes is to promote economic security, stimulate job creation and assist entrepreneurs develop innovative ways to enhance their economic viability.

The community economic development and rural entrepreneurial programs offered by the 1890 Research and Extension Program are designed to improve small business income, increase the business ownership and entrepreneurs, educate rural communities about alternative programs and assist with business expansion.

The initiatives are aligned with the South Carolina Department of Commerce, which works on a larger scale to prepare communities for economic and product development (infrastructure, industry construction, and speculative buildings). In fact, the Department of Commerce is working to improve the economy in 23 counties identified by the South Carolina Department of Revenue as distressed, underdeveloped, least developed and moderately developed. The 1890 Research and Extension Program is working with five of these counties – Jasper, Marlboro, Williamsburg, Hampton and Orangeburg, which have an annual revenue ranging from \$3,500 to \$8,000.

Partnerships and collaborations with local and state agencies, community leaders, and schools are essential in addressing the multi-cultural challenges and in strengthening community resources. The 1890 Extension Program partnered with community groups community development corporations and small business leaders to deliver business oriented programs to local residents.

The 1890 Research and Extension Program is dedicated to increasing economic development in rural areas. Through entrepreneurial, economic and technological education and support, the goal is to help rural communities raise their standard of living using the principles of continuous improvement and collective action.

By giving people a thorough and complete understanding of entrepreneurship, rural communities have the skills to solve the economic problems that plague their communities. Furthermore, they'll be able to establish support mechanisms for change, whether those support mechanisms are new businesses that create jobs, or social programs that provide a service to those in need.

According to the 2000 U.S. Census Bureau, Orangeburg County, South Carolina has a population of 91, 337 that is 60.9 percent African American, 37.2 percent Caucasian and the remaining 1.9 percent being comprised of Hispanic, Latino, Asian, American Indian and Alaskan Natives. Seventeen and one tenth percent (17.1) of persons over the age of 25 have less than a high school diploma. The corresponding State of South Carolina averages are lower than those for the county at 13.6 percent and 18.1 percent respectively. The unemployment rate for the county is 11.6 percent, more than double the 4.5 percent unemployment rate for the state. The percentage of families earning less than per capita income of \$25,000 per year is 51 percent. The Northeastern Corridor of Orangeburg Community Development Center (NCOCDC) completed a Service Area Needs Assessment that revealed statewide, the percentage of families with per capita income of less than \$25,000 is 38 percent and the corresponding percentage in the

NCOCDC service area, north of and adjacent to the South Carolina State University campus, is 71 percent. The percentage of the county population with incomes below the poverty level is 23.3 percent and the corresponding percentage for the state is 14.9 percent.

The total number of housing units in the county is 39,304, 19 percent do not have a complete kitchen, 3 percent lack complete plumbing and 15.2 percent have no telephone. The average number of persons per household is 2.8, the state average household size is 2.6.

According to the County of Orangeburg Building Permits Department, from August 3, 1999 to June 13, 2002, Orangeburg County issued 3,282 permits for mobile homes and 650 permits for conventionally built homes. The ratio of mobile home permits to the stick built homes is 5 to 1. The county administrator explained that should the trend continue, the eventual outcome will be the erosion of the county's tax base due to fewer conventionally built homes being constructed and resulting in a disproportionate share of the tax burden being placed on existing homeowners.

Orangeburg County has made physical infrastructure, to include water and sewer, as a part of its Community Development Block Grant (CDBG) funding priority for the past several years. It will continue to be a priority for the immediate future. Thus, the county is supporting South Carolina State University and the Northeastern Corridor of Orangeburg CDC in undertaking affordable homeownership, as well as providing safe, decent and sanitary housing.

Community development activities enhance the social and economic well-being of low and moderate neighborhoods. The research will increase the understanding of community development in selected cities in South Carolina.

Another research project deals with the Hispanic population. The Hispanic population has tripled in the last ten years in South Carolina. The research project examines the patterns of adaptation and community integration of the Hispanic population in South Carolina.

## **Performance Goal(s)**

### **EXT1: To enhance the economic viability of rural and urban communities.**

A main priority in rural communities is the need for community leadership that can stimulate economic development. The Community Leadership and Economic Development program is working to improve the lives of rural South Carolinians by assisting communities to acquire resources toward job creation and the development of new or expanded small businesses. The series or related activities build business and education experiences, along with effective techniques for use in everyday problem solving.

The NCOCDC seeks to improve economic conditions and opportunities; elevate the levels of education, employment and business opportunities; develop safe and sanitary housing for the residents to improve the quality of life for the residents of Orangeburg County. The NCOCDC has implemented community based programs and initiatives that focus on a variety of problems that confront our neighborhoods. The programs include the Owner-Occupied Rehabilitation Program, which provides up to \$15,000 to qualified applicants. The approved applicants receive repairs to their homes that would eliminate health and safety hazards. The Youth Council Program is designed to address the challenges facing our youth and provide an opportunity for involvement in positive, educational and recreational activities. Additionally, the NCOCDC initiated a Home Buyer's Education Program created to inform citizens of home ownership as well as opportunities to provide education on fair housing laws and state and federal housing assistance programs.

**EXT2:**

Often communities are in need of assistance with new business development, social or health programs, community organizing, board training, strategic planning and operating a business. The Community Leadership and Economic Development program provides rural communities technical assistance to foster the development of community organizations and provide guidance to those individuals who are interested in building the capacity of their communities. The clientele includes educators, health care officials, social services, state government, utilities, economic development practitioners, and community groups. Within the past year, new community organizations were established in Sumter, Marlboro, Williamsburg, and Orangeburg counties. 1890 Community Leadership and Economic Development assisted organizations with incorporation, the development of by-laws, 501(c) (3) status, board training, and operation procedures. The communities mentioned have been approved as a 501(c) (3) or in the process of obtaining approval.

**RES1: Understanding the Effects of Community Development on Citizen Participation in Selected Rural and Urban Cities in South Carolina**

The project is designed to use qualitative and quantitative methods to assess community development activity in South Carolina. Southern community development and urban development literature was reviewed to identify major social science databases and selected bibliography of references. A survey instrument will be developed to gather data on economic development in local governments and the level of citizen participation regarding community development activities, to include voter registration and participation over time. The project will compare and examine objective indicators of community development since 1970. A regression analysis will be employed to determine the relationship of independent and dependent variables.

**RES2:** The Evans-Allen Research Project is vital to identifying existing social and educational services (*Food Stamp, Medicaid, TANF, GED, and ESL/LEP*) that are being utilized by the Hispanic population in the state of South Carolina in selected counties. Secondary data sources will be utilized to establish evidence based data concerning Hispanics within the state. The targeted audiences consists of Hispanic's who are 12-65 years, recently immigrated to South Carolina, equal distribution of gender and a resident of one of the 22 selected Hispanic communities with more than 1,000 residents in its county. The 22 counties will be broken down into four notable regions of the state (Piedmont, Midlands, Pee-Dee, and Coastal).

Conducting such research will enable the 1890 Extension Program to connect to the Hispanic community as well as educate and inform both state agencies and selected communities about the impact and/or lack of social and educational services provided to the Hispanic community. Additionally, the study will allow state agencies to benchmark their progress toward serving the tremendous influx of Hispanics into South Carolina since 1990. Furthermore, the research will assist in developing the creation of a data base and develop a profile of Hispanics in the state. It will also expand the information system for developing the human capital and leadership in the Hispanic community. Such information should foster new policies to develop appropriate measures in meeting the needs of the Hispanic population within the selected counties and the entire state of South Carolina.

### **Output Indicators**

Through a series of workshops and training sessions, 262 clients were served by the Community Leadership and Economic Development department during the fiscal year 2003-2004 (October 1, 2003 – September 30, 2004). The clients participated in workshops and trainings in the areas of marketing, customer service, human resources, operations, accounting, bookkeeping, finances, international trade, and other specialized areas of business management. Extension agents made 91 business consultations in Marlboro, Marion, Dillon, Sumter, Calhoun, Orangeburg, Hampton, Beaufort and Dorchester counties.

### **Outcome Indicators**

While state and local programs are dealing with budget cuts and the decline of job availability, community organizations have increased their interest in gaining the skills to expand and enhance rural development. There was an increase in the number of collaborations and partnerships established to assist with educating and training community leaders. As a result of the contacts established with the 140 clients, business plans and loan applications were prepared for 11 clients. Four loan applications totaling \$335,000 were funded. Clients received assistance with the establishment of two businesses and two businesses were expanded.

### **Output Indicators (Educational Workshops)**

Six educational workshops were designed to maximize the agency's ability to reach and address the needs of the residents of the NCOCDC service area and Orangeburg County. During the workshops, the CDC staff presented information regarding the home repair program, explained the application process and gathered the necessary documentation from potential applicants to facilitate the submission of the applications. Individual consultations were held with the attendees to ascertain their particular needs.

### **Outcome Indicators**

The participants included over 40 residents from the CDC's targeted service area as well as Cordova, Neeses, and Holly Hill. Twenty-nine participants were eligible to apply for home rehabilitation services. Eighteen applicants applied and were approved for funding under the Owner-Occupied Rehabilitation Program. Three participants were assisted with homeownership activities by the CDC staff and the remaining participants either did not qualify for services or were placed on a waiting list pending determination of qualifications.

### **Output Indicators (Owner-Occupied Rehabilitation Program)**

The NCOCDC submitted to the South Carolina Housing Finance and Development Authority (SCHFDA) five applications for low and very low income residents of Orangeburg County to receive funding for home rehabilitation. SCHFDA is a state funded program designed to provide financial assistance in the development and preservation of safe and sanitary housing. Each applicant could receive up to \$15,000 toward home repairs.

### **Outcome Indicators**

Five applications for Owner-Occupied Rehabilitation were approved for funding through the South Carolina Housing Finance and Development Authority. The applicants were low to moderate income residents of Orangeburg County and over 95 percent of them were elderly,



handicapped, or disabled. The homes were unsafe and unsanitary. As a result of their low income status, the residents were unable to address the needed repairs.

### **Output Indicators (Homebuyer's Education Program)**

The NCOCDC collaborated with the County of Orangeburg, the City of Orangeburg and the Lower Savannah Council of Government in hosting a Home Buyer's Education Program. The goals of the Homebuyer's Education Program are to increase the level of homeownership in the County of Orangeburg; to increase the number of credit worthy low to moderate income families capable of purchasing a home; and to increase the level of awareness relative to the importance of good credit.

### **Outcome Indicators**

As a result of the Homebuyer's Education Program, 52 families received training on establishing good credit, choosing the right mortgage, understanding their credit rating, and borrowing basics. Two participants of the homebuyer's program applied and were approved for home repair services through the Owner-Occupied Rehabilitation Program facilitated by the CDC in collaboration with South Carolina State Housing Finance and Development Authority. Two additional participants are being assisted with preparations to apply for homeownership through the South Carolina Housing Finance and Development Authority (SCHFDA) Homeownership Program.

### **Output Indicators**

**RES1:** There were no publications, presentations or trainings conducted during the report period.

**RES2:** There were no publications, presentations or trainings conducted during the report period.

**HE1:** There is one B. S. student in political science and one M. A. student in political science.

**HE2:** There is one B. A. student in computer science and one M. A. student in counselor education.

### **Outcome Indicators**

**RES1:** A final research bulletin will be published at the end of the research project.

**RES2:** A final research bulletin will be published at the end of the research project.

### **Key Program Components**

#### **Business Consulting**

The Business Consulting Services provided individual businesses clients with advice related to their particular area of business. Business owners received assistance in marketing, human

resources, operations, accounting, bookkeeping, finances, international trade, and other areas. Consultations took place over the phone, at an 1890 Extension Office or onsite.

### **Business Workshops/Seminars**

The Business Workshops offer business owners advice on ways to enhance their business management. The workshop topics addressed marketing, human resources, operations, accounting, bookkeeping, finances, international trade and other business subject matters. The workshops were taught in a practical way by 1890 Extension staff and SCSU School of Business professors. The workshops were designed to encourage questions, feedback, and idea exchange. Because of this, many preferred learning new business concepts in the workshop format versus any other option. The workshops were offered in collaboration with the SCSU College of Business and Applied Professional Services.

### **Small Business Workshop Series**

The 1890 Program has partnered with the SCSU College of Business and Applied Professional Services to conduct the Small Business Workshop Series. The six-week series was a way to expand our outreach efforts into rural communities. With the business insight of SCSU professors and the 1890 staff, rural business owners and entrepreneurs learned small business management skills and how to turn their small business ideas into reality. Participants left the series with a greater understanding of lending requirements, marketing strategies, bookkeeping, ways to enhance customer service and more.

