Accountability Report Transmittal Form

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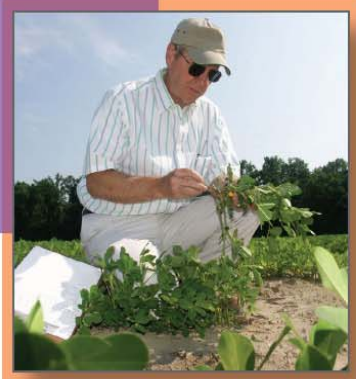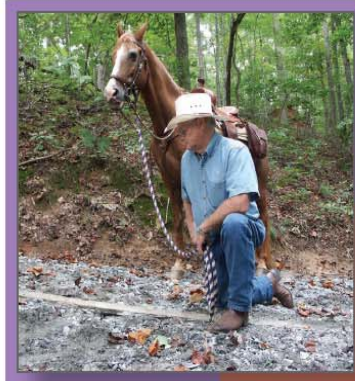
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Budget and Control Board
ACCOUNTABILITY REPORT
2006-2007

CLEMSON
PUBLIC SERVICE

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SECTION I: EXECUTIVE SUMMARY

I.1 MISSION AND VALUES

Clemson University was founded in 1889 on Thomas Green Clemson's belief that education could create a better way of life for the people of South Carolina. Mr. Clemson willed much of his estate to South Carolina to establish an institution of higher learning dedicated to teaching scientific agriculture and mechanical arts. Clemson University, designated as South Carolina's 1862 land-grant university, began operations in 1893.

The national land-grant university system was created by the United States Congress to improve the quality of life for citizens in every state. Clemson University Public Service Activities (PSA) fulfills the University's land-grant responsibilities by delivering relevant research and extended public service programs for the benefit of South Carolina's citizens, communities, businesses and public agencies.

PSA is a multifaceted organization with approximately 685 fulltime employees delivering programs throughout the State of South Carolina in collaboration with various federal, state and local governments and agencies, as well as private industry partners. With its unique arrangement of talent and expertise, PSA is a significant leader in advancing the competitiveness of agriculture and forestry industries, enhancing the economic potential of rural communities, safeguarding the food supply, preserving natural resources and preparing young people to become productive citizens.

Mission Statement

Clemson Public Service Activities support the University's emphasis areas by developing and delivering science-based information to improve the quality of life for the people of South Carolina in:

- Agrisystems Productivity and Profitability
- Economic and Community Development
- Environmental Conservation
- Food Safety and Nutrition
- Youth Development and Families

Vision Statement

To be acknowledged as the foremost provider of practical new discoveries, outreach education and technical assistance in the areas of agrisystems productivity and profitability, economic and community development, environmental conservation, food safety and nutrition, and youth development and families in order to enhance the quality of life for South Carolina's citizens.

Core Values

Service – Clemson PSA serves South Carolina's citizens through research, outreach and regulatory activities that enhance the quality of life in our state. We build partnerships with people, communities, other countries, industries and agencies to achieve our mission; we are responsive to their needs and proactive in our outreach.

Discovery – Clemson PSA conducts research to discover innovative technologies, products and processes that can enhance agribusiness industries, build rural economies and communities, protect the environment and natural resources, improve the nutritional quality and safety of the food supply, and prepare South Carolina's youth to be productive citizens.

Knowledge Transfer – Clemson PSA believes that sharing and applying knowledge generated by scientific research is the best way to help South Carolina's citizens make informed decisions about the major issues that affect their lives.

Respect – Clemson PSA pledges to provide a work environment that fosters collaboration and respect among our employees and for those we serve, regardless of race, faith, ethnic heritage, gender or sexual orientation. We value the state's cultural diversity and strive to respect and incorporate that diversity in our staffing and services.

I.2 Major Achievements

Achievements are presented by unit and subdivided by PSA Focus Area. Units include: 1) Clemson University Experiment Station, 2) Cooperative Extension Service, 3) Livestock-Poultry Health, 4) Regulatory and Public Service Programs, and 5) PSA Institutes.

CLEMSON UNIVERSITY EXPERIMENT STATION
http://www.clemson.edu/agforestryresearch/

Clemson's Experiment Station is part of a nationwide system of scientists working to improve the quality of life for people in their home state, the nation and the world. Clemson scientists have been involved in this effort since 1889 when the university was founded.

The Clemson University Experiment Station supports basic and applied research by Clemson faculty. Research is conducted in laboratories, farms, and forests on the Clemson campus and at five research and education centers strategically located in the state's distinct soil and climate regions. Areas of study include coastal forests and ecosystems, food safety and packaging science, environmental conservation, and ornamental horticulture, as well as commercial production of timber, crop plants, and livestock.

Clemson's research capabilities are being transformed and strengthened with increased expertise in the biological sciences, biotechnology and genetics and in emerging issues impacting plants, animals and the environment. Additional research capacity has also been added to focus on the sustainability of South Carolina's rural communities.

Focus Area 1: Agrisystems Productivity and Profitability

A. Agricultural Biosecurity

- **Understanding the Cellular Processes of a Category B Bioterrorism Agent**

Entamoeba histolytica, a protozoan parasite, is the causative agent of amoebic dysentery, invasive amoebiasis, and liver abscess in developing countries. Infection is acquired by ingestion of the cyst form of the parasite in contaminated food and water. Since this protozoan can infect large numbers of people through contaminated water and/or food, be genetically manipulated, and is difficult to diagnose, the National Institutes of Health (NIH) has classified *E. histolytica* as a Category B bioterrorism agent. Clemson scientists are seeking to understand the cellular functions that regulate virulence in this pathogen, which will contribute significantly to understanding the infectious process of this food- and water-borne pathogen and potentially lead to the development of innovative detection, prevention and therapeutic strategies. Results from this research initiative have been published as two journal articles in "Experimental Parasitology."

B. Agricultural Biotechnology

- **Breeding High-Yield Disease-Resistant Fruit Trees**

Clemson's peach genomics research is at the forefront of fruit tree genomics science. Breeding for fruit quality, yield and resistance to pests is particularly difficult in large perennial species. Clemson researchers are developing tools that will facilitate genetic analysis and breeding of superior fruit trees, resistant to diseases, insects and environmental stresses. Researchers will continue to examine the conservation of genomic regions carrying genes of interest in other fruit tree species. It is anticipated that the peach genomics databases will facilitate identification of candidate genes controlling these traits in

related species. The genomics resources generated by this project will also become part of the international genome databases for many plant species, thereby improving the value of worldwide productions.

- **Science and Engineering for a Biobased Industry and Economy**
Clemson scientists are evaluating and demonstrating a new, innovative technology for capturing nitrogen and phosphorus from agricultural surface waters as high-value aquatic biomass, biofuels and biofertilizers, and for the development of an "energy farm." Researchers are seeking ways to reduce the cost of harvesting, handling, storing and transporting biomass, thereby increasing the competitiveness of biomass as a feedstock for biofuels, biomaterials and biochemicals. A competitive biobased industry and economy may emerge in South Carolina, as a result of: 1) expanding the scientific knowledge needed to achieve significant economic improvements in biofuel production processes, and 2) developing, evaluating and optimizing integrated processes to convert biomass resources into biomaterials with commercial applications.