### **Website Development (Architecture & Graphic Design) for Small Businesses**

A web page is the front door to promoting a business on the Internet. The course demonstrated how to create a website plan. The instructor discussed the ideas, tools, experience and know-how, so participants get the most from their website investment. Participants learn to create virtual communities with customers, suppliers, employees, and friends. The topics allow participants to get the most from their website investments.

### **Entrepreneurship Course for Youth**

The Entrepreneurship Course taught high school students the different aspects of entrepreneurship like writing a business plan, e-commerce, leadership and marketing. The goal is to cultivate world-class business leaders who have the ability to make a difference within the world around them. After students learn the principles, they are given an opportunity to put the principles into practice through the establishment of a small business they develop during the course.

### **High School Entrepreneurship Expo**

The Entrepreneurship Expo is designed to encourage high school seniors to be future business owners. The students have an opportunity to learn the major principles of entrepreneurship and free enterprise through a series of business related workshops. The Entrepreneurship Expo consisted of workshops, competitions, incentives, and scholarships that are designed to instill and reinforce the main principles of business ownership.

### **Beginning Investing**

The four-week program takes individuals step-by-step through the investing process. Weekly participants were introduced to new aspects of investing to include how to read the Wall Street Journal, how to read the stock market indexes, investment strategies and the basics of investing. Middle and high school students venture into the world of business leaders, where they establish their own business and manage their own investment portfolio.

### **RES1: Understanding the Effects of Community Development on Citizen Participation in Selected Rural and Urban Cities in South Carolina (SCX-121-02-04)**

- 1) To place South Carolina community development activities within the broader context of community development in the south;
- 1) To obtain current data on community development activities within incorporated cities;
- 2) To compare and examine objective indicators in selected cities since 1970;
- 3) To determine the extent to which low and moderate income neighborhoods benefit from community development policies and projects; and
- 4) To examine the relationship between the following variables: views, preferences and practices of public officials, community development activists, political structure and community development policies on citizen participation.

### **RES2: Assessing Existing Social and Educational Programs for Hispanic Populations in South Carolina (SCX-824-05-03)**

- 1) To explore patterns of adaptation and community integration of new immigrants of Hispanic origin in selective counties in South Carolina;
- 2) To assess existing social service programs (Food Stamps, Medicaid and TANF) and the use of the programs by the Hispanic population in selective counties in South Carolina and determine the impact on the programs; and
- 3) To assess existing educational service programs (GED and ESL) and the use of the programs by the Hispanic population in selective counties in South Carolina and determine the impact on the programs.

### **Internal / External Linkages**

Memorandums of Understanding were established between 1890 Research and Extension, Office of Community Leadership and Economic Development and SCSU College of Business and Applied and Professional Sciences, Sumter Empowerment Zone/City of Sumter, Marlboro County Community Development Corporation and the Town of Estill. The organizations were interested in promoting community economic development through small business consultations and entrepreneurship education. The services were available to community residents. Also, Memorandums of Understanding were signed with Edisto High School and William J. Clark Middle School to teach the beginning investment course.

A partnership with the SCSU School of Business fostered an opportunity for business professors to share their expertise with community leaders and small business owners. In addition, community leaders obtained research-based information that could be implemented

locally to advance small business development. Therefore, the University was allowed to fulfill its outreach mission of community education.

**RES1: Understanding the Effects of Community Development on Citizen Participation in Selected Rural and Urban Cities in South Carolina**

The project is internally involved with the 1890 Research and Extension Program and the Political Science Department at South Carolina. Externally, the research study involves the Richland County Library, Richland County Election Commission, City Halls of Aiken, Charleston, Columbia, Florence, Greenville and Rock Hill.

**RES2:** The research project involves internal linkage with 1890 Research and Extension. Externally, the study has established collaboration with the Department of Social Services, the Department of Health and Human Services, the University of South Carolina (School of Social Work), South Carolina Department of Education, the Center for Rural Sociology and Community Analysis, Society for Advancement of Chicanos and Native Americans in Science and the South Carolina Commission for Minority Affairs.

**Target Audience**

**RES1:** Adults

**RES2:** Hispanic's 12-65 in selected counties of South Carolina

**Program Duration**

**RES1:** Short Term: Expiration Date – May 16, 2004 – May 15, 2008

**RES2:** Short Term: Expiration Date –October 1, 2003 – September 30, 2007

**Allocated Resources**

**RES1:** Evans-Allen (\$58,397)  
State Appropriations (\$38,932)

**RES2:** Evans-Allen (\$30,685)  
State Appropriations (\$20,457)

**Impact**

Direct assistance or training was delivered to 262 people in business development. In the workshops and seminars conducted, potential entrepreneurs learned how to start a business, how to evaluate business ideas, the basics of financial management, how to write a business plan and ways to locate financial resources. As a result of the workshops and technical assistance, three clients started a new business and obtained two loans totaling \$335,000.

Eighty-eight percent of clients agreed that the services met their expectations and eighty-seven percent agreed that the services provided the information and assistance they needed for small business start-up or operation. Participants expressed high levels of satisfaction with workshops, presenters and materials, which found the content useful. Clients gained educational

knowledge from hands-on experiences and increased their knowledge of regulatory and licensing information. They also obtained information on marketing, finance and bookkeeping skills to enhance the operation of their businesses. In addition, the 1890 Extension Program provided clients an opportunity to work with experts, find out about local resources, receive referrals and network with other business owners. Fifty-one percent of workshop participants currently operate a business and eighty-three percent reported their business as their primary or secondary source of income.

**RES1: Understanding the Effects of Community Development on Citizen Participation in Selected Rural and Urban Cities in South Carolina**

The research can provide data, information and analysis to assist policy makers in drafting development policies that ensure low and moderate income neighborhoods as major beneficiaries. By looking at various community development projects and activities in different cities, the study will provide useful information regarding the most appropriate strategy to revitalize poor neighborhoods and enhance the quality of life of low and moderate people. The data and analysis generated from the research has policy implications for the 1890 Extension Program. The results can assist 1890 Extension in its community development efforts.

**RES2: Assessing Existing Social and Educational Programs of the Hispanic Population in Selected Counties in South Carolina**

Direct impact of the project will be to provide a vehicle for state agencies to benchmark their progress, as well as, foster new policies to develop appropriate measures in meeting the needs of the Hispanic population and assist in connecting the 1890 Extension services to the Hispanic community and develop a data base and profile of Hispanic immigrants in the State of South Carolina. Also, the research will expand the information for developing human capital and leadership in the Hispanic community.

**Scope of Impact: State**

**RES1:** Statewide

**RES2:** Statewide

**Success Stories**

**McNeil Enterprises, Inc.**

McNeil Enterprises, Incorporated is a start-up multipurpose rental facility located in Bennettsville, South Carolina. The facility will be used for commercial and private rental. The commercial rental will include two facilities: The Village Centre, a social/professional meeting facility and “Blast Off: A Galaxy of Fun”, a space-themed indoor children’s playground.

South Carolina State University 1890 Community Leadership and Economic Development Office assisted the McNeils’ in obtaining financing for the facilities. The extension agent counseled the client on the loan process and business plan, as well as assisted in writing the

business plan. The 1890 Extension staff also facilitated the submittal of the loan package to Business Carolina and other financial institutions.

McNeil Enterprises, Incorporated was awarded a loan in the spring of 2004. The loan amount for \$180,000 was obtained from First Citizen Bank, located in Bennettsville, South Carolina. The funds will be used for the reconstruction and remodeling of the buildings and equipment.

### **Taylor and Taylor Realty, LLC**

Taylor and Taylor Realty, LLC is a real estate investment firm located in Columbia, SC. The business is owned by a father and son. They established the company as a way of creating wealth for their family. Taylor and Taylor Realty, LLC primarily invests in residential rental projects within the state of South Carolina.

South Carolina State University Extension assisted the client with organizing a limited liability corporation. The extension agent consulted the client as to the loan process, worked with the client in obtaining all of the necessary information to include, writing the business plan and facilitating the loan submittal to finance their first project.

Taylor and Taylor Realty, LLC successfully established a limited liability company and obtained financing for its first development project. They obtained a loan in the amount of \$80,000 from Regions Bank and an equity investment of \$20,000. The funds will be used to build apartments located in Barnwell, South Carolina. Two rural families will receive affordable housing through the development.

### **Educational Workshops**

The Northeastern Corridor of Orangeburg Community Development Corporation (NCOCDC) conducted six educational workshops to inform residents about the programs and services offered by the agency. The NCOCDC workshops focused on the home repair program and the application process. More than 40 residents attended the workshops. Twenty-nine participants were eligible to apply for the home repair program. Five applications were submitted to SC State Housing Trust and all were approved. In addition, three participants were pre-qualified by a lending institution for financing of their first home.

### **Owner-Occupied Rehabilitation Program \$60,000 Grant**

The Northeastern Corridor of Orangeburg Community Development Corporation, administrated by the 1890 Extension Program, received two grants totaling \$60,000 from the S.C. Housing Finance and Development Authority. The grants provided funding to improve the quality of life for five low and very low income families. Each household consisted of one to three members, serving a total of seven individuals. Each household could receive from \$6,000 to \$15,000 to make the repairs. The repairs included, but were not limited to, new roofs, windows, flooring, HVAC systems, plumbing and electrical work. Five of the owner-occupied houses are 90 percent complete.

### **Key Theme: 4H, Youth Development**

The poverty level for a family of three in South Carolina was \$15,020 in 2002. During the same year, a family of four was considered at the poverty level with an income of \$18,100. The state

of South Carolina is comprised mainly of rural areas, where single parents head families who are almost always living at or below the poverty level. For example, over 40 percent of the youth in households headed by a single parent lived in poverty in 1999. Meanwhile, married couples and their families accounted for less than eight percent of dual parent households living in poverty.

Education also plays a large part in the success of the state's youth. In 2001, African-Americans and other ethnic groups with less than a high school diploma gave birth to 25 percent of the babies born in South Carolina and white mothers gave birth to 19 percent. The high rate of teen pregnancy and high school attrition rates are preventing South Carolina's youth from becoming self-supporting, successful adults. The overall well-being of youth in South Carolina between the ages of 10 and 17 consistently ranked between 42<sup>nd</sup> and 48<sup>th</sup> from 1990 to 2000 (Composite Rank Order, Kids Count 2003). Currently, the state of South Carolina has raised its ranking from 48<sup>th</sup> to 47<sup>th</sup> in high instances of teen pregnancy (births per 1,000 females aged 15-17). Additionally, the percentage of teen high school dropouts jumped from 9.6 to 11 percent and the number of youth living in poverty increased from 21 to almost 27 percent. The above data was derived from the Kids Count 2003 Databook Online.

### Program Components

#### 4H Youth Development

#### **Key Theme – 4-H Youth Development (Personal Development, Leadership and Citizenship)**

- a. Due to a rapidly changing, complex American society and a media-reinforced “me” culture, youth need experience and training to become contributing, effective members of their communities. Without the skills and confidence to make appropriate decisions, youth often make poor choices about important issues. The 4-H Program provides a variety of programs, events and activities designed to improve the ability of youth to develop their personal talents and leadership skills. In addition, the program provides opportunities for youth to serve as partners in planning, implementing and evaluating the overall 4-H Youth Development Program. They are seen as partners in the program, not merely as recipients. Three 4-H members attended the National 4-H Conference in Washington, DC to provide input and vision for the 4-H program of the future. The State 4-H Council visited with the governor and was introduced from the South Carolina Senate and House of Representatives. Eleven 4-H members attended National 4-H Congress in Atlanta, GA. The 4-H program also teaches about the responsibilities of American citizenship. A ceremony is held during State 4-H Congress recognizing youth who have reached their eighteenth birthday and are eligible to vote. State service projects were conducted to benefit children in crisis. Local club and county 4-H programs offered numerous opportunities to help others.
- b. Impact -  
There were 926.5 days planned in this project with 1,188 days reported. A total of 3,317 white males, 4,560 white females, 3,352 black males, 4,542 black females, 92 other

males, 136 other females, and 663 limited resource youth were contacted through this project. There were 513 activities and programs conducted in this project with 9,435 youth completing these non-formal education programs, 7,993 of these youth reported an increase in knowledge with 420 youth reported adopting or increasing uses of practices. A total of 1,397 volunteer hours were also reported.

c. Source of Federal Funds - Smith Lever 3b&c

d. Scope of Impact - State

#### **Key Theme – 4-H Youth Development (Family & Consumer Sciences)**

a. Strong families provide children with a sense of belonging and the security of being loved and nurtured. Children from families without this strength and security often are at risk. Although the 4-H program does not seek to replace the influence and purpose of the family unit, it offers youth the opportunity to become a part of an organization where knowledge and skills can be developed for lifelong learning. The 4-H program seeks to support the family unit and strengthen the individual child, building upon the assets that are present. County Extension agents receiving training through the Building Family Strengths Program utilize their training to reach and help individual youth and their families.

b. Impact -

There were 417 days planned for this project and 375 days reported. A total of 654 white males, 1,332 white females, 890 black males, 1,332 black females, 6 other males, 14 other females and 752 limited resource youth were contacted through efforts made in this project area. A total of 148 volunteers were also reported as participating in this project area. There were 200 programs and activities conducted with 3,149 youth completing non-formal educational programs. Of those youth participating, 2,407 reported an increase in knowledge while 477 adopted or increased uses of practices and 976 planned to adopt practices. There were 0 youth participating in Consumer Judging programs, 200 in Consumer Education classes, and 714 in clothing and textiles education classes.

c. Source of Federal Funds - Smith Lever 3b&c

d. Scope of Impact - State

#### **Key Theme – 4-H Youth Development (Plants & Animals)**

a. Learning about plants and animals has long been the hallmark of the 4-H program. When 4-H began more than 100 years ago, youth from an agrarian society needed skills taught by 4-H to nurture their family's livelihood. Although far fewer youth, including 4-H members, now live on farms or require knowledge of crops and animal husbandry practices to survive, learning about living things is just as critical today because society as a whole has lost touch with agriculture and food production. Of course, teaching youth about plants and animals is much more than teaching them to appreciate life.



Lifelong hobbies and careers develop over the course of a 4-H plant/animal experience. The value of discovering a hobby that is truly cherished and brings lifelong satisfaction coupled with the development of skills and conservation practices makes this project especially significant.

b. Impact -

There were 1,071.5 days planned and 1,617 reported for this project area. A total of 14,372 white males, 15,065 white females, 5,297 black males, 5,581 black females, 308 other males, 244 other females and including 1,169 limited resource youth were contacted through efforts made in this project area. A total of 645 volunteers participated in this project area. There were 729 activities and programs conducted with 19,309 youth completing these non-formal education programs. Of those youth completing the programs 15,132 youth reported increased knowledge while 2,574 youth reported adopting or increasing uses of practices. An additional 8,703 youth completing programs in plant/animal science indicated they plan to adopt recommended practices. A total of 4,384 youth participated in 4-H animal projects while 3,068 youth participated in plant projects.

c. Source of Federal Funds - Smith Lever 3b&c

d. Scope of Impact - State

**Key Theme – 4-H Youth Development (Natural Resources & Shooting Sports)**

a. Although our society expresses a desire for open space and abundant natural resources, citizens often lack a working knowledge of natural resources and an understanding of their role in environmental stewardship. Many have no contact with the natural environment or little experience in outdoor recreation activities. The 4-H program seeks to create an awareness and appreciation of the natural environment and an understanding of individual and personal responsibility of every citizen to maintain the natural resources. 4-H also develops life skills through outdoor education and recreation activities.

b. Impact -

There were 611 days planned and 810.5 reported in this project area. A total of 4,373 white males, 3,201 white females, 1,637 black males, 1,600 black females, 296 other males, 355 other females and including 740 limited resource youth were contacted through efforts made in this project area. There were also 288 reported as volunteers. There were a total of 253 activities and programs conducted with 6,293 completing non-formal education programs. Of those youth who completed the programs, 4,167 reported increase in knowledge and 302 adopting or increasing uses of practices. An additional 1,945 plan to adopt recommended practices. In addition there were 2,326 youth reported in county natural resources programs, 1,123 who participated in shooting sports clubs, and 279 youth trained in hunter safety.

c. Source of Federal Funds - Smith Lever 3b&c

d. Scope of Impact -- State

**Key Theme – 4-H Youth Development (Science, Safety & Technology)**

- a. Youth live in a world where technology rapidly changes and becomes obsolete. Acquiring a basic understanding of electrical and mechanical science is vital to understanding the world around them. Having computer science skills has become a necessity for productive life in the world of work.

Safe behavior is essential for youth and it must be taught and reinforced. Vehicle safety is of grave concern during the adolescent years. The South Carolina 4-H Energy Challenge, with support from SCANA Corporation, Duke Power Company, Inc., and Carolina Power and Light Company, continues to provide an opportunity for South Carolina students to learn about the world of energy. In addition, 4-H youth are actively engaged in electric, computer science, and safety programs.

In addition, strong emphasis is needed on developing an awareness in youth of the relationship between sound nutrition and physical exercise. Healthy practices related to sound nutrition and physical exercise are often misunderstood or simply not practiced by even those youth who participate in organized athletic activities. In nutrition and fitness, the 4-H program offers instruction in workshops, seminars, school enrichment and camping.

b. Impact -

There were 587 days planned and 689.5 days reported in this project area. A total of 1,839 white males, 2,086 white females, 1,548 black males, 1,799 black females, 565 other males, 604 other females and including 1,353 limited resource youth were contacted through efforts made in this project area. There were 253 activities and programs conducted with 6,549 youth who completed these non-formal education programs. Of these youth who completed the programs 5,381 youth reported increase knowledge and 946 youth reported adopting or increasing uses of practices. There were also 2,675 youth who completed programs and plan to adopt the recommended practices. A total of 794 volunteers were reported in this project area.

c. Source of Federal Funds - Smith Lever 3b&c

d. Scope of Impact - State

**Key Theme – 4-H Youth Development (Food & Nutrition)**

- a. Youth are faced each day with making choices, some of which could impact their lives forever. They face the challenge of balancing their desire and ability to make healthy decisions with the desire to feel part of a group. Without the skills and confidence to

make appropriate decisions, youth often make poor choices about important issues. The 4-H Program provides a variety of programs, events and activities designed to increase the ability of youth to make wise decisions. In addition, the program provides opportunities for youth to serve as partners in planning, implementing and evaluating the overall program. They are seen as partners in the program, not as recipients of the program.

- b. Impacts -  
There were 387 programs conducted in this project, with 5,347 youth completing these non-formal educational programs. Of those youth completing the programs, 4,398 youth participants reporting an increase in knowledge.
- c. Source of Federal Funds - Smith Lever 3b&c
- d. Scope of Impact - State

#### **Key Theme – 4-H Youth Development (Communications & Expressive Arts)**

- a. Living successfully in the information age requires that youth be knowledgeable and skilled in communicating their ideas and beliefs. This includes the ability to speak with poise and confidence in the public arena, effectively and efficiently communicate utilizing computer technology and through standard written formats. Extension 4-H programs provide opportunities for youth to become proficient in many communications modes. The opportunities exist through different delivery modes in order to reach a diverse audience of young South Carolina citizens. Competitive events which are designed to strengthen the skills of the 4-H participants include: method demonstrations in 4-H project areas; public speaking contests; and a business demonstration contest.
- b. Impact -  
There were 60 days planned in this project with 53 days reported. A total of 94 white males, 189 white females, 131 black males, 211 black females, 2 other males, 1 other females and 0 limited resource youth were contacted through this project area. There were a total of 32 activities and programs conducted in this project area with 442 youth completing these programs. Of those youth participating, 339 reported an increase in knowledge, 64 reported adopting or increasing uses of practices, and 97 reported they plan to adopt new practices. The 4-H debating contest had 34 participants while 28 participated in public speaking contests with a total of 1 participating in Business Demonstration Contest. A total of 7 Volunteers assisted with these programs.
- c. Source of Federal Funds - Smith Lever 3b&c
- d. Scope of Impact – State

### **Key Theme - Youth Development (Teaching KATE)**

- a. Some children never have the opportunity to explore the natural world around them. Experiencing the environment is often done through textbooks and other formal educational methods. Taking kids into the natural world to explore resources is the best way to teach them about the environment. Experiential learning is the hallmark of all 4-H programs and Teaching KATE (Kids About The Environment) is no exception.
- b. Impact -  
There were 98 days planned and 94 days reported for this project area. A total of 1,753 white males, 2,089 white females, 642 black males, 915 black females, 96 other males, and 88 other females were contacted through this program area. There were 32 activities and programs conducted with 2,056 completing non-formal education programs. Of those youth who completed the programs 0 youth reported increase in knowledge and 0 youth reported adopting or increasing uses of practices. There were also 0 who plan to adopt recommended practices. In addition, 0 people were reached in promotion effort of Teaching KATE and 0 teacher received Teaching KATE lesson plans.
- c. Source of Federal Funds - Smith Lever 3b&c
- d. Scope of Impact – State

### **Key Theme: Youth Development -Youth at Risk Programs**

- a. Adventure and experiential learning are core components of programs in this area. The goal of these programs is to provide youth who have exhibited high-risk behaviors a chance for growth and personal development so that they can succeed back in their communities and classroom. Through the use of alternative educational program, students can strengthen their academic skills, build self-esteem and life skills while increasing leadership skills in an organized camping environment. Programs conducted through this effort include non-residential alternative school programs as well as overnight residential camping programs.
- b. Impact --  
There were 630 days reported for this project area and a total of 19,619 contacts made. A total of 107 educational programs were conducted reaching 2,587 youth through overnight programs, in-school programs, and day camps.
- c. Source of Federal Funds - Smith Lever 3b&c
- d. Scope of Impact - State

**Key Theme: Youth Development (Family and Adult Outreach Programs)**

- a. The magic of the camp experience can reach adults as well as youth. New surroundings, new challenges and supportive environments strengthen families and encourage new experiences and fresh perspectives. Programs conducted through this effort include Elderhostel programs that bring a wide variety of educational and recreational retreat opportunities to those over the age of 55. Subject areas for these programs include Ornithology, history of the Santee-Cooper lakes, canoe trips, the Internet, the Revolutionary and Civil Wars, and much more. In addition, many rowing teams from the northeast and mid-west attend training programs to prepare for their upcoming season. Also, many groups, such as churches, businesses, non-profit organizations, government agencies, and schools, participate in weekend or summer retreats that are designed for their particular needs.
- b. Impact –  
There were 146 days reported for this project area. A total of 12,170 contacts were made through this program area. A total of 56 educational programs were conducted reaching 1,479 people through overnight residential programs.
- c. Source of Federal Funds - Smith Lever 3b&c
- d. Scope of Impact - State

**Key Theme: Youth Development -Special Needs Programs**

- a. Physical limitations should not limit the opportunities for individuals to learn and grow. Camp programs are specifically designed to encourage individuals to reach beyond their perceived boundaries and grow through their experiences. Programs in this area include week-long residential camps for children who have diabetes or have been diagnosed with cancer, as well as programs for youth and adults with other disabilities and special needs.
- b. Impact --  
There were 48 days reported for this project area. A total of 3,551 contacts were made through this program area. A total of 17 educational programs were conducted reaching 698 people through overnight camping programs.
- c. Source of Federal Funds - Smith Lever 3b&c
- d. Scope of Impact - State

**Key Theme: Youth Development -Youth Leadership Programs**

- a. Using experiential education and natural settings, we have created innovative programs that assist in the healthy development of young people. Through the use of adventure programs and hands-on activities, students learn to communicate effectively, solve

problems and work with others. Programs in this area range from two-week summer camp programs to day-long planetarium presentations. In addition to traditional camp activities, campers are also taught food and nutrition, aerospace technology, marine science and wildlife ecology.

b. Impact --

There were 517 days reported for this project area. A total of 39,652 contacts were made through this program area. A total of 235 educational programs were conducted with 10,672 youth participating.

c. Source of Federal Funds - Smith Lever 3b&c

d. Scope of Impact - State

**Key Theme: Families**

**Key Theme - Families (Building Family Strengths)**

- a. Society has undergone dramatic social, demographic and economic changes that have deeply affected individuals and families in this country. Extension will focus on strengthen individuals and families while addressing current issues facing children, youth and families across the lifecycle. Creating caring families and communities through collaborative efforts is a MUST if we are to meet the challenges today and beyond. This approach demands a team approach to programming that focuses on the needs of the total family. Strong families provide children with a sense of belonging and identity and create hope for the future. Extension programming in Building Family Strengths provides opportunities to strengthen families and address issues facing children, youth and families. The program has a developmentally appropriate curriculum designed to strengthen families. This Building Family Strengths program has been the recognized as a “model” for team programming by the NAE4-HA and Epsilon Sigma Phi, receiving state and national recognition. In addition, Building Family Strengths has been identified by the CSREES Family Development/Resource Management base program team as a program of excellence.