- **Biochemistry of DNA Damage and Repair**
DNA repair is a cellular mechanism that removes DNA damages or corrects replication errors. Researchers are working to understand whether certain defects in these DNA repair pathways contribute to cancer development. Using primarily biochemical analyses, research was conducted to understand the intricate interplay between DNA damage and repair and other cellular functions. Researchers gained insights regarding cellular structure and DNA repair that may translate into better tools for mutation recognition and scanning. Novel approaches, such as dietary/nutraceutical intervention for the prevention and treatment of cancer, may be developed. Additionally, some of the repair proteins may be used for developing nucleic acid-based technologies, which could help detect pathogens in food and agricultural products.

- **Antimicrobial Pathogens Combat Harmful Food-Borne Pathogens**
Certain antimicrobials produced by bacteria are useful in controlling or eliminating unwanted or harmful microbes in foods, which can be extremely dangerous to the infants, immunosuppressed individuals, and the elderly. In order to better understand the genetic and biochemical aspects of the food-grade microorganisms, Clemson scientists are working to complete the partial sequences of potentially beneficial genes and construct a Bacterial Artificial Chromosome library. Scientists are also using generated DNA sequences to determine gene identity and function. This research may lead to the discovery and use of novel non-antibiotic antimicrobials suitable for controlling food-borne pathogens.

- **Development of Environmentally-Safe Antifouling and Anticorrosion Strategies**
Antifouling chemicals on hulls, docks and offshore platforms threaten sea life and commercial catches of fish and shellfish. Anticorrosion coatings on aircraft contaminate fresh water, creating a negative environmental and economic impact on agriculture and water supplies. Clemson scientists are working to develop safe and benign antifouling and anticorrosion strategies. Two promising strategies have been developed, resulting in new coatings. Clemson's research also resulted in a novel invention with potential as an anticorrosive and a biologically-based semiconductor. The basic research results generated by this study will be applied to the next generation of antifouling coatings for ships and anticorrosion coatings for the aerospace industry. A total of eight manuscripts, three patent disclosures, and one new grant were generated from this study.

C. Agronomic Crops

● **New Small Grain Varieties Adapted for South Carolina as "Second Crops"**
Small grains are an important part of crop rotations and provide a valuable second crop for South Carolina's cotton, corn and soybean growers. Cool-weather crops such as soft winter wheat, oats, barley and triticale are grown on some 200,000 acres in South Carolina. Clemson researchers are assisting growers by seeking new varieties and improved production methods by evaluating grain performance and adaptation to South Carolina. Pest management research focuses on resistance to Hessian flies and diseases such as powdery mildew, leaf rust and stripe rust. Results are published in guides that contain current and multiple year data for several standard varieties as well as new varieties of grain.

● **Sensors, Tools, and Methodology for Site-Specific Soil, Pest and Water Management to Enhance Profits and Environmental Sustainability**
Crops in South Carolina are generally produced in fields with high soil variability and conditions that may negatively affect crop production yields. Clemson scientists are developing, evaluating and adapting methods and instrumentation for site-specific detection and management of soil compaction, pests, nematodes, weeds and other pests. Scientists also tested five irrigation scheduling methods using a variable-rate irrigation system, which increased seed cotton yields and plant heights, while decreasing the number of chemical applications. Innovative irrigation practices will result in greater efficiency in water usage. A 40% cost savings is achievable when employing certain variable-rate irrigation techniques.

● **Breeding High-Yielding, High-Value Soybean for South Carolina**
Biological and environmental stresses on soybean plants combine to decrease seed yields and reduce profitability for growers. Clemson scientists are working to develop high-yield, pest-resistant soybean cultivars adapted to growing conditions in South Carolina and the southern United States. By determining the inheritance of genetic traits that may be utilized to increase yields and quality, researchers will be able to produce highly marketable soybean varieties.

● **Harvesting and Processing of Flax Fiber**
Flax fiber has significant potential for use in textiles, composites and paper products; however, there is currently no production of fiber flax in the United States. Clemson scientists are working with the United States Department of Agriculture (USDA) to establish a fiber flax industry in North America with special emphasis in South Carolina. Researchers are developing harvesting procedures both plant stems and seeds and establishing best management practices for retting and cleaning processes for commercial use. A pilot plant for processing flax straw has been established and tested. The pilot plant has been used by two companies to determine fiber quality and yield. As a result, one of the companies is exploring the possibility of establishing a new venture into fiber production for composites.

D. Livestock Production Systems

● **Livestock Reproduction Research Improves Herds**
Breeding is of primary importance to livestock producers. Reproductive physiologists are working to improve livestock reproduction by increasing the quantity and quality of herds for producers in South Carolina. Research results will stimulate technology and knowledge to assist cattle producers in their effort to reach their financial, reproductive, and genetic goals. By decreasing the inefficiencies associated with livestock reproduction, this research will facilitate efficient production and provide a financial advantage to Southeastern producers.

<center>**Focus Area 2: Economic and Community Development**</center>

- **Migration and Community Vitality in South Carolina's Hispanic Populations**
South Carolina is experiencing a dramatic change in the ethnic composition of its communities. With the influx of permanent Latino residents, the state must expand its resources and infrastructure to foster community viability. Clemson researchers are seeking to better understand the catalyst for the Latino population to permanently settle in South Carolina, and how Latino immigrants develop their communities. The results generated from this study are available to aid law and policy makers with identifying the community resources needed to support the Latino population and assessing the impact of the Latino population on the state's infrastructure.

- **Clemson University Agritourism: Enhancing the Rural Economy**
South Carolina's agricultural industry continues to face challenges that have the potential to affect its long-term sustainability. Clemson faculty are examining the concept of agricultural tourism (agritourism) as a diversification strategy for South Carolina by developing an agritourism advisory board and demonstration project in South Carolina. This study will result in a better understanding of the agritourism market in South Carolina, as well as the barriers to market entry for agricultural business owners. The results will be applied to enhance the state's rural economies and the profitability of small and medium-sized farmers, landowners, and food processors.

<center>**Focus Area 3: Environmental Conservation**</center>

- **Interaction of Toxic Metals and Natural Organic Matter for Determining Water Policies**
Contamination of surface waters by metals, such as copper and mercury, often results in water use impairments and fish consumption advisories. Clemson scientists are determining whether natural organic matter (NOM) can decrease the toxicity levels of these metals. The research has led to an understanding of equilibrium and kinetic effects as they relate to the toxicity of metals to human organisms. This knowledge is instrumental in developing and applying water quality regulations. This research could potentially result in a method for predicating metal toxicity.

- **Biological Integrity in South Carolina Stream Ecosystems**
The impact of rapid land conversion on South Carolina's stream health is unknown. Clemson researchers are determining how a variety of land-use practices alter the physical characteristics of streams (habitat and sediment regime) and how physical and chemical alterations impact the stream-dwelling biota, especially macroinvertebrates. Based upon the data generated to date, current best management practices for water quality protection in housing developments fail to adequately control sediment and microbial contamination of stream water quality. These data are germane to policy makers and others concerned with improving land use and water quality in South Carolina.

- **Predictive Models for Sediment Control**
The Environmental Protection Agency (EPA) has identified sediment as one of the leading causes of water quality impairment in the United States. Sediment loss in the United States results in economic losses estimated at $2.88 trillion per year due to sediment-bound chemical pollution. Clemson scientists are developing predictive models for the removal of eroded soil particles from stormwater runoff using sediment control structures. Scientists are working to create approaches to obtain useful water quality information from real-time, remote sensors in watersheds. Successful completion of this ongoing study will provide tools for improving surface water in South Carolina, and researchers will be able to design more effective water management practices.