Extension programming in Building Family Strengths provides opportunities to strengthen families and address issues facing children, youth and families. The program has a developmentally appropriate curriculum designed to strengthen families. This Building Family Strengths program has been the basis for a four-year program of work effort for SC Cooperative Extension. Partners involved in utilizing the materials statewide are Department of Social Services (Youth Services Program) Clemson University College of Health Education and Human Development, South Carolina State University, Prison System, Faith-based institutions and secondary schools in South Carolina. In addition, Building Family Strengths has been identified by the CSREES

Family Development/Resource Management base program team as a program of excellence. The program has been recognized by the National Association of Extension 4-H Agents as the national and regional winner for Excellence in Teamwork and received the Excellence in Teamwork award from the Alpha Chapter of Epsilon Sigma Phi and was selected as the 2003 winner of the SC Extension Teamwork Award. Utilizing the train-the-trainer model, this holistic approach to family programming has been successful in a variety of settings that include traditional classrooms, state youth services, county extension Family and Consumer Sciences and 4-H agents, student teacher training, and non-profit organizations.

b. Impact –

Examples include Strengthening Women workshop, Day Care Providers, Maternity Health Fairs, Community Youth Boards, Housing authorities, Character Education Course Planning, Pregnancy prevention, Junior Achievement, After School Enrichment Programs, Communities in Schools, 21<sup>st</sup> Century Coordinators, Department of Social Services, Conflict Resolution, Anger Management, and the SC Council on Aging. Throughout the year, many train-the-trainer workshops were conducted by state and county Extension faculty. The focus of the Building Family Strengths program this has been on curriculum development and training utilizing the train-the-trainer model. To this end, professionals representing Extension, secondary schools, Headstart, daycare personnel, higher education, human service agencies, law enforcement, and clergy have been trained throughout the state. In addition 13 military installations in the Southeast have adopted the BFS curriculum for use in the afterschool programs and over 500 professionals will receive the training. The SC 4-H Operation Military Kids project is using the Building Family Strengths model to address family needs of deploying service men and women.

The trainings were designed for diverse work settings and provided the basis for partnerships in the project. It also increases Extension’s visibility and ability to program in many different settings. In addition, the curriculum design is applicable to audiences reached by many organizations. The delivery of the Building Family Strengths curriculum throughout the state has demonstrated Extension’s ability to offer train-the-trainer trainings (for a fee) to other professionals. The current planning cycle focuses on marketing the revised Building Family Strengths curriculum and targeting later life development stages – Building Family Strengths for Later Life to address emerging family issues of baby boomers.

Building Family Strengths for Later Life

1.	Number of educational programs and activities conducted.	89
2.	Number of people completing educational programs.	1,998
3.	Number of people reporting increased knowledge.	1,302
4.	Number of people who plan to adopt practices.	575
5.	Number of people adopting practices.	319
6.	Number of people receiving information through “non-program” contacts such as telephone, office, and farm visits.	211

7.	Number reached through mass media.	20,000
8.	Number of volunteer hours.	4
9.	Number of people participating in Conflict Resolution/Anger Management programs.	50
10.	Number of people participating in Taking Charge in Challenging Times programs.	6

#### Building Family Strengths – A Youth Development Approach

1.	Number of educational programs and activities conducted.	87
2.	Number of people completing educational programs.	2,104
3.	Number of people reporting increased knowledge.	1,185
4.	Number of people who plan to adopt practices.	1,167
5.	Number of people adopting practices.	174
6.	Number of people receiving information through “non-program” contacts such as telephone, office, and farm visits.	608
7.	Number reached through mass media.	113,853
8.	Number of volunteer hours.	0
9.	Number of people participating in Conflict Resolution/Anger Management programs.	112
10.	Number of professionals participating in Train-the-Trainer programs.	127

In February 2001 and 2005, National Strengthening Families and Youth Conferences were sponsored with over 160 participants across the US and Australia for professionals working with youth and families. Throughout the year, many train-the-trainer workshops were conducted by state and county Extension faculty. The third national conference, Strengthening Families, Youth and Communities is planned for February 2006.

c. Source of Federal Funds - Smith Lever 3b&c

d. Scope of Impact - State

#### **Key Theme – Families – (Financial Management)**

a. Many South Carolinians are in great danger of not being financially stable and secure throughout their lifetimes. Because most people did not receive formal financial education in their youth, they need lifelong learning opportunities to help them improve their financial management skills. Increasing financial literacy throughout the life cycle is essential to avoid the following threats to financial security.

Programs in this area are designed to increase the number of South Carolinians who are financially literate and empowered with the knowledge, attitudes, skills, and confidence to



practice effective and successful financial management strategies that insure financial security and stability across the life cycle. Education programs encourage families to adopt financial practices which will increase financial security and stability and help families cope with financial impacts of periods of reduced income due to plant downsizing and military base closings, as well as from divorce, widowhood, and natural disasters.

Educational programs for youth encourage them to 1) set and achieve financial goals through regular savings, 2) help them understand and adopt basic financial management practices, 3) make wise consumer decisions in the marketplace, and 4) provide entrepreneurship concepts in preparation for real world experiences. Programs are conducted by county agents and specialists.

b. Impact -

Impact data for each of the projects are as follows:

*Financial Security and Stability* - There were 233 days planned and 317.5 days reported in this project area equaling 1.4 FTE's with a total of 2,358 contacts and 1,394 people participating in 80 educational programs.

1. Number of educational programs and activities conducted.	80
2. Number of people completing educational programs.	1,394
3. Number of people reporting increased knowledge.	969
4. Number of people who plan to adopt practices from those who increased knowledge.	265
5. Number of people adopting practices from those who increased knowledge.	29
6. Number of people receiving information through "non-program" contacts such as telephone, office, and farm visits.	879
7. Number of people who engage in activities which increase their financial literacy related to later life issues.	201
8. Number of people who initiate or increase contributions to a savings plan.	120
9. Number of people who participate in the Legal Check Up program.	0
10. Number of people set or revise spending, saving, or debt reduction goals.	57
11. Number of people who participate in the Investing for Your Future program.	0
12. Number of people who develop a plan for accumulating, protecting, and distributing/transferring assets.	0
13. Number of people who participate in programs to cope with financial impacts of reduced income (Ex. Taking Charge in Challenging Times)	65

Resource Management for Youth - There were 151 days planned and

147 days reported in this project area equaling .6 FTE's with a total of 1,691 contacts and 1,154 participating in 54 educational programs.

1. Number of educational programs activities conducted.	54
2. Number of people completing educational programs.	1,154
3. Number of people reporting increased knowledge from those completing progs.	856
4. Number of people who plan to adopt practices from those completing progs.	315

5. Number of people adopting practices from those who increased knowledge.	123
6. Number of people receiving information through "non-program" contacts such as telephone, office, and farm visits.	474
7. Number of participants in the High School Financial Planning program.	357
8. Number of participants in the Mini-Society program.	26
9. Number of participants in the LifeSmarts program.	0
10. Number of participants in a financial program (i.e. – "Money My Way" or "Financial Fitness for Youth" lessons).	54

c. Source of Federal Funds - Smith Lever 3b&c and some grant funding.

d. Scope of Impact - State Specific

**Key Theme – Families (FCL Volunteer Management and Leadership Development)**

a. The purpose of Project 125 FCL Volunteer Management and Leadership Development was to implement an effective volunteer management system for FCL boards, committees, and county organizations and to establish, revitalize and/or improve the cooperative relationship with FCL to expand the scope of its membership and programming efforts.

b. Impact –

During the 2003-04 fiscal year, 347 days were planned in this project area. Six hundred nine and a half days were reported equaling 2.7 FTE's with 12,000 total contacts. Three hundred nine programs were conducted with 3,966 people in attendance. Of those completing programs, 2,835 reported an increase in knowledge and 1,700 of those planned to adopt practices. According to the 2004 Education Report submitted by President Pat Breznay, 11 counties sent reports with the following data totals using an \$18 per hour figure:

Family and Youth	5,956 hours were donated	\$107,208.00
Environmental and Health	5,606 hours were donated	\$100,908.00
Nutrition and Food Safety	1,460 hours were donated	\$ 26,280.00
Special Projects	11,337 hours were donated	\$204,066.00
State Project	1,179 hours were donated	\$ 21,222.00
Prepare/present Lessons	4,982 hours were donated	\$ 89,676.00
Conduct club/county business	2,071 hours were donated	\$ 37,278.00
Total hours donated	32,591	\$586,638.00
Donations other than "Penny's for Friends" and Nickels for SC Youth		\$ 30,835.00

Penny's for Friends	\$	858.01
Nickels for SC Youth	\$	621.86

**Volunteer hours plus money's donated toward the betterment of SC**  
**\$618,952.87**

- c. Source of Federal Funds - Smith Lever 3b&c
- c. Scope of Impact – State

The **1890 Extension 4-H and Youth Development Program** provides family and resource management and various educational programs and activities to improve the well-being of the internal family structure in South Carolina. In a massive and on-going effort to assist youth and families to improve their quality life, the 1890 Extension Program at South Carolina State University has focused its attention on two vital areas: youth and families. The two focus areas include a plethora of youth projects and activities that work to counteract the negative trends influencing youth in South Carolina. The educational projects include youth camps, academic enrichment programs, financial planning, recreation, leadership development, life skills, and mentoring.

In regards to research, reading comprehension remains a constant enabling/disabling factor casually associated with test performance and academic performance. The research examines the effects of an etymological word learning system on regular and special needs children in rural schools.

Early mentoring is more likely to demonstrate hope and positive self concept in the later years of youth. A research study to examine student outcome as a result of a college mentoring experience in the middle school years is vital.

### **Performance Goal(s)**

#### **EXT1:**

There is a decline in the family structure in the state South Carolina. According to the Department of Health and Environmental Control, 29 percent of the families in the state are headed by single parents. The Building Family Strength program was initiated to obtain information that would directly address the issues of youth and families. The program focused on the positive qualities of families and encouraged them to recognize their strengths and build upon them.

The child development component is designed to provide opportunities for children, youth, and families to participate in organized educational experiences. Because rural families live on a limited income, it is difficult for many families to provide children with the educational materials and skill enrichment necessary for healthy child development. Armed with the ability to understand child development, parents have the information and skills to be successful in parenting.

**RES1:** The project conducts a two year quasi experimental investigation of the effects of the etymological word learning system on regular and special need children in rural schools. Under the Sankofa Language Aptitude Development System, the principles of sankofa punctuate language development activities, setting the stage for recurring epiphanies in the mind of each student. The epiphanies constitute the sudden awareness of the relationship between a host of words bound by their etymologies. The fundamental element in the Sankofa Language Aptitude Development System sets it apart from all other language learning systems and stimulates future learning.

The Sankofa process is further enhanced by instructional activities requiring the use of the dictionary and the contextual application of new words and phrases in appropriately re-structured sentences and paragraphs. The sequence and pattern of the activities under the learning modules are structured to achieve and sustain high levels of motivation to learn among students. Each activity is designed to reinforce the notion that learning words can be easy and enjoyable.

**RES2:** The mentoring project was designed to impact essentially high-risk students through the mentoring relationship and to measure the effects of that intervention against students in a control group. The current Phase II of the research is an extension of a 5 year longitudinal study (Phase I). In Phase I, the object was to measure identifiers that predicated success in academics, discipline, truancy and prevention of drop-out, pregnancy or violent behavior based on mentored vs. non-mentored children. The purpose of Phase II is to ascertain success of mentoring experiences reflected by career choices, emotional development, self-esteem, social values and hope that precede successful adaptation to adulthood.

The triangulation study continues to use a quasi experimental design to measure self concept of participants and qualitatively assess participants through use of interviewing and quantitative testing.

### **Output Indicators (Child Development)**

State law requires that child care service providers receive 15 hours of annual in-service training. Collaborations were established with 46 child care providers and community groups who desired assistance from 1890 Extension to help meet their training needs. The St. Paul United Methodist Church Day Care and Kindergarten Program, Kid's World Learning Center, Trinity United Methodist Church Child Development Center, Kiddie Kollege, Mama Stokes Family Day Care, Doja's New Beginnings Day Care Center, Playhouse Nursery, OCAB Head Start Program, First Baptist Child Development Center, Immanuel Baptist Child Development Center, Allendale Adult Learning Center, Calhoun Adult Education, Orangeburg Adult Education and Hampton County First Steps partnered with the 1890 Extension Program for their child development training needs. A total of 756 participants attended the child development training sessions. The sessions were presented by one full-time employee.

In another partnership, 1890 Extension conducted a Train the Trainer training for Calhoun County Adult Education. Ten participants from Calhoun County First Steps were trained to implement "Off to a Good Start", a kindergarten readiness program.

With a focus on literacy and encouraging reading at a young age, a reading activity was conducted with child care development centers in Orangeburg and Florence counties. Extension staff visited 13 child care development centers where they engaged preschoolers in storytelling and a puppet show. The students were given a healthy snack and parental tips that encouraged reading and other school readiness skills. Each student received a Clifford the Big Red Dog book.

### **Outcome Indicators (Child Development)**

By collaborating with 1890 Extension, child care providers saved an average of \$15,120 during the fiscal year 2003-2004. The average savings per class was \$20.00 per person. With the 1890 Extension program offering child development training, providers were able to reallocate their training funds for use in other areas. The 1890 Extension Program also reduced travel cost by providing the training sessions at the child development learning centers.

Ninety percent of the participants in the Off to a Good Start program were African-American and 10 percent were Caucasian. One hundred percent of the participants were females. Participants were asked to complete an evaluation form to determine whether the curriculum was still being used. The participants said that they used the parent handouts to share information with parents and activities and to emphasize specific skills being taught. The Calhoun County First Steps program reached over 100 families.

A total of 218 students participated in the reading activity conducted at child care development centers. Eighty-eight percent of the participants were African-Americans and 12 percent Caucasian. Fifty percent of the clients were males and 50 percent females. A total of 500 Clifford the Big Red Dog books were distributed to students. It is anticipated that the students will improve their reading skills and read more often after participation in the event. One hundred percent of the students said they enjoyed the activity. Teachers stated, they liked the interaction between the presenter and the students. They also stated that they would love for the storyteller to come back to the center.

### **Output Indicators (Parenting)**

Partnering with the Calhoun County Department of Social Services, the Tackling the Tough Skills program was used to conduct 30 workshops for the Calhoun County Parent Education Support Class and Orangeburg, Calhoun, Allendale and Bamberg Community Action. The workshops addressed goal setting, financial management and stress management. The purpose of the workshops was to improve the quality of life for the parents and empower them with the necessary skills to make changes in their personal and family lives that would result in positive growth.

### **Outcome Indicators (Parenting)**

The Tackling Tough Skills program was offered during a six-week cycle. After six weeks, the clients were placed in a workplace liaison program. Twenty-eight clients participated in the classes. Ninety-three percent of the participants were females and seven percent males. Ninety-three percent of the participants were African-American, seven percent Caucasian and one percent Hispanic. Eighty-one percent of the participants were able to identify three goals that they wanted to accomplish during the next 12 months. Eighty-eight percent of the participants developed a spending plan and 15 participants obtained employment.

### **Output Indicators (Honors Program Debate Team)**

The 1890 Extension Program assisted in training the SCSU Honors Program debate team, which trained to compete against students from other black colleges and universities. Over a period of two months, the extension agent served as a coach for the four member debate team. Team members were taught the art of debate; the rebuttal process; and how to listen for new information that may be used in sequence rounds. The team trained twice a week for two months to prepare for the competition. Students also participated in one-on-one sessions with the coaches. Students were encouraged to use the Internet, periodicals and reference materials to define their points in the affirmative and the negative. The team placed third in the national competition.

### **Outcome Indicators (Honors Program Debate Team)**

The 1890 Extension Program collaborated with the South Carolina State University Honors Program, the National Association of African American Honors Program, the National Association of Honors Program Executive Committee and the South Carolina State University Title III program to assist the debate team. Through the debate team, four students enhanced their academic achievement and scholarship. Four clients participated in eight meetings to prepare for the debate. Fifty percent of the students surveyed were males and 50 percent female. All of the clients were African American.

### **Output Indicators (Strengthen Families)**

The Building Family Strength program was used to conduct 21 workshops on communication, self-esteem, contentment, humor, and history. The trainings were presented by four full-time employees. Thirty-six students participated in the Building Family Strength program held at the Orangeburg Boys and Girls Club, St. Paul Apartments and Ellore Elementary School. Five students from Ellore Elementary School participated in the program. They were all African-American females. Four workshops were conducted for members of the Orangeburg Boys and Girls Club and 10 sessions for youth at St. Paul Apartments.

### **Outcome Indicators (Strengthen Families)**

Orangeburg Area Boys and Girls Club, Ellore Elementary School and St. Paul Apartments were sites of the Building Family Strength program. A total of 36 clients participated in the lessons. Fifty-eight percent of the participants were females and 42 percent were males. One hundred percent of the participants were African-American. Results of the evaluation results determined that 75 percent of the participants understood the importance of communication; 58 percent of the participants said they would use the tactics given to improve self-esteem; and 50 percent of the participants stated history was important to the family structure.

Results of the evaluation conducted following of the Ellore Elementary School program revealed that 80 percent of the participants in the Building Family Strength program said they had made some changes in their attitude. As well, they reported an improvement in their self-esteem. The extension agent conducted followed-up with the guidance counselor, who continues to work with the group.

**EXT2:** In order to determine the level of assistance needed in community-based organizations, pre and post –tests were given to participants. Community organizations throughout the counties provided seminars on drug and alcohol awareness, nutrition and health and wellness. Additional collaborations were established with local community centers and business, which provided discounts on refreshments for youth. The focus areas included: leadership skills development, financial planning, youth camps, and academic enrichment programs.

### **Output Indicators (Youth Camps)**

Across South Carolina communities, youth have little to do during the summer months. Youth are becoming involved with violence, gangs, and poor nutrition due to a lack of summer programs. Limited resource youth are being affected by high dropout rates and underachievement. Clearly, anyone of the mentioned behaviors would diminish a youth's life chances. The 1890 Extension Program provided an opportunity for youth to be engaged with a summer enrichment program that reinforced school performance activities and enhanced life

skills. The summer enrichment programs were offered in Hampton, Marlboro, Pickens, Orangeburg and Williamsburg counties. Students were divided into classroom activities based on grade level. Students participated in math and reading to reinforce the skills learned during the school year.

### **Outcome Indicators (Youth Camps)**

The audience included 562 participants in the summer youth camps. Enrichment activities consisted of health, math, reading, and leadership skills. Participants were given a pre and post test. There were more than 26 workshops, 20 trainings and 30 meetings held during the summer camp periods. Based on surveys and questionnaires, the participants gained knowledge from the programs offered; adopted the practices; and planned to use the practices.

### **Output Indicator (Leadership Skills Development)**

Basic leadership knowledge and skills are essential for success. Leadership is a priority within the 4-H and Youth Development program. As a result of 1890 Extension leadership development component, youth have improved their ability to face challenges in the future. Programs were offered in Hampton, Orangeburg, Marlboro and Pickens counties. The program consisted of experiences and activities designed to promote life skills practices.

### **Outcome Indicators (Leadership Skills Development)**

Three hundred and thirty-eight youth were reached through the 1890 Extension 4-H Youth and Development Program. The participants attended fifty workshops. Ninety-five percent of the participants were African-American, while four percent were white and one percent Hispanic.

### **Output Indicators (Academic Enrichment)**

Williamsburg, Marlboro, Marion, Dillon, Clarendon and Orangeburg counties offered a well-rounded after school literacy program that included physical education and fine arts. The youth participated in reading, writing and math activities that were integrated through science and social studies. The youth were involved in Scholastic Reading Counts, the Accelerated Reader Program and modules designed to promote and improve literacy. The program also offered hands-on activities for math and science that improved higher level thinking and processing skills for the participants.

### **Outcome Indicators (Academic Enrichment)**

Williamsburg, Marlboro, Marion, Dillon, Orangeburg and Clarendon counties provided assistance for more than 721 youth participants through their academic enrichment program. A racial breakdown of the participants showed, of the 721 youth involved, three percent were Caucasian, one percent Native American and 96 percent African-American. A gender breakdown showed that there were 59 percent females and 41 percent males. Each site kept a detailed tracking record throughout the school year. Records indicated ninety percent of the youth attended tutorial sessions, eighty percent of the time. Of the participants attending the sessions, records tracked quarterly reports, homework assignments and special projects, which displayed ninety percent of youth increased their scores by at least a half-point on the Reading Readiness grading scale. An etiquette component was included to encourage the participants to improve both their manners and social skills, while introducing more appropriate ways to express

themselves courteously. A budget in excess of \$114, 000 was used to implement the program component.

### **Output Indicators (High School Financial Planning)**

The management of family finances and credit are major concerns across the United States. Often, poor credit history prevents people from qualifying for home mortgages and other loans. Many families are living from pay check to pay check. The number of personal bankruptcies has continued to rise. Productivity in the workplace is affected when workers experience financial stress. Effectively managing money and finances is a learned skill. The 1890 Extension Program at South Carolina State University conducted a six-week financial planning workshop at Calhoun County High School, Woodland High School and North High School to educate and prepare students to manage their finances. The program focus area was presented by three full-time employees in Orangeburg, Calhoun, and Dorchester counties. The audience included two hundred and ninety-eight participants. Eighty percent of the participants were African-American and 20 percent were Caucasian. Sixty-three percent of the participants were females with 37 percent males.

### **Outcome Indicators (High School Financial Planning)**

The schools that participated in the financial planning program showed an average increase of 49 percent, 18 remained the same, 13 showed a decrease in financial planning skills. Participants showed an average increase of 32 percent, 29 remained the same, 29 showed a decrease.

Seventy- four participants from Denmark and Bowman high schools have adopted the information about college preparation and career choices. The extension agent directed questions to each student about the careers they chose. The students selected careers such as engineering, cosmetology, lawyers, pediatricians, veterinarians and doctors. An extension agent also provided information through lectures on how to prepare students for their career choices. Recommendations were given such as contact the colleges that have their interested field and consult with the guidance counselor, as well as conducting individual research.

### **Output Indicators**

#### **RES1: Experimental Application and Development of the Etymological Word Learning System**

- 5) There were no publications or presentations made for the reporting period.

#### **RES2: Adolescent Violence and Acting Out Following a College Student Mentoring Experience in Fifth and Sixth Grades: Phase II**

- 1) Two publications or presentations were derived from the research during the 2003-2004 reporting period.

### **Outcome Indicators**

**RES1:** A final research performance report will be published at the end of the project period.

**RES2:** A final research performance report will be published at the end of the project period.



## **Key Program Components**

### **Leadership Skills**

Teen Leadership Connection was implemented as part of the summer enrichment program. Teen Leadership Connection is a comprehensive youth development program that is a prevention-based, experiential, and interactive and community-oriented program for youth ages 11 and up. Youth learned the value of cooperation and teamwork through a variety of educational and entertaining activities. TLC is designed to help more students overcome the against academic achievement, by improving their school attendance, demonstrating academic excellence, providing service to their communities and participating in organized positive youth development programs. During the two-weeks, topics included conflict resolution, self-esteem, social skills and leadership.

Unlock Your Leadership Potential was designed to help youth learn and practice leadership skills. The 4-H Leadership component provided an opportunity for young people to practice a variety of leadership skills while learning communication, conflict resolution, decision making, understanding different teaching methods and learning styles, managing resources and people and cultural diversity.

### **High School Financial Planning**

National Endowment for Financial Education (NEFE) High School Financial Planning was developed and sponsored in partnership with the U.S. Department of Agricultural Cooperative State Research, Education, and Extension Service and credit unions. The component is designed to alert and educate high school students in the fundamental concepts of financial planning. The financial planning sessions included workshops and hands-on practice in buying, budgeting, saving and check writing.

### **Building Family Strength**

Building Family Strength was designed and developed to provide a comprehensive, developmentally appropriate approach to strengthening families. Each of the family strengths provided knowledge and skills to strengthen individuals and families across the lifecycle. The 10 family strengths are individually and collectively important and inter-related: communication, contentment, sense of optimism, spirituality, family togetherness, humor, resiliency, self-esteem, unity and common values.

### **Youth Camps**

Youth camps provide educational and recreational activities that focus on literacy, math, computer science, dance, martial arts, team sports, and other fun. The camps offered youth an opportunity to meet community leaders and introduced them to different cultural experiences. The camp also allowed the participants to challenge themselves mentally and physically.

The Mini Society Youth Camp is designed for youth ages 8 to 12 years old. The goal is to provide youth with opportunities to experience entrepreneurship and integrate the study of entrepreneurship with other subjects as well as critical thinking and problem solving skills. The Mini-society approach to experimental learning builds upon three essential characteristics.

Students must participate in experiences that provide: personal as opposed to vicarious involvement, active as opposed to passive roles and an opportunity for decision making.

CYFAR is a part of a national project to assist American families and communities in developing initiatives that will lead to positive, secure, happy lives for children and youth, while developing skills, knowledge and competencies necessary for fulfilling and contributing to adult lives. The model for South Carolina CYFAR is focused on creating a community vision, leadership development, national issues forum/deliberative dialogue, intergenerational service learning and developing programs and training per the community priorities.

**RES1: “Experimental Application and Development of the Etymological Word Learning System,” (SCX-206-02-03)**

- 1) To design activities to assess the effectiveness of an etymological word learning system in selective rural schools in South Carolina.
- 2) To develop a computer learning program to train rural school teachers for assessing the academic learning and attitude of children toward learning and reading.