- **Using Forests to Aid Development**
 Properly managed timber lands can help lessen the impacts of urban development and protect South
 Carolina's water resources. The preservation of forested areas allows for rainfall to naturally infiltrate
 the soil; while urban developments, unless built with open spaces, have the potential to increase
 stormwater runoff. Impervious surfaces, such as rooftops and driveways, lead to increased stormwater
 runoff that carries heat and pollutants into rivers, lakes and marshes. South Carolina depends on
 rainwater that infiltrates into the soil to recharge its aquifers and provide drinking water. Clemson
 researchers are assessing potential water quality and quantity impacts in coastal areas due to converting
 forests to urban uses and studying the impacts of impervious surfaces in developed areas, as well as land
 uses and management practices.

Focus Area 4: Food Safety and Nutrition

- **Rapid Detection of Toxic Food Agents**
Clemson researchers are developing methods to improve the safety of the food and water supply in South
Carolina through rapid detection and reduction of toxic food agents. Researchers are working to create
nanotechnology applications and biosensors for detecting toxic agents in food and water. Researchers
have also quantified the correlation between pasteurization and antimicrobials in ready-to-eat meats,
which will assist the meat industry in reducing the incidence of *Listeria monocytogenes*, a common and
sometimes deadly pathogen in raw meat or improperly pasteurized milk. Results from the related heat-
activation trials led to the creation of models for bacteria handling that will help ensure consumer safety
and health.

- **Synthetic Spider Silk for Medical Uses**
 The National Institutes of Health is funding Clemson research seeking to produce synthetic spider silk
 that could be used to repair the human body. Researchers are investigating ways to insert a spider's silk-
 making genes into plants. Unlike silkworms, spider farming is unrealistic because of low silk yields and
 territorial behavior. Instead, the goal is to produce the fiber-forming protein polymers by transferring
 recombinant silk genes into plants. Tobacco may be a good candidate for carrying the spider genes,
 which is a benefit for growers seeking alternative crop uses. The dragline silk of the golden orb weaver
 spider is the model for the study because it is a strong, elastic, waterproof, stretchable, biodegradable
 protein fiber. This makes it ideally suited for many applications, such as biodegradable sutures and cell
 scaffolds for tissue engineering. This research complements work by other Clemson scientists who are
 investigating ways to spin the silk protein into fiber for the textile industry.

- **Value-Added Uses for Whey Products**
The United States is the world's largest, single-country, exporter of whey products. Because of their
undesirable characteristics, acid whey products have little commercial value and are typically disposed of
as a waste product. Approximately 18 billion kg of acid whey are produced in the United States annually.
Disposal of acid whey is a costly process to the dairy industry. Clemson's researchers are seeking
alternative uses that will increase profitability to dairy producers and processors by expanding the value-
added market for acid whey.

Overview

- Approximately 462,884 contacts were made by Extension personnel in the delivery of educational information. In addition to programs, this total reflects repeated interactions with clientele via telephone, office walk-ins, farm and home visits, and newsletter and periodical distribution.

- Clemson Extension Service conducted 16,903 educational programs throughout the 46 counties of South Carolina. This number includes 7,981 programs that were federally funded. The total number of participants in these programs was 243,912. This number includes duplicated counts of persons who had participated in various Extension programs throughout the year. Approximately 103,334 represent an unduplicated headcount. Of the 243,912 individuals participating in programs, 81% reported gaining knowledge.

Focus Area 1: Agrisystems Productivity and Profitability

- As part of the Department of Homeland Security's measures to protect farm and food production systems, Extension agents, farmers, and first responders were trained regarding South Carolina's potential vulnerabilities to terrorist activities and the best practices for responding to threats. The following trainings were provided by CES agents:
  - Agroterrorism Awareness
  - Foreign Animal Disease (FAD)
  - Plant First Detector course
  - Incident Command System, 100, 200, and 300 Levels
  - National Incident Management System (NIMS) 700 Level
  - Global positioning GIS & GPS courses I, II, and III
  - Foot and Mouth Tabletop Exercise

- In an effort to provide low-income citizens with additional and/or alternate economic opportunities, a new farmers' market was established in Marion County. The market opened on June 23, 2007 for its second successful year. The CES secured vendors, signage, and a part-time manager, which was financially supported by the South Carolina Department of Agriculture.

- South Carolina is the second leading producer of leafy brassica greens in the United States. Extension agents have researched the diamondback moth population to develop an economic threshold for caterpillar pests of collards and a rapid and accurate scouting program to determine the need for pesticide applications. Hands-on trainings were offered to the farming community. As a result, the

overall number of pesticide applications has been reduced, and growers are using biological control effectively as evidenced by continued purchase of insectary-raised insects to augment natural biological control in their fields. Broad-spectrum insecticide use has been mostly eliminated on leafy brassica crops in Lexington County.

- Foliar nutritional supplements are aggressively marketed for agronomic crops such as peanuts. Supplements typically cost about $20 - $30 per acre annually, which is a substantial expense for growers. A comprehensive set of fertility recommendations were developed for peanuts, and the results of multi-year foliar nutrient testing program were presented to growers. This program has resulted in a savings of $20 per acre on at least 20,000 acres per year ($400,000 per year).

- Many new varieties of soft red wheat are released and promoted every year in the Southeast. In an effort to assist growers in selecting the varieties best suited for South Carolina's growing conditions, the Clemson Extension Wheat Variety Challenge annually invites each breeding program, both public and private, to submit their most competitive lines for South Carolina production conditions. The program evaluates yield, test weight, disease resistance, insect resistance, and straw strength against current variety standards. Results are disseminated each August reflecting multi-year performance and varieties recommended as out-performers under South Carolina conditions. The positive annual impact of this program is $1.6 million.

- Freezing temperatures in early April 2007 severely damaged corn plants in South Carolina, giving the appearance of dead plants. A newsletter was sent to county agents, growers, and seed companies apprising them of the situation and describing the process for assessing plant damage levels and signs of new growth. It is estimated that replanted corn varied from zero to 80 percent, depending upon the county. As a result of Extension's activities, the overall estimated savings to South Carolina growers was approximately $10 million.

Focus Area 2: Economic and Community Development

- CES received an AmeriCorps Grant to expand "Builders of Tomorrow," a youth leadership and dropout prevention program, to four additional counties/school districts; Allendale County Schools, Barnwell School District #19 (Blackville), Colleton County School District, Dorchester County School District #4 (St George), and Hampton County School District One (Hampton). The program is designed to improve academic achievement and high school graduation rates. The goals of the program are to: 1) engage youth in school and community activities with a focus on building leadership capacity and civic involvement, and 2) expose participants to potential career and educational opportunities. "Builders of Tomorrow" conducted 7200 hours of tutoring for 700 students, which has resulted in 68% of the students improving in math and 86% improving in English.

- Through the National Issues Forums (NIF), CES agents interacted with citizens to create synergistic direction for community actions. Forums have created platforms for discussing strategies for addressing issues related to at-risk children with a history of violence. Citizens have also had opportunities to consider immigration issues and diversity topics. South Carolina and CES agents were recognized by the Public Agenda Foundation for their accomplishments with NIF.