**RES2: Adolescent Violence and Acting Out Following a College Student Mentoring Experience in Fifth and Sixth Grades: Phase II (SCX-318-02-03)**

- 1) To re-establish contact with project participants and school officials
- 2) To Obtain pertinent data from school officials and project participants
- 3) To schedule and prepare for presentation results of Phase I
- 4) Organize and establish career clubs at high school
- 5) To formalize career interest inventory
- 6) To conduct routine office procedures and generate reports

Phase II of the project will continue to measure post-study effects in 10<sup>th</sup>, 11<sup>th</sup> and 12<sup>th</sup> grades on standardized evaluation tools, identify test score stability between treatment and control group subjects by gender, examine variations in completion of high school and examine subjects’ attitudes and opinions.

**Internal and External Linkages**

While working to offer programs, there have been several partnerships developed to assist in providing programs to limited resource youth, children and families in Orangeburg, Marlboro, Hampton, Jasper, Allendale, Colleton, Dorchester, Bamberg, Calhoun, Clarendon, Marion, Dillon, Florence, Pickens and Williamsburg counties. Collaborations for youth programs in the 1890 Extension Clusters were established with Clemson University Extension, Jesus Is Lord Ministries, Camp Opportunity and Pickens County Department of Social Services. The City of Easley, Easley Police Department, Springhill Baptist Church; Orangeburg Boys and Girls Club of Orangeburg, Bamberg Villa Housing in Bamberg, Hampton School Districts One and Two, Allendale County School District, Jasper County School District, Save the Children, Woodland High School, Bamberg Job Corps, North High School, Branchville High School, Holly Hill High School, SC Department of Juvenile Justice, Housing Authority, Marlboro School District, Berea Association, Community and Schools, Wallace Family Life Center, Greater St. Paul Baptist Church Young Ladies of Essence, Big Sister and Little Sister, Orangeburg School District Five, Bowman Literacy Center, Felton Laboratory and the Department of Health and Physical

Education. The above organizations have partnerships and memorandums of understanding with 1890 Research and Extension.

**RES1:** Internal linkages include the Department of Education at South Carolina State University and 1890 Research and Extension. External linkages were established with school district personnel from Whitaker Elementary and Brookdale Elementary schools (Orangeburg County).

**RES2:** Internal linkages include the Department of Health Sciences Department of Telecommunications and 1890 Research and Extension at South Carolina State University. External linkages were conducted with Orangeburg School Districts 4 and 5 as well as the Calhoun County School District and Orangeburg County Adult Education Program.

### **Target Audiences**

Children 2-7

Youth 8-17

Adults

Senior Citizens

**RES1:** Youth

**RES2:** Youth

### **Program Duration**

Youth camps were held in the month of June through July

High School Financial Planning workshops were conducted August through May

Academic enrichment programs were conducted throughout the year

**RES1:** Short Term: Expiration Date - October 1, 2003 – September 30, 2006

**RES2:** Short Term: Expiration Date – October 1, 2003 – September 30, 2006

### **Allocated Resources**

**RES1:** Evans-Allen (\$44,342)

State Appropriations (\$29,561)

**RES2:** Evans-Allen (\$49,779)

State Appropriations (\$33,186)

### **Impact**

After intervention, analyses of impact showed that participants' performance in schools increased. In Marlboro County, 30 percent of participants' performance had improved one grade

level. In Dillon, 43 percent improved one grade level. In Marion, 23 percent improved one grade level.

One student in fourth grade made an amazing attitude adjustment. He was very disrespectful to his teachers and uncooperative with the students and staff in the 21st Century Program. With consistent reinforcement about the importance of having respect and a positive attitude, he has taken a new outlook on school. He respects his teachers and peers. Also, he values class work and homework and is maintaining a positive behavior.

Greeleyville Elementary School is fortunate to have an Accelerated Reading Program. In the 21st Century Program, students read books and take assessment tests. Their book average is excellent and they have developed a true love for reading.

Because of the supplies and one-on-one help, the Brighter Futures program assisted the entire first grade class to improve in the areas of math, spelling and reading. Many of the students will be working above grade level before June. One student has improved in recognizing sounds and ability to spell. Many of the students have an "A" in math. The teacher said the school and students are very proud of the help and support that the Brighter Futures program provides.

### **Impact**

**RES1:** No impact will be measured until the implementation of instruction officially begins.

**RES2:** It is too early to determine the impact of Phase II activity. However, in Phase I, of the 12 graduates from on treatment group cohort, five are known to be in college. One is in the military and the remainder unknown at the present time. Only one of the control group students is reported to be in college. An assessment and/or tracking of sixty-eight project participants, twenty-one of who have graduated from high school, twenty-six enrolled in high school grades 10<sup>th</sup> – 12<sup>th</sup> and the whereabouts of the remainder is uncertain at the present.

### **Success Stories**

Brett Crawford, of Colleton County, is a 16 year-old from Walterboro who became a 4-Her through the 1890 Leadership course offered at Colleton County School District. Crawford volunteered to participate in the 4-H Poultry Program once he learned of the program details and benefits.

The requirements for the program is that the 4-Her raises 25 baby chicks for 26 weeks. The 4-Her brings back the best five chickens to the Show and Sale Competition. Participants who fail to report their five chickens would not be able to recover their deposit. The 4-H Poultry Program Show and Sale Competition is held annually in Hampton, South Carolina.

With some advice from the 4-H agent, Brett began to prepare a pen for his newborn chicks. The agent delivered 25 day old chicks to Brett in a brooder and gave him instructions on how to properly care for his farm animals. The 4-Her was given the responsibility of caring for the chicks for 26 weeks. At the end of the 26 week period, he was required to participate in the Poultry Program Show and Sale Competition and enter five of his best chickens.

He joined 11 other 4-Hers at the Show and Sale Competition, which was held in Hampton County. Despite not placing first in the competition, Crawford presented blue-ribbon chickens. His chickens were well raised and made a good showing at the auction. After the auction, he sold an additional 10 chickens

to a local farmer. Crawford still has chickens from the Poultry Program and uses them for eggs. He markets and sells the fresh eggs for a profit.

### **Spring Break Summer Mini Camp**

There are not many activities for the youth in the Bowman community. Due to the lack of programs offered after school and during summer breaks, youth are engaged in activities that are not positive. The South Carolina State University, Bowman 1890 Extension Office organized a Spring Break Mini Camp for the Bowman Community to address the lack of activities during the summer break.. The staff targeted youth in middle and elementary schools. Twenty-eight participants registered for the camp. The camp lasted for one week from 7:30 a.m. to 2:00 p.m. The topics covered in the one-week camp were gardening, health, nutrition, home improvement and wellness activities. The children received information through various methods such as handouts, lectures and hands-on training. The planned activities were fun and interactive. The camp allowed local students in the area to participate in activities that fostered positive relationships, social interaction, increased self-esteem, as well as academic skills. There were four community volunteers and one youth counselor who assisted with camp. Parents expressed their appreciation more than once for having camp for the children. One parent stated, “It was very nice of the 1890 Extension Office to have camp for the children.” One student expressed thier gratitude for the camp by saying, he wished camp lasted longer than a week.”

### **CYFAR (Children Youth & Families at Risk)**

A community assessment conducted during a Bowman community meeting revealed that youth recreation was an issue. There were no programs in the area for youth to participate in during the summer. The CYFAR program allowed South Carolina State University, 1890 Extension to provide enrichment activities for rural youth who would not normally have access to the services. The youth in the Bowman community were given an opportunity to participate in after school and extended summer programs. Parents stated that because of the CYFAR program, students in the Bowman community increased their academic achievement, improved their self-esteem and social skills.

### **Success Story**

#### **RES2: Adolescent Violence and Acting Out Following a College Student Mentoring Experience in Fifth and Sixth Grades: Phase II**

Completed testing on students who were one week from graduation when Phase II of the project began; successfully tracked 25% of the project participants; updated database; established new files and completed career assessments for all students currently in high school.

## **B. STAKEHOLDER INPUT PROCESS**

Section 102(c) of the AREERA Act of 1998 requires that land grant institutions provide information related to stakeholder input. The Act specifies that information on 1) actions taken to seek stakeholder input that encourages their participation and 2) a statement of process used by institutions to identify individuals and groups who are stakeholders and to collect input from them.

At Clemson University, stakeholder input is a key to successful extension programs. Clemson has a long history and tradition of seeking stakeholder input into the plan of work process. The process involved in seeking stakeholder input include the following steps: 1) identification of stakeholders--internal and external that should have input in the POW process, 2) process used in seeking stakeholder input, 3) POW questions for stakeholders, and 4) profile of external stakeholders.

### **Identification of Stakeholders--Internal and External:**

**Internal:** Internal stakeholders include Extension administrators, program administrators, county Extension directors, Extension agents, agent associations, specialists, faculty, department chairs, school directors, and faculty and administrators from Experiment Stations (Research).

**External:** Extension advisory boards, commodity groups, community leaders, human service providers, business/industry, and collaborators such as Farm Bureau, Chamber of Commerce, Farm Service Agencies, etc.

### **Process Used to Seek Stakeholder Input and Questions**

Nominal group technique (NGT) was used to garner stakeholder input to the POW process. NGT is a process where a group of individuals generate a large number of ideas in a relatively short period of time. NGT is helpful in identifying problems, exploring solutions and establishing priorities.

Several steps were involved in conducting the NGT. First, each of the 46 South Carolina counties was asked to conduct a NGT. Second, instructions were provided to all county offices/county directors of the steps involved in conducting the NGT. Third, to assure diversity, emphasis was placed on obtaining a cross-section of people that represent the local community. Fourth, a set of rules and procedures was established for the smooth operation of NGT. Fifth, a series of questions were identified to which stakeholders were to respond. These questions included: 1) What are the five most critical issues facing your communities in the next five years? 2) Is Extension addressing any of these issues? and 3) What partnerships do you think might be formed with Extension to address the issues or concerns? The responses to these questions were summarized by county, by cluster and by state as a whole. The initiatives and projects that were developed for the state plan of work are a result of this process which were later included in the strategic goals of Public Service and Agriculture (PSA) in South Carolina.

### **Profile of Stakeholders**

Of all the external stakeholders, Extension advisory boards play a significant role in the POW. Extension advisory board members constantly provide input to Cooperative Extension in South Carolina. A profile of advisory board members would help address the diversity issue. Of the 237 advisory board members who provided input, 48% were male, 52% female; 81% Caucasian, 15% African-American, and 4% other. Regarding age, 5% were less than 35 years of age, 46% between ages 36 and 55 years, and 49% more than 55 years. Eighty-four percent were married and living with a partner. Regarding education, 15% had completed high school, 18% some college, 35% were college graduates, while the remaining 32% held masters or professional degrees.

In 1890, **Stakeholder Input Process** efforts were concentrated on developing on-going assessment tools such as reporting stakeholder and clientele feedback through weekly reporting on activities conducted in workshops and forums within cluster areas served. Successful efforts were made to work with Clemson University in developing one state holder Advisory Council for 1890 and 1862 schools. Joint meetings were held with the 1862 Council to move toward one Advisory Council. The merger of 1890 and 1862 Advisory Councils has created greater synergy in moving toward a stakeholder input process that, in the wake of declining program dollar support, is allowing for better programmatic collaboration in program delivery and project development between Clemson and South Carolina State.

The State Extension Advisory Council is made up of 34 members, two from each cluster and six (6) at-large members. Membership is for three years. As a member of the state council, the role and function is much broader than the service on a local committee. Members are kept fully informed on Extension programs through regular meetings and written materials submitted by the 1890 and 1862 Directors.

Members chosen for inclusion on the overall Council are not only leaders and innovators in their field, but community leaders as well. They are individuals deeply involved in their community and respected by their peers and by the community at-large.

Nomination for Council membership comes from local committees, from the advisory board itself and from at-large nominations. A request for at-large nominations will be sent to the system by October of each year. The Cooperative Extension Service Directors will issue an invitation to serve. Officers of the Council will include a Chairman, Vice-Chairman, and Secretary. Standing committees include: executive, program, budget and finance, and recognition. The Executive Committee shall consist of all officers and committee chairs. The Council elects the officers and the chairman appoints the committee chairs. Council Chairman serves as chair of the Executive Committee.

The Council Chairman appoints a Nominating Committee for report prior to the last regularly scheduled meeting each year. Officers are elected by majority membership present at voting. Terms of council membership, officers and committee appointments are by calendar year.

### Responsibilities of Council Committees

Executive – The Executive Committee advises the chairman on overall operation of the Council. The committee also makes recommendations on council meeting agenda. The Executive Committee is made up of the chairman, vice-chairman, secretary, and committee chairs.

Program – The Program Committee monitors the overall Extension program activity and makes recommendations. The committee receives the Extension Plan of Work and narrative reports. They review the plan and make overall recommendations to the Council.

Budget and Finance – The Budget and Finance Committee has two main functions:

- (1) Plan and implement any fund-raising activity of the Council and provide oversight for their use.
- (2) Coordinate any Extension budget promotion activity conducted by the Council.

Meeting Frequency – The advisory council meets at least two times per year and will normally not meet more than four times per year. Meeting locations will vary but most will be centrally located in the state.

## **C. PROGRAM REVIEW PROCESS**

There have been no significant changes in the program review processes since the 5-Year Plan of Work was submitted in July, 1999.

## **D. EVALUATION OF THE SUCCESS OF MULTI AND JOINT ACTIVITIES**

South Carolina participates in a variety of multistate, multi-institutional/organizational, and multidisciplinary activities. Several of these activities involve positions that are partially funded by South Carolina Extension funds but are located in other states within the southern region. The activities that are reported below are those activities for which South Carolina provided primary leadership.



## Risk Management

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

During program identification meetings, farmers and farm managers have identified issues that needed to be addressed such as management and marketing programs.

2. Did the planned programs address the needs of underserved and under-represented populations in the state?

Traditionally underserved and underrepresented populations were involved in identifying areas of need and were reached through this program. Last year, a total of 3,618 white males, 1,115 white females, 1,049 black males, and 319 black females reached in this area. In addition, 78 individuals classified as "other" were contacted. As many as 457 limited resource individuals were contacted through the program.

3. Did the planned programs describe the expected outcomes and impacts?

Expected outcomes and impacts were identified. Expected risk management outcomes and impacts were: 1) current situation, outlook and management strategy information to the industry; 2) increased training for front-line agents and state specialists; 3) educational programs on market risk management tools available for use by primary producers and agribusinesses; and 4) development, distribution and training on microcomputer-based market risk management decision aids.

4. Did the planned programs result in increased program effectiveness and/or efficiency?

Program results increased effectiveness and efficiency. Program results include:

- Situation, outlook and management strategy information was developed for SC Agricultural industry
- Developed and delivered market management information through the SC Agricultural Outlook Conference (SC Agricultural Expo) February 2004.
- Materials were provided to County Agriculture Agents for county or cluster commodity programs in the region.
- Training for county agents and state specialists
- Six multi-state workshops were offered on tactical market risk management procedures with a focus on the current agricultural environment.
- Educational programs on risk management tools and products available for use by primary producers and agribusinesses: Eight multi-state workshops were offered on tactical market risk management procedures with a focus on the current agricultural environment.
- Educational programs on risk management tools and products available for use by

primary producers and agribusiness: A regional (TN, NC, SC, GA, and FL), in-depth training on beef cattle market risk management was developed and offered to agricultural producers, lenders and other agribusinesses under the auspices of the Southeastern Beef Cattle Marketing School.

- Development and distribution of market risk management decision aids and data access: Spreadsheet-based software that reviews the existing marketing alternatives and calculates the potential performance of the strategies under varying market scenarios was improved and further developed. Further, a module on the probability of ex-ante price change derived from current market conditions was incorporated along with portfolio.

## **Forest Resource Management**

In 1999, the Master Tree Farmer program was broadcast by satellite to thirteen South Carolina locations. The popularity of this offering led other states to join, making Master Tree Farmer a regional program. It is documented that landowners are more willing to see forestry practiced on their land when they understand why things are done. The Master Tree Farmer courses are the only satellite broadcasts of their kind for forest landowners throughout the South. Each participating state land grant university has a coordinator making arrangements for their programs. Clemson University serves as the host for the programs. Forestry professionals from universities, private and public organizations participate as instructors and presenters. Broadcasts are live from Clemson to viewing locations around the South. Participating states were Texas, Arkansas, Mississippi, Georgia, and Kentucky.

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

Critical issues addressed the need for educational efforts to teach landowners how to practice sustainable forestry, to determine options available to manage their land and meet their objectives, to learn basic terms and concepts of forest management, to become acquainted with services and assistance available for managing forest land, and to learn about best management practices for protecting the environment.

2. Did the planned programs address the needs of underserved and under-represented populations in the state?

Traditionally underserved and underrepresented populations were involved in identifying areas of need and were reached through this program. Last year in South Carolina, a total of 634 white males, 249 white females, 40 black males, 18 black females, 15 other males and 14 other females were reached through educational programming in this area.

3. Did the planned programs describe the expected outcomes and impacts?

The outcomes to be measured were:

Number of participants who would recommend the program to other landowners.  
feel that the program will save them money when practicing forestry on their property.  
Number of landowners who report that they will earn money by using knowledge they  
gained from the program..

Number of landowners completing the course who planned changes in the management  
of their forest property.

Number of participants who planned to attend a more advanced training program if it  
were offered.

Number who ranked their forest management level at good to excellent after the program  
compared to prior to the program.

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

Using video conference technology, the program was delivered to 2,875 forest  
landowners in 2001. Landowners representing 748,277 acres of forest land completed  
the course. Approximately 47 percent of the landowners were under 50 years of age and  
20 percent were female. The Master Tree Farmer Program utilized 21 volunteers. The  
following impacts were derived from analysis of evaluation data collected after  
landowners completed the training:

1. Ninety-eight percent of the participants would recommend the program to other  
landowners.
2. Ninety-four percent feel that the program will save them money when practicing  
forestry on their property.
3. Ninety-five percent of the landowners report that they will earn money by using  
knowledge they gained from the program for an estimated total gain of \$16 million.
4. Based on increased knowledge, eighty-eight percent of the landowners completing  
the course plan changes in the management of their forest property.
5. Ninety percent of the graduates indicated that they would attend a more advanced  
training program if it were offered.

A follow-up survey was conducted one-year after the program. Forty-three percent of  
545 surveys were returned. They report the following updated impacts:

1. Eighty-one percent report their forest management level at good to excellent  
compared to twenty one percent prior to the program.
2. Ninety-four percent plan changes in forest management practices.
3. Eighty-two percent have made changes as a result of the training.
4. Sixty-six percent plan to make additional changes to forest management practices.
5. Respondents indicate that the course will save landowners more than \$13 million and  
earn them a total of \$6 million.

Master Tree Farmer II, a more advanced level of training than MTF I, was delivered to  
1700 attendees in 10 states in 2002. In 2003, Master Tree Farmer graduates attended a  
variety of related trainings, tours and landowner association meetings.

A seven-week Master Tree Farmer introductory shortcourse in forest management is  
currently being broadcast live from Clemson University and will continue on through

March 16. Follow-up evaluations have not yet been completed on the 2004 statewide programs. Impacts will likely parallel those from 2001.

### **Fire Ant Research & Extension Program**

**Participants/Collaborators:** Principal Investigator -- Dr. Paul M. Horton, Clemson University, Clemson, South Carolina. Tim Davis, Clemson Extension, Areawide Imported Fire Ant Specialist.

Other states and agencies include:

- USDA/ARS/CMAVE, Gainesville, Florida;
- USEPA, OPP/BPPD, Arlington, VA;
- US Army Environmental Center, Aberdeen, MD;
- US Army Center for Health Prevention and Preventative Medicine, Aberdeen, MD;
- TRADOC, Ft. Monroe, VA;
- SCARNG Environmental Office, Columbia, SC;
- Pest Management Office, Fort Jackson, SC;
- Texas Agricultural Experiment Station and Texas Agricultural Extension Service,
- Texas A & M University System;
- The University of Georgia Cooperative Extension Service, Athens, GA;
- LSU Agricultural Center, Baton Rouge, LA;
- OSU Cooperative Extension Service and Department of Entomology;
- USDA-ARS Stoneville MS
- Bayer Environmental Science Corporation
- DuPont
- Alabama Cooperative Extension Service, Auburn University;
- Pest Control and Urban Entomology, University of Florida, Gainesville, FL.

**Statement of Problem Prompting Research Initiative:** The imported fire ant (IFA) is a non-native, invasive, insect species having no naturally occurring enemies or control agents in North America. The current IFA infestation in the U.S. is 5 –7 times more dense than occurs in the native range of the IFA. It has become an important medical, social, agricultural and economic pest in every county in South Carolina. Currently management technology is limited to chemical control. Environmentally-friendly management decisions can only be made based upon sound knowledge of the economic, ecological, social, and biological components of this insect. The IFA program in South Carolina focuses on three specific areas. First, testing of novel biological and chemical controls for IFA. Second, testing integrated management strategies to enhance the technologies that are available. Third, adoption through education by the public of South Carolina of the most appropriate IFA control strategies available.

## **Accomplishments and Results to Date:**

### *Fort Jackson*

A pilot IFA-Integrated Pest Management program with funding from DoD, EPA and industry was initiated as a model DoD IFA management scheme for use on other southern military bases. In this pilot two test sites were installed on Ft. Jackson, SC and McIntire ANG airbase in June, 2000 and have been monitored since then. This pilot is a fully integrated program which incorporates GIS/GPS mapping and the integrated use of selected chemical management techniques designed to supplement and enhance the release and establishment of the two biocontrol agents (*Thelohania* and *Pseudacteon triscupis*). As of October 2000, both the phorid flies and the microsporidian were found to have survived, reproduced and spread into new colonies locally on these two sites in the midland region of South Carolina. As a result of this success this pilot is being used as a model for the establishment of even larger IFA Management programs on three other military installations in the southern US. The SC tests have been monitored for three years. Based upon the results obtained in this study the Areawide Imported Fire Ant Suppression Program has been funded to test this model on a large scale and replicated in five states.

### *Areawide Program*

South Carolina is one of five states cooperating with USDA/CMAVE in Gainseville FL to test and demonstrate the effect of combining large scale treatment of pastures with traditional fire ant bait chemicals with the biological controls *Thelohania* and Decapitating flies.

To date in South Carolina a control site in Abbeville County and a treatment site in Fairfield County have been selected. Both sites have been treated with traditional chemicals and both have seen population reductions below the threshold levels. Both sites have also need retreatment.

Two species of decapitating flies have been released at the Fairfield County site. *Pseudacteon triscupis* has been found to overwinter at the site. The status of *P. curvatus* overwintering is pending. *Thelohania* has been released and established at the site.

This is an ongoing project expected to continue through FY-07. South Carolina is expected to be funded at an average of \$100,000 per year for this project. Tim Davis has been hired to serve as an Areawide Fire Ant Extension Specialist to manage this project.

### *Decapitating Fly Releases*

In addition to the areawide sites flies are now established in Clemson, Greeleyville, Fairfield, Richland, Anderson Counties. USDA-APHIS is supplying flies for approximately one release each year. Each of these sites is managed by local county extension agents and is developed as a “mini” areawide site with chemically treated sites combined with the release of biological controls.

### *IFA General Extension Programs*

More than 55 training programs and production meetings were held throughout the state last in 2004 to teach IFA management techniques to more 1,711 agents, farmers and

homeowners. Twenty-five research/demonstration sites have also been installed. Other extension efforts include mass media, newsletters, fact sheets, and news releases.

The Clemson University IFA Team joined with the extension and research personnel of 9 other land grant universities in a project to revise and publish a comprehensive and up-to-date extension bulletin on IFA management in urban areas. The title of the publication is "Managing Imported Fire Ants in Urban Areas." More than 40,000 copies of this 18-page publication were printed and distributed during the past 12 months.

A comprehensive training program was developed and conducted to train DoD personnel IFA integrated pest management. 45 attendees from installations across the US attended. Approximately one-third of the attendees were senior military entomologist. The other attendees were Clemson Extension Agents and military base land managers.

An advanced inservice training was conducted for County Extension Agents to train them on fire ant management techniques and conducting fire ant extension programs. Twenty-five county extension agents have been trained through this program.

The Clemson IFA team is currently contracted to develop a general manual for fire ant IPM for landscape managers, military installation managers, extension personnel, and the general public. This will be a comprehensive publication on fire ant biology, traditional management strategies, and integration of novel biological controls.

The Experiment Station supported 20 MRF (Multi-state Research Funds) projects and invested more than \$3,300,000 on those projects in FY2003. Researchers participate in MRF projects in all four regions of the country (Southern, Western, North Central, Northeast).

The Experiment Station has conducted a systematic and detailed review of the most recent CRIS reports on these research initiatives and has monitored the progress of each project through site visits, and discussion sessions with the faculty, their respective department chairs and with the appropriate Associate Dean for the goal areas.

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

By their very nature, regional projects are designed by experts in the respective fields from all of the participating states, normally in the Southern Region to address critical issues identified by faculty and stakeholders in all of the participating states. The Southern Region also reviews selected program concepts with identified stakeholder groups.

2. Did the planned programs address the needs of underserved and under-represented populations in the state?

Experiment Station faculty participated in regional research projects which addressed youth and family issues, food safety issues and a wide range of plant and animal issues. The research was geared to meet the needs of the state's population, to include those groups considered under-served or under-represented. This was accomplished through stakeholder input and awareness on the part of research faculty of the needs of all segments of the population. Results will be transferred to these user groups through the Cooperative Extension Service, web-based communications, public service announcements and outreach through the county programs.