Focus Area 3: Environmental Conservation

- CES received $300,000 in grant funding from the Environmental Protection Agency (EPA) under section 319 of the Clean Water Act. Projects have been implemented throughout the state to determine and reduce the Total Maximum Daily Loads (TDML) of fecal Coliform bacteria in watersheds. In

Pickens County, the water bodies within the 67,805 acre Twelve Mile watershed were identified as containing excessive fecal Coliform bacteria. Surface runoff from livestock farms were identified as a source of the bacteria. In partnership with the Natural Resources Conservation Service, Extension agents identified livestock producers within the watershed willing to implement best management practices (BMPs) to help reduce fecal Coliform levels in nearby water bodies. Project participants received a 60% cost-share for properly installed and approved BMPs. As of March 2007, 34 livestock operations within the Twelve Mile watershed were under contract and had implemented 184 BMPs. These farms will be receiving $290,430 in cost-share funds for their efforts. Fecal Coliform counts were taken downstream of each farm prior to BMP implementation. Levels will be reviewed upon completion of the project to quantify the impacts. The Extension Service is conducting similar projects with the Tyger River, Coneross, and Beaverdam Watersheds.

- Farm and forest landowners in South Carolina are seeking alternate land uses, management practices, and diversification strategies to generate additional income to mitigate the effects of declines in commodity sales and markets, as well as the maturity time required for timber investments. Extension agents developed and provided 28 educational programs for landowners regarding alternate income opportunities. There were 733 participants.

- Extension agents educated horticulture service providers, Master Gardeners, and consumers regarding best practices for developing environmentally friendly urban landscapes. A total of 113 educational programs and activities were conducted for 1,823 horticulture professionals. Ninety-six percent (96%) of participants reported an increase in knowledge. There were 44 articles or fact sheets prepared.

- During FY07, 24,185 consumers received information via the Urban Hort Center, Home and Garden Information Center (HGIC), and PAWS Hort-Line. Over 7 million visits were recorded for the HGIC web site. A total of 811 people were trained as Master Gardeners. Master Gardeners contributed 23,978 hours of service, conducting over 3,500 activities.

Focus Area 4: Food Safety and Nutrition

A. Food Nutrition and Health

- Expanded Food and Nutrition Education Program (EFNEP) Nutrition Educator Assistants (NEAs) conducted 3,825 educational programs reaching 13,377 adults; 10,873 participants reported gaining knowledge, 5,573 planned to adopt a recommended practice, and 2,637 reported adopting a recommended practice. There were 2,139 hours of volunteer time contributed to EFNEP. Pre-program surveys indicated that 13% of participating adults reported diets containing foods from all five food groups. Based on post-program surveys, the percentage reported increased to 36%.

- EFNEP Nutrition Educator Assistants (NEAs) conducted 4,033 educational programs reaching 57,876 children and youth. There were 6,001 hours of volunteer time contributed to 4-H EFNEP. Of the children and youth surveyed, 39,635 of these reported gaining knowledge, 18,136 planned to adopt a recommended practice, and 6,268 reported adopting a recommended practice.

B. Food Safety

- A total of 840 managers, supervisors, and other food handlers completed food safety training, representing 421 food establishments. These food handlers have the potential to reach 217,171 people. Of the total participants, 737 received a course completion certificate. The National Restaurant

Association has estimated that the average cost of a foodborne illness outbreak to an establishment is approximately $75,000. The estimated economic value of the trainings in South Carolina was $31,575,000.

- Food Safety and Nutrition Educators conducted 727 educational programs for the general public reaching 4,085 adults. Of the adults participating in the educational programs, 3,762 reported increased knowledge. Media kits (990) were distributed to media channels throughout the state. Print media was one outlet, with 14,215 column inches of information on food safety and nutrition appearing in newspapers and other publications. Additionally, educators provided 1,224 minutes of radio airtime and 534 minutes of television airtime in the area of food safety and nutrition. There were 87 new or value-added food products or packages entering the market as a result of the program.

- The Center for Disease Control reports that there are 76 million cases of food-borne illness in the United States each year. Among those cases, 323,000 people require hospitalization, and 5,200 deaths occur. According to the South Carolina Department of Health and Environmental Control, there are approximately 100 food-borne illness outbreaks in South Carolina annually. In an effort to reduce these risks, the Food Safety Manager with the Food Lion Supermarket corporate office in Salisbury, North Carolina, requested that ServSafe Manager Training be taught by Clemson Extension for deli managers, meat market managers, produce managers, and store managers of Food Lion Supermarkets at ten locations in South Carolina.

Focus Area 5: Youth Development and Families

- 4-H financial management programs are designed to educate families regarding financial practices that create opportunities for financial security and stability. These programs help families cope with the impacts of reduced income resulting from plant downsizing, divorce, widowhood, and natural disasters. Youth programs are designed to provide participants with the necessary knowledge and skills to: 1) establish financial goals through regular savings, 2) implement basic financial management practices, 3) make wise consumer decision, and 4) understand entrepreneurship concepts. Nine programs educated 153 participants.

- A total of 1,527 adults were trained in 4-H project areas, who, in turn, trained 15,944 youth. As a result, 2,086 youth developed workforce preparation skills; 290 developed hunter safety skills; 286 youth received officer training to strengthen leadership skills; 263 provided leadership to service learning projects for the community or to help others in their club; and 858 youth participated in service learning or community development projects. Youth were trained as ambassadors and conducted 12 presentations about 4-H to other groups. Volunteers contributed 8,150 hours. The value of time contributed was $105,950.

- The number of people trained to become Master Gardeners was 811. The number of hours contributed by agents on continuing education training for Master Gardeners was 677. There were 2,447 Master Gardeners conducting 3,576 programs and activities such as oral presentations, newsletters, radio programs, and TV appearances. These trained Master Gardeners contacted 23,437 individuals and contributed 23,978 hours of service. Master Gardener volunteers contributed 91,288 miles of travel.

- Fifty-nine (59) 4-H teens represented South Carolina at various national events, trainings and/or contests related to emergency preparedness and safety management, computer technology, videography, wildlife habitat, shooting sports, service leadership, citizenship, youth adult partnerships, youth military partnerships, and animal science.

- The new 4-H Healthy Lifestyles Program was initiated. Statewide training in using curriculum, club manuals, and event planning guides was provided for 4-H agents, health and nutrition professionals, and volunteers in all 46 South Carolina counties. The first annual 4-H Healthy Lifestyles Challenge event was successfully held where participants demonstrated their knowledge and skills related to nutrition, safety, fitness, and community service. Five university programs were involved in the collaboration for this initiative.

- According to the Department of Labor's Employment and Training Administration, "80% of careers by the year 2012 will require some knowledge of geospatial technology and systems." There is an immediate and anticipated need to fill tens of thousands of positions in this area and related fields. Approximately 1,120 youth were reached through the 4-H Science and Technology Project which engages members in GIS/GPS training and subsequent mapping.

- Ten South Carolina 4-H members and four 4-H volunteer leaders attended the "Alert, Evacuate, and Shelter" (AES) Hurricane Preparedness Conference at Virginia State University. The AES project is a result of the 4-H Technology and Community Readiness initiative and is supported by USDA programming dealing with emergency preparedness. The 4-H participants in this training are prepared for and charged with assisting local communities in hurricane preparedness and response should such a disaster take place. Youth and adults will act in a "train-the-trainer" role with the capacity to reach more than 1,100 teen 4-H members. One area that is a new development in the emergency response planning is the requirement of emergency management officials that disaster sheltering for pets be organized to handle pets when people have to evacuate the area. South Carolina 4-H members will work with local officials to develop maps of evacuation routes with human and animal shelters marked.

- The 4-H_2O Pontoon Classroom, a science-based water quality and natural resources program, is conducted annually for South Carolina 4-H members and affiliates. The number of youth participants increased 140% this year, from 180 to 455 campers. These youth address critical issues impacting South Carolina watersheds and other natural habitats.

For over 100 years, Livestock-Poultry Health Programs (LPH) has fulfilled the covenant of Clemson University's founder through its land-grant responsibilities of teaching, research, and extended public service. LPH programs support and enhance the following PSA goals: Agrisystems Productivity and Profitability, Economic and Community Development, Food Nutrition and Safety, and Environmental Conservation.

LPH ensures the continued health of the livestock and poultry industry and companion animals and protects the public health of the citizens of SC from zoonotic diseases (diseases transmitted from animals to man). LPH ensures safe, wholesome, properly labeled meat and poultry products. LPH provides state-of-the-art diagnostic capability to support the veterinarians, companion pet owners, backyard farmers and livestock/poultry commercial producers in South Carolina, and it is the lead agency to coordinate a state-wide animal emergency response to all hazards and/or disease outbreak whether it is intentional, natural, or accidental.

LPH serves as the Center of Veterinary Excellence for the state of South Carolina in the areas of food safety, endemic and foreign animal diseases, emerging and zoonotic diseases, diagnostic veterinary medicine, and biosecurity. Approximately 75% of emerging infectious diseases over the past decade have been zoonotic diseases. Surveillance, detection and response activities to outbreaks of emerging infectious diseases such as monkeypox, leishmaniasis, Mad Cow Disease and West Nile virus are integral activities of LPH. No other entity or state agency offers this level of veterinary expertise to South Carolina.

With over 24,000 farms operating on almost 5 million acres of land and employing nearly half a million workers (22% of state workforce), agriculture continues to be a major economic sector in South Carolina. Agri-business contributes over 17% to our state's GSP (gross state product), with cash receipts from livestock and poultry alone in excess of one billion dollars annually.

Focus Area 1: Agrisystems Productivity and Profitability

- LPH coordinated the statewide animal emergency response for animal evacuations along the coast in response to Tropical Storm/Hurricane Ernesto.

- Poultry services were expanded with six new laboratory poultry tests for infectious bursal disease, infectious bronchitis virus, reo virus, exotic newcastle disease (END), chick anemia virus, and laryngotracheitis.

- The National Animal Identification System (NAIS) outreach program for Premise Registration was initiated with all livestock commodities including South Carolina State's extension services and community-based organizations.

- USDA published its first ranking of states for the percentage increase in premises registered monthly. In the initial listing, South Carolina was first in the nation with a reported increase of over 5% from June to July. Second place had an increase of less than 2%. According to another new ranking, South Carolina is 16th in the nation in the absolute number of new premises registered since January 1, 2007. South Carolina ranks 33rd in total number of premises to be registered.

- At the annual American Veterinary Medicine Association (AVMA) convention, Dr. Julie Helm presented Clemson's Low Path Avian Influenza (LPAI) Containment and Response Plan. It was recognized as an example for a national template. Many states have consulted us concerning their own plan development. Helm spearheaded the plan development with the poultry industry, and it was approved by the USDA in February 2007.

- The LPH Laboratory was recognized and provisionally accredited by the American Association of Veterinary Laboratory Diagnosticians (AAVLD).

- RNA nucleic acid sequencing was developed by the LPH Laboratory for the identification of bacterial and fungal species from cultures.

- LPH generated the first HL7 message as part of the National Animal Health Laboratory Network (NAHLN), which was presented at the AVMA annual convention in veterinary informatics.

- The South Carolina Ag Watch Program for producer biosecurity education and certification was initiated.

- LPH participated in a federal station review of regulatory programs and retained "disease free status" for tuberculosis, brucellosis, Salmonella pullorum and typhoid, and pseudorabies, which ensures interstate and international movement of poultry and livestock products.

- LPH participated in organizing the Southern Agriculture Animal Disaster Alliance (SAADRA). SAADRA was created as a structure to allow regional collaboration and coordination between state officials for agricultural and animal disasters.

Focus Area 4: Food Safety and Nutrition

- LPH conducted the first statewide Food Defense Reality Based Exercise (RBX), which focused on defining the roles of state, county, and federal government agencies, and the food industry in collaborating to detect, respond to, and recover from an intentional incident involving the food supply.

- LPH responded to a national, regional and state multi-agency investigation into melamine-contaminated hog feed. Hog movement was restricted for one month until food safety issues were resolved and the safety of the public health was ensured.

- Supported U.S. Customs and Border Patrol Programs and the Port of Charleston's "Operation Cold Fowl II," a multi-agency special operation committed to protection of agriculture resources entering the country.

- Two veterinarians were certified as Foreign Animal Disease Diagnosticians (FADD); SC MPID was the first program in the nation to certify veterinarians in meat inspection services as FADDs.

Focus Area 1: Agrisystems Productivity and Profitability

- RPSP personnel conducted and participated in various emergency response preparedness training and exercises. National Incident Management System (NIMS) training was completed for all Regulatory and Public Service Programs (RPSP) staff expected to be activated in the event of an emergency situation. Agroterrorism Awareness training was provided for staff having potential to be First Detectors/First Responders, and designed and conducted a Tabletop Exercise involving multiple agencies in response to an agricultural emergency targeting plants and agrichemicals.

- An Advisory Committee was formed with Category 3 (Ornamental and Turf Pest Control) pesticide applicators. The Committee met and strongly encouraged the Department of Pesticide Regulation's decision to transition to a regulatory enforcement relationship after 18 months of operating in a compliance assistance mode relative to enforcement of Category 3 licensing.

- The Plant Problem Clinic began using the Plant Diagnostic Information System, a nationwide diagnostic database and reporting system. The system allows the use of digital imaging to aid diagnosis and has improved the efficiency of data entry into the nationwide data repository. County agents and administrative assistants have been trained to use the system.

- Legislation was passed to allow use of methyl bromide fumigation in tree seedling nurseries to help producers comply with intrastate and interstate phytosanitary requirements for shipping tree seedlings. South Carolina ranks second in the United States in forest tree seedling production, and this legislation protects the ability to market products competitively.

Focus Area 3: Environmental Conservation

- The South Carolina Department of Agriculture provided funding support to establish a stewardship program for waste, "left-over," and otherwise unusable agricultural pesticides in South Carolina. This effort will protect the people of South Carolina by preventing these materials from being released into the environment.

- The Department of Pesticide Regulation introduced 44 additional South Carolina schools to the Integrated Pest Management (IPM) for Schools Program. Also, IPM training was conducted in 24

school districts. The practice of IPM principles in schools helps improve the school environment through by reducing pesticide applications in close proximity to school children.

- DPR coordinated the recycling of 104,000 pounds of plastic pesticide containers, reducing the volume of plastic and pesticide residue potentially going to landfills.

- DPR regulatory specialists conducted 2,795 pesticide inspections in monitoring the use of pesticides in South Carolina to ensure their effective use and to prevent possible harm to humans, plants, animals, or the environment.