3. Did the planned programs describe the expected outcomes and impacts?

Each regional project detailed the outcomes and impacts as a part of the application process. These outcomes and impacts were developed at the meetings which set the regional projects in motion. The progress of these regional initiatives is monitored by Clemson's Experiment Station, the other states and by the Southern Experiment Station Directors.

4. Did the planned programs result in increased program effectiveness and/or efficiency?

The concept of regional research initiatives is built around assembling the best talent to approach a problem and allowing faculty to develop the research design to maximize the effectiveness of the program in meeting the stated goals, and in achieving the maximum efficiency by utilizing talent and resources from multiple states.

## **Families - Financial Management**

Many South Carolinians are in great danger of not being financially stable and secure throughout their lifetimes. Because most people did not receive formal financial education in their youth, they need lifelong learning opportunities to help them improve their financial management skills.

Dr. Nancy Porter, state program leader for Family and Consumer Sciences and Extension family resource management specialist, is co-chair of the National Initiative Management Team for the Financial Security in Later Life National Extension Initiative, composed of 14 professionals across the United States. The vision for this educational effort is a nation of individuals who understand their finances and know how to get the most out of their resources. The second objective is to increase the capacity of local educators and their community partners to offer effective Initiative programs.

The national Roll-Out Conference was held in March 2002, which drew 240 professionals from 46 states, partner organizations and agencies, and a satellite videoconference December 2001 that linked 220 sites in 45 states and the District of Columbia. The first year of national program implementation was 2003, when 19 states reported that 14,141 individuals participated in one or more of eight Initiative-related programs. More than 30 states have plans to implement Financial Security in Later Life programs with seven more pending.

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

Increasing financial management skills is a critical issue identified by stakeholders in South Carolina. Job losses, uncontrollable spending and high debt, and little to no savings contribute to financial insecurity among families.

2. Did the planned programs address the needs of underserved and under-represented populations in the state?

Increasing financial literacy throughout the life cycle is essential to avoid many threats to financial security for all including the underserved and underrepresented populations of the state. Research indicates that “*low levels of financial literacy affect the quality of life of individual households, reduce wealth generation, and limit the attainment of goals such as buying a home, funding higher education, starting a business, and securing a comfortable retirement. “When taken in the aggregate [this] has important macroeconomic implications, as a more financially educated population contributes to market efficiency and thereby helps promote the general economic welfare.”*

*Fox, L., & Hoffman, J. (2004, Autumn). Federal Reserve personal financial education initiatives. Federal Reserve Bulletin, p. 447-457. Washington, DC: Federal Reserve.*

3. Did the planned programs describe the expected outcomes and impacts?

Percent of participants who increased their financial literacy, percent of participants who reported that they planned to utilize recommended financial management practices, and the amount of money saved, debt reduced and new dollars invested.

4. Did the planned programs result in increased program effectiveness and/or efficiency?

Based on program evaluations reported by Extension educators, 86 percent of participants increased their financial literacy and 67 percent reported that they planned to utilize recommended financial management practices. The Financial Security in Later Life Initiative has also had a direct economic impact on those who have completed Initiative programs. A group of 1,481 individuals who completed Initiative-related programs reported a total of \$2,923,113 of annual financial impact in dollars saved, debt reduced and new dollars invested. This is an average of more than \$1,900 per person per year. The website <http://www.reeusda.gov/financialsecurity> is the keystone of the Initiative, and facilitates delivery of information to educators and consumers in urban and rural areas across the country.



## **E. MULTISTATE EXTENSION ACTIVITIES**

Extension faculty and staff are currently involved in four multistate activities. The overall purpose of these programs is to foster interdepartmental, interdisciplinary, and intercampus communication and collaboration in the southern states. In addition, these programs will increase coordination and expansion of efforts in conducting educational programs throughout the southern region.

The Virtual Small Fruit Center is creating more visible and active focal points for stakeholders within and outside the university for research, Extension, and outreach activities related to small fruit production, handling, processing, marketing and consumption. South Carolina is partnering with the states of North Carolina and Georgia on this program.

The Regional Forestry Position is a liaison of the southern land-grant universities and the USDA Forest Service - Southern Region. The Forester is responsible for increasing coordination and regional level technology transfer, information dissemination, and educational activities. Working closely within the Extension System and the USDA Forest Service, the Forester identifies opportunities and works with natural resource professionals to address them. South Carolina is one of thirteen southern states cooperating in this effort.

The Water Quality Position increased coordination and cooperation among EPA, state environmental agencies, USDA-CSREES, and Cooperative Extension. This position was also responsible for identifying and providing related Extension educational materials to EPA and others as appropriate and communicate research, and other educational needs of Extension audiences to EPA and other appropriate organizations. South Carolina was one of eight participating states on this position.

The Orchard Floor Management program provides leadership and direction to orchard and vineyard floor management in South Carolina, North Carolina, and Georgia. Specifically the program is used to evaluate orchard and vineyard floor management programs and provide support to county faculty through publications, field days, on-farm demonstrations, and inservice trainings.

South Carolina receives multistate input in the development of the yearly Pest Management Handbook. Specialists from Georgia and North Carolina provide current pesticide information for various sections of the handbook. Due to budget restraints and specialist retirements the Pest Management Handbook was not updated in 2003 nor in 2004.

South Carolina is an active partner in the Southern Legislative Conference Imported Fire Ant (IFA) Extension/Research Program. This effort between federal, regional, state, and private sectors is essential to ensure that current and emerging IFA management technologies are effectively evaluated for regional effectiveness, and rapidly implemented where appropriate. This is especially important with candidate biological control agents whose survivorship and impact may be influenced by the climate, soils, topography, and native fauna/flora which vary widely throughout the southeast region.

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

**Institution** Clemson University  
**State** South Carolina

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

**Actual Expenditures**

<b>Title of Planned Program/Activity</b>	<b>FY 2000</b>	<b>FY 2001</b>	<b>FY 2002</b>	<b>FY 2003</b>	<b>FY2004</b>
<b>Virtual Small Fruit Center</b>	<b>\$12,948</b>	<b>\$35,738</b>	<b>\$28,590</b>	<b>\$35,000</b>	<b>35,000</b>
<b>Regional Forestry Position</b>	<b>6,150</b>	<b>6,122</b>	<b>5,747</b>	<b>4,978</b>	<b>8,300</b>
<b>Regional Water Qual Pos. (EPA)</b>	<b>10,463</b>	<b>4,700</b>	<b>5,232</b>		<b>4,869</b>
<b>Orchard Floor Management</b>	<b>14,500</b>	<b>15,000</b>	<b>7,500</b>	<b>15,000</b>	<b>15,000</b>
<b>Pest Management Handbook</b>	<b>0</b>	<b>16,942</b>	<b>9,511</b>	<b>0</b>	<b>0</b>
<b>Fire Ant Program</b>	<b>30,000</b>	<b>15,000</b>	<b>15,067</b>	<b>135,000</b>	<b>15,000</b>
<b>*Environ Housing Issues, South</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

**Total** **\$74,061** **\$93,502** **\$71,647** **\$189,978** **\$78,169**

**Form CSREES-REPT (2/00)** \_\_\_\_\_ **Director** 04/01/05  
**Date**

\*Environmental Housing Issues Affecting the South program which was to begin in 2001 was not developed due to the lack of subject matter specialist support for this area

**1890 Multi-State Research and Extension Activities**

**Extension – Families First: Nutrition Education and Wellness System (FFNEWS)**

The FFNEWS Program is a nutrition education intervention program designed to help families select and prepare meals that are culturally traditional, yet will improve their overall health. Upon completion of the program, participants are able to make rational food choices from a variety of foods, improve their diet through a wide selection of food and food supplements, improve the nutritional status of the family by better utilizing foods commonly available in traditional recipes, practice safe and nutritious home gardening and food preservation skills. Food stamp recipients are the primary targeted audience. This is a multi-state and multi-institution collaboration with Extension Programs at the following sites: Langston University (OK), Prairie View A & M University (TX), South Carolina State

University (SC), Southern University and A & M College (LA), University of Arkansas at Pine Bluff (AR) and Lincoln University (MS).

### **Research – Comparative Study on the Impact of NAFTA on South Carolina and the Southeastern Region**

The North American Free Trade Agreement (NAFTA) is a multi-state research endeavor that includes South Carolina and the Southeast Region. The study evaluates the impact of NAFTA on fruit and vegetable trade at the state and regional levels in South Carolina and the Southeast region. The project results indicate that the average small farms are negatively affected by free trade under both optimistic and pessimistic scenarios. Optimistically, land prices for the average small farms exhibit a slight increase over the 10 year period, while pessimistically, the ending land prices are lower than beginning prices. Overall, the average small farms are at a competing disadvantage in globalization.

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

As required by the AREERA Act of 1998, the Experiment Station and the Cooperative Extension Service at Clemson University have integrated their efforts to foster knowledge development and transfer for the citizens of South Carolina. The process of involving the integration of research and Extension efforts are as follows:

A critical element for successful integration efforts is the joint appointment of faculty in both research and Extension. This is done both at the administrative and specialist levels. For example, the former Dean and Director of Research had a 25% Extension appointment, while the former Dean and Director of Extension had a 25% research appointment. Similarly, the four associate deans for the College of Agriculture, Forestry, and Life Sciences have joint appointments in both research and Extension. These associate deans coordinate research and Extension programs. These joint appointments provide the foundation for a strong working relationship and better understanding of the process involved in research-Extension integration. To accomplish the five GPRA goals in FY 2003, 11 initiative teams were utilized. Each team had faculty and staff drawn both from research and Extension. In FY 2003 these initiative teams were provided with \$83,831 of appropriated monies for program development activities, even though the organization was faced with another year of budgetary constraints.

A marketing program is being initiated with the support of both research and Extension to provide publicity for our joint programs and activities. In addition, programs are jointly conducted by both research and Extension faculty at the South Carolina Research and Education Centers. Each center has a specific program focus where both research and Extension faculty collectively work together to identify problems, develop solutions to address the problems and then develop a mechanism to transfer appropriate solutions and/or recommendations to the citizens of the state.

**The Experiment Station** Invested \$390,899 in integrated Research and Extension activities. The areas appearing on Form CSREES-REPT (2/00) below reflect the Hatch funds committed to integrated Research and Extension activities.

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

Institution: Clemson University  
 State: South Carolina

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

Title of Planned Program/Activity	Actual Expenditures
Turf Grass	\$120,000
Water Quality	32,000
Farm Management	35,325
Marketing	110,156
Information Technology	49,776
Agro-Ecology Program	<u>43,642</u>
Total	\$390,899

Director \_\_\_\_\_ Date 04/01/05 Form CSREES-REPT (2/00)

**Narrative Summaries:**

**Turf Grass:** The Experiment Station provided funds to support Extension staff and programs in selected counties in conjunction with on-going turf research initiatives.

**Water Quality:** The Experiment Station provides lab facilities for analysis by the Extension waste management initiative team, and selected pieces of laboratory and field equipment were made available to support extension efforts.

**Farm Management:** The Experiment Station provides farm services which directly support extension demonstration plots and field days. These activities are ongoing and require a significant commitment of equipment and farm staff to insure quality demonstration plots and field days.

Marketing: The Experiment Station and Extension provide equal funding for a joint public relations/marketing unit. Information Technology: The Experiment Station shares the expenses for supporting the technology information office that coordinates computer support at all on and off campus locations.

Agro-Ecology Program: The Experiment Station provides 50% of the support for the innovative Agro-ecology Program

**U.S. Department of Agriculture  
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**Institution** Clemson University  
**State** South Carolina

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

**Actual Expenditures**

Title of Planned Program/Activity	FY 2000	FY 2001	FY 2002	FY2003	FY200 4
<u>Enhancement of Applied Research and</u> Extension Activities	\$543,673	\$511,751	\$306,720	\$390,560	\$738,043
Total	\$543,673	\$511,751	\$306,720	\$390,560	\$738,043

\_\_\_\_\_ Director 04/01/05 Date

Form CSREES-RETP (2/00)

Narrative Summaries:

Turf Grass: The Extension Service provided funds to support research staff and programs in selected counties in conjunction with on-going turf research initiatives.

Water Quality: The Extension Service uses facilities for analysis .

Farm Management: The Extension Service provides staff services which directly support demonstration plots and field days. These activities are ongoing and require a significant commitment of equipment and farm staff to insure quality demonstration plots and field days.

Marketing: The Experiment Station and Extension provide equal funding for a joint public relations/marketing unit. Information Technology: The Extension Service shares the expenses for supporting the technology information office that coordinates computer support at all on and off campus locations.

Agro-Ecology Program: The Extension Service provides 50% of the support for the innovative Agro-ecology Program