PSA INSTITUTES

Selected achievements are presented for the following PSA Institutes:

Belle W. Baruch Institute of Coastal Ecology and Forest Science
Conducts research and education programs focused on the ecology and management of the natural resources of the coastal region of South Carolina for the betterment of the state's citizens. The institute is situated on more than 700 acres in Georgetown, SC, and conducts research on more than 80,000 acres of coastal forest through public and private partnerships.
www.clemson.edu/baruch/

Institute for Economic and Community Development
Conducts research and education programs to help South Carolina communities balance economic and community development with environmental conservation. Institute programs focus on securing a livable, prosperous and sustainable future for South Carolina's citizens.
www.clemson.edu/sandhill/

Institute for Family and Neighborhood Life
Conducts research and education programs, analyzes public policies, and provides technical assistance for community institutions that support family and neighborhood life. The Institute is comprised of five centers that address issues critical to healthy families and neighborhoods in South Carolina.
www.clemson.edu/ifnl/

Strom Thurmond Institute
Conducts research and education programs on medicinal plants with an emphasis on crop cultivation and post-harvest practices, product standards, and efficacy. This statewide consortium focuses on industry-wide issues and economic development in rural South Carolina.
www.strom.clemson.edu/

Youth Learning Institute
Develops and delivers innovative youth development programs through high-performance learning environments to build quality relationships and valuable life skills. Over 60 programs are presented at leadership centers around the state.
www.clemson.edu/yli/

BELLE W. BARUCH INSTITUTE FOR COASTAL ECOLOGY AND FOREST SCIENCE

- The Program of Integrated Study for Coastal Environmental Sustainability (PISCES) continued its initiation phase in 2007. Additional water level recorders and rain gauges were installed as part of the monitoring system, grants were submitted for research funding, and a University-based Information Technology upgrade is underway that will include data acquisition sensors for transmitting data wirelessly via the internet. The upgrade has been designed, and the components have been ordered. The completed network will provide remote data acquisition access for other University projects.

- The Coastal Initiative was expanded through a colloquium, hosted by the Baruch Institute, pertaining to environmental issues of concern to legislative delegates from South Carolina's ten coastal counties. A synthesis of the state of knowledge for these issues with recommendations for research is being developed among several state agencies. The coastal effort was further expanded by the creation the Clemson University Restoration Institute (CURI) program dealing specifically with perturbed ecosystems. Baruch Institute and Restoration Institute faculty will collaborate to provide a comprehensive study of the natural and perturbed systems on the coast.

- Environmental education efforts were expanded. Articles describing research initiatives were published in Clemson's Impact magazine, a Pate Foundation newsletter was mailed to the coastal interest group, five educational programs were conducted, and faculty participated in a Hobcaw-based seminar series with the University of South Carolina.

- Faculty from the Baruch Institute and CURI established collaborative initiatives at the Water Forum sponsored by the CURI. Faculty from CURI are developing plans to establish an EPA Watershed Center in South Carolina. Baruch faculty will be actively involved in the effort.

INSTITUTE FOR ECONOMIC AND COMMUNITY DEVELOPMENT

- During this fiscal year, the Clemson Institute for Economic and Community Development (CIECD) conducted a series of "Charrettes" (input sessions) at four locations within the state for the Department of Juvenile Justice. More than 500 individuals participated in the meetings held in Florence, Orangeburg, Columbia and Greenville. The attendees were a diverse group, representing agencies, parents, local and state lawmakers, law enforcement, officials from the judicial system and youth who were formerly part of the system. These sessions were designed to obtain input from community stakeholders and the juveniles concerning local efforts to address youth issues. CIECD utilized the information gathered during the sessions to strategically develop new initiatives and strengthen partnerships in communities.

- In partnership with the Horry County Council, the CIECD hired a Community Development Agent in Horry County. Because this is a dual funded position (funds received from the County and the University), the agent's primary focus is to develop and implement aggressive economic and community development programs for Horry County. The agent will also assist University and County Teams in developing and implementing outreach programs designed to address the needs of county residents and communities.

- FastTrac® is a comprehensive entrepreneurship-educational program that provides entrepreneurs with business insights, leadership skills and professional networking connections to prepare participants for creating a new business or expanding an existing enterprise. The FastTrac® program includes practical, hands-on business development programs and workshops for existing entrepreneurs, aspiring entrepreneurs, as well as entrepreneurship curriculum for college students. CIECD conducted several programs with a number of success stories including business expansions, openings and diversifications.

INSTITUTE FOR FAMILY AND NEIGHBORHOOD LIFE

- With support from the Duke Endowment ($1.7 million per year), the "Strong Communities for Children" project has recruited over 4,500 individual volunteers and involved over 400 businesses and churches to participate in child protection and family strengthening activities.

- Through the federally-funded "South Carolina Rural Communities Compassion Project," 35 rural faith- and community-based organizations received over $400,000 in small grants to build their capacity to provide services to children and families, while over 200 rural faith- and community-based organizations received technical assistance on board development and fund-raising to build their organizational capacity.

- "Building Dreams," a project designed to meet the mentoring needs of children of prisoners, was one of ten sites selected nationally to implement a set of principles to improve practice and policy for children of prisoners and their families.

- The national media campaign to "Stop Bullying Now" was augmented with 20 website fact sheets and several national news accounts featuring Clemson researchers (e.g., *Time Magazine*). Additionally, two "train-the-trainer" sessions were held to train professionals to implement the "Bullying Prevention Program," bringing the total number of Clemson-trained trainers to over 400.

- Institute faculty created and taught the undergraduate curriculum for the innovative Civics and Service House, the undergraduate residence devoted to civic engagement and service, and also implemented the first year of the Ph.D. program in International Family and Community Studies.

- In collaboration with the Strom Thurmond Institute, the Institute for Family and Neighborhood Life published, *Neighbors: Stories of Fountain Inn*, a collection of stories, essays, and drawings from 40 contributors. The book was released at a community luncheon and distributed to every household in the city of Fountain Inn, South Carolina.

- IFNL faculty and staff continued development of the Center for Community Services (formerly the Golden Strip Center) in southern Greenville County. In 2006, more than 10,000 clients, exclusive of "Strong Communities" programs, were served in various programs at the center. IFNL staff generated approximately $200,000 in external funding during FY07 to support the coordination and further development of these efforts.

- IFNL faculty, staff, and graduate students developed Cafe Cultura, a community center for Hispanic families, at the Center for Community Services.

- The Strom Thurmond Institute (STI) completed a feasibility study for implementing a Wireless Cloud in South Carolina. The project provided a basis for legislation to establish this resource and a demonstration project regarding the use of wireless laptop computers in selected high schools throughout the state.

- STI recruited Dr. Tom Tanner from the Carl Vinson Institute at the University of Georgia to direct the Regional Dynamics & Economic Modeling Lab, established in partnership with the Clemson University Research Foundation. Models regarding the economic impact of the Wireless Cloud in South Carolina, off-shore wind generation, and subsidies provided by the Greenville Housing Trust were developed.

- The project on the fiscal impact of residential growth expanded into Jasper, Aiken and Dorchester Counties. As a result of study findings, these counties have altered or adopted residential growth plans and taxation programs.

- In its first year of operations, the Alliance for Research on Higher Education at STI established partnerships with the Medical University of South Carolina, the State Board for Technical and Comprehensive Education, Francis Marion University, The Citadel, and the University of South Carolina Beaufort. In addition, working relationships were established with the South Carolina Independent Colleges and Universities Association, and the South Carolina Budget and Control Board as well as with the South Carolina Commission on Higher Education. Initial research papers included a longitudinal analysis of state appropriations for education, a review of state governance roles with higher education, and an introduction of education links with state economic health. Finally, the Alliance initiated work on a Parent's Guide intended to inform South Carolinians about the planning, partners, and return on the education investment.

- STI concluded a successful, two-year partnership with the Palmetto Institute, an independent, nonpartisan and nonprofit research and educational organization. This partnership, "Evaluation of the South Carolina Revenue System," resulted in eight research reports by researchers from STI and the University of South Carolina, which reviewed all aspects of government revenue in South Carolina. The state and local government revenue system of taxes, fees, and debt management is crucial to the state's competitiveness and attractiveness as a place to work, invest, and live when compared to other states. The eight research reports continue to be used by the Palmetto Institute to promote its agenda of comprehensive, thoughtful tax reform.

- The Water Resources Center's received an $80,000 appropriation from the United States Geological Survey to establish joint research activities for two projects:
  - "A Statewide Biomarker Approach to Investigate Pollution Effects on Fish in Wadeable Streams of South Carolina (Phase 2)."
  - "A Statewide Sediment and Water Quality Approach to Characterize Pollution in Wadeable Streams of South Carolina (Phase 2)."

- A total of 26,319 individuals participated in educational and youth development programs at the Youth Learning Institute (YLI). These individuals spent 112, 261 program days in YLI activities.

- A total of 793 groups, ranging from state agencies to local schools and civic groups, partnered with YLI to conduct programs.

- In partnership with the Department of Juvenile Justice and Columbia College, YLI established The Girls Center, which will become a resource and research hub to tackle gender-specific issues such as stereotyping, trauma, teen pregnancy, high school dropout rates and poor self-esteem among girls.

- YLI partnered with the Department of Juvenile Justice to offer 107 leadership staff the opportunity to participate in "Thinkshops." This program emphasizes leadership, performance enhancement, and strengthening team relationships.

- YLI entered into a partnership with the South Carolina Department of Education to develop and deliver a curriculum and program focused on character education as outlined in a grant from the U.S. Department of Education. YLI developed a Character Education curriculum and conducted comprehensive summer training sessions for 60 teen leaders and their teachers from around the state. YLI's participation will provide over $459,000 of deliverables in this multi-year grant.

- YLI partnered with Aiken County Public Schools to establish and operate an alternative school that provides clinical, therapeutic counseling services for middle school students.

- YLI participated as advisor to the National Forum on Children and Nature, an initiative of The Conservation Fund, a nationally recognized nonprofit in environmental conservation.

- YLI partnered with the Ministry of Education and the Archbold Tropical Research Center to provide two weeks of educational programming and youth development activities to 91 young people in the country of Dominica.

- YLI developed and implemented CSI: Clemson Student Investigators, a residential, forensic science learning adventure designed for students and teachers in grades 5-8. Students learned math, science and technology through forensic activities that are aligned with state science standards. Teachers also received training on the use the program "TestEdge" as a means to help students overcome test anxiety and improve their focus, clarity and problem-solving skills.

- National Elderhostel programs were expanded to include opportunities for active senior citizens from across the country to learn about the natural resources and to experience the many trails, waterfalls, and lakes in the Upstate Region of South Carolina.

- Expanded the partnership with Happy Days and Special Times, to include a weekend retreat at the R.M. Cooper Leadership Center for families who have children with cancer. The program gives families time to be together in a vacation-like environment to simply have fun, bond with other families, and allows parents access to professionals in the fields of homebound education, finance and family dynamics.

I.3 KEY STRATEGIC GOALS

PSA supports the University's emphasis areas by developing and delivering science-based information to improve the quality of life for the people of South Carolina within five focus areas. **Table I.3-1** provides description of each focus area. For more information, please visit: http://www.clemson.edu/public/focus_areas/index.html.

Table I.3-1

PSA FOCUS AREAS

Agrisystems Productivity and Profitability

Clemson researchers, Extension personnel and regulatory agents help South Carolina's agriculture and forestry producers compete in a global economy. Research scientists develop new production technologies, investigate value-added products and develop new plant varieties. Regulatory agents monitor for plant and animal diseases and alert producers of potential threats. Extension personnel share science-based information on sustainable timber crop and livestock production systems, turfgrass and ornamental horticulture, and organic and alternative crops.

Economic and Community Development

Clemson scientists and Extension personnel work with community leaders to realize Thomas Green Clemson's goal of improving the quality of life for South Carolina's citizens. The Institute for Economic & Community Development and Extension personnel develop statewide partnerships to share resources among community organizations. The Strom Thurmond Institute conducts research and shares data with public policy makers on critical issues such as population growth and urban planning. The Design Arts Partnership helps rural communities design improvements for architectural, landscape, and historical preservation projects.

Environmental Conservation

Clemson researchers, Extension personnel and regulatory agents work to enhance South Carolina's forests, wetlands, wildlife habitats and water quality. Researchers develop best management practices for agriculture and forestry producers to minimize the use of chemicals, prevent soil erosion, reduce the impact of livestock waste, preserve wildlife habitat, and minimize the environmental impact of urban development. Extension personnel develop and deliver education programs for landowners, municipal officials and commercial operators on sustainable forestry, wetlands and watershed management, and stormwater run-off prevention. Regulatory agents ensure the quality, efficacy, and safe use of fertilizers and pesticides

Food Safety and Nutrition

Clemson researchers, Extension personnel and regulatory agents help ensure the safety and nutrition of South Carolina's food supply. Regulatory agents work closely with crop and livestock producers to ensure that the state's meat, poultry and plant crops meet all federal and export safety requirements. Research scientists seek to enhance the nutrients in plants and to develop post-harvest handling and packaging technologies that protect food quality and safety. Extension personnel provide safe food-handling training for individuals, restaurants and commercial food processors to prevent outbreaks of food-borne illnesses.

Youth Development and Families

Clemson Extension and institute personnel seek to enhance support for families and young people in South Carolina. Extension 4-H programs provide training in necessary life skills, such as resolving conflict, becoming involved citizens, and protecting the environment. The Institute on Family and Neighborhood life conducts research and outreach to strengthen families and communities, and to reduce bullying in schools. The Youth Learning Institute develops and delivers experiential learning programs that challenge, educate and inspire students from elementary school through college.

The University's **Emphasis Areas**, which are the foundation for its Academic Plan, are:
1. Leadership and Entrepreneurship
2. Information and Communication Technology
3. Family and Community Living
4. Advance Materials
5. Automotive and Transportation Technology
6. General Education
7. Biotechnology and Biomedical Sciences
8. Sustainable Environment

PSA also aligns its strategic goals and objectives with "**University Year 2011 Goals**," established in January 2001 in the following five broad areas:
- Academics, Research and Service
- Campus Life
- Student Performance
- Educational Resources
- Clemson's National Reputation

PSA contributes to multiple goals within each area, with the exception of student performance.

I.4 OPPORTUNITIES AND BARRIERS

The primary opportunities and barriers that affect PSA's ability to fulfill its mission and strategic plans are presented in **Table I.4-1**.

Table I.4-1: Opportunities and Barriers

Opportunities	Barriers
- Provide relevant new knowledge that will improve the quality of life for South Carolinians - Generate opportunities to provide programming on state, regional, national and international levels - Collaboratively identify mission-critical faculty hires - Integrate technological advances to improve programs - Improve relationships with advisory boards, commodity boards and other stakeholders - Increase donor base and private giving - Improve accountability systems and strategic planning processes - Increase grant funding - Provide relevant programs based on accurate identification of customer needs	- Restrictive hiring policies - Lower-than-market compensation levels - Delays in the hiring process - Meeting technological needs and responding to rapidly changing technologies - Responding to and implementing changes in laws, regulations, policies and procedures - Responding quickly to customer's changing needs

I.5 IMPROVING ORGANIZATIONAL PERFORMANCE

Accountability is the process by which organizational performance is evaluated based upon identifying performance objectives, assigning appropriate measures and indicators, systematically collecting and analyzing data, and using the data to make decisions that continually improve performance. PSA units adhere to this philosophy by submitting strategic plans prior to the fiscal year identifying the relevant measures and indicators for each objective. Data is gathered throughout the reporting period and reviewed on a regularly scheduled basis. The schedule is dependant upon the meaning and application of the measure or indicator. Data analyses provide managers with relevant feedback for making informed decisions and developing action plans, which are formalized annually.

II.1 PRODUCTS, SERVICES, AND DELIVERY

PSA is a service organization dedicated to improving the quality of life for South Carolinians by transferring applicable, science-based knowledge developed through research conducted at Clemson University. PSA communicates with customers, advisory boards, local governments and agencies, commodity boards, industry partners and others to identify issues relevant to the state's citizens. PSA faculty and specialists apply their field expertise to develop solutions to address the identified challenges. County agents and specialists primarily deliver applied knowledge to customers through client visits, educational programs, internet sites, email, publications, and media productions.

II.2 CUSTOMERS AND KEY EXPECTATIONS

Key Customers:
- Citizens of South Carolina
- Agricultural producers and growers
- Forest land owners and managers
- State, local, and county agencies
- Local municipalities and communities
- County governments
- Pesticide and fertilizer manufacturers and users
- Practicing veterinarians

Key Expectations:
- Accurate information
- Investments in cutting-edge research that is helpful to the industry and overall economy
- Positive economic impacts
- Environmental responsibility
- Continuous improvement in the availability of information
- Accurate assessment of South Carolina's needs
- Ethical approaches with clients and other stakeholders
- Intelligent allocation of resources
- Quality educational opportunities
- Rapid response and excellent customer service
- Accountability

I.3 KEY STAKEHOLDERS

- Citizens of South Carolina
- Federal, state, and local governments
- Federal, state, local, and private granting agencies
- Agricultural community
- PSA employees
- PSA suppliers
- Private donors
- Commodity boards and associations
- Agricultural Industry and Related Associations
- Advisory boards

II.4 KEY SUPPLIERS AND PARTNERS

- Vendors maintained in the Clemson University Business System (CUBS)
- Contractors selected for capital improvements and infrastructure projects for PSA facilities
- Federal, state, local, and private granting agencies
- Federal, state, and local governments
- Private donors
- Strategic partners with federal, state, and local agencies and the agricultural industry

II.5 OPERATION LOCATIONS

Clemson PSA includes four central units, eight institutes, five research and education centers, five residential camping facilities, 46 county Extension offices, and more than 28,000 acres of land. See Figure II.5-1 to view statewide locations.

Figure II.5-1. PSA Statewide Location Map
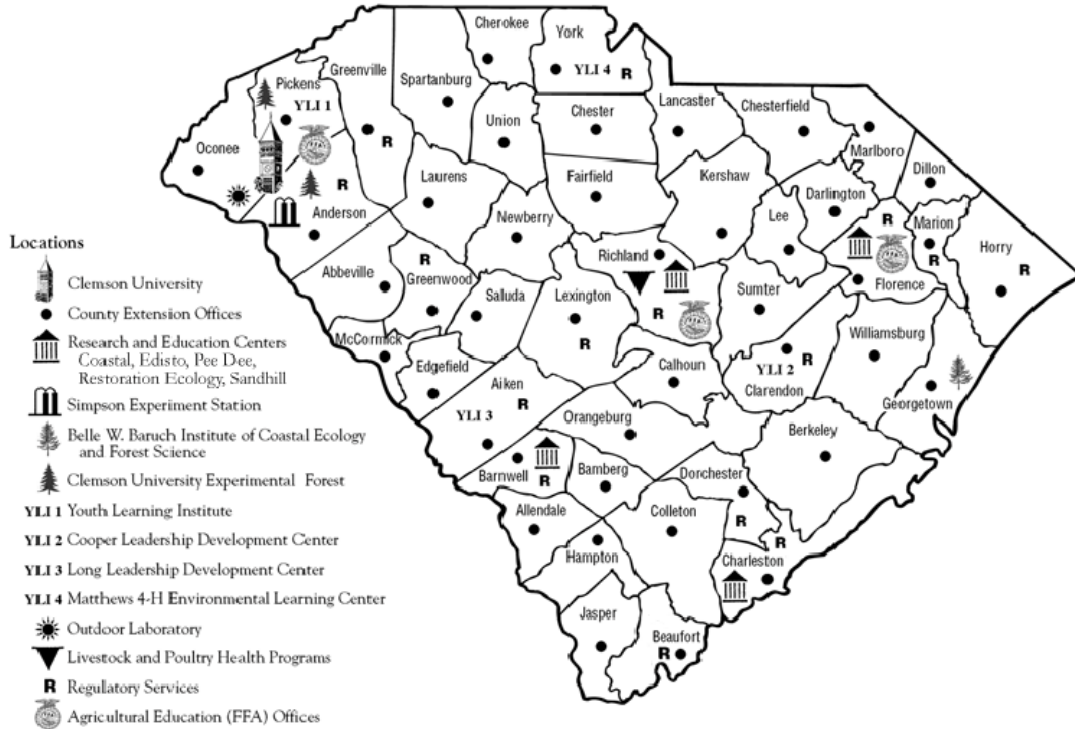
Central Units	Research Facilities	Centers and Institutes	Outreach Facilities
• Clemson University Experiment Station • Cooperative Extension Service • Livestock-Poultry Health Programs • Regulatory and Public Service Programs	• Archbold Tropical Research & Education Center • Biosystems Research Complex • Clemson Experimental Forest • Coastal Research & Education Center • Edisto Research & Education Center • Pee Dee Research & Education Center • Research Farm Services • Sandhill Research & Education Center	• Belle W. Baruch Institute of Coastal Ecology & Forest Science • Clemson Institute for Economic & Community Development • Genomics Institute • Institute on Family and Neighborhood Life • Institute for Nutraceutical Research • Nutrition Information & Resource Center • Restoration Institute – Center for Applied Ecology • Strom Thurmond Institute of Government & Public Affairs • Youth Learning Institute	• Bob Campbell Geology Museum • Home & Garden Information Center • S.C. Botanical Garden • T. Ed Garrison Livestock Arena

II.6 HUMAN RESOURCE STATISTICS

As of July 1, 2007, PSA's total headcount was 864 consisting of 480 classified and 384 unclassified positions. There were 79 temporary grant employees funded by grant funds. Of the total headcount, there were 685 full time equivalents (FTEs) consisting of 398 classified staff and 287 unclassified staff.

II.7 REGULATORY ENVIRONMENT

Federal Regulatory Environment:

- **USDA Cooperative State Research, Education and Extension Service (CSREES):** "Congress created CSREES through the 1994 Department Reorganization Act, by combining the USDA's Cooperative State Research Service (CSRS) and Extension Service (ES) into a single agency. This move united the research, education, and extension portfolios of both agencies and consolidated their expertise and resources under one leadership structure." http://www.csrees.usda.gov/

- **Morrill Act of 1862:** Also known as the "Land-Grant Act," this legislation established institutions in each state designed to educate citizens in agriculture, home economics, and mechanical arts. http://www.reeusda.gov/1700/legis/morrill1.htm

- **Hatch Act of 1887:** Authorized federal-grant funds for direct payment to each state to establish an agricultural experiment station at the land-grant college established under the provisions of the Morrill Act of 1862, and of all supplementary acts. http://www.nasulgc.org/publications/land_grant/Hatch.htm

- **Smith-Lever Act of 1914:** Established funds to relay relevant information related to agriculture, home economics, and rural energy in collaboration with a college or colleges in each state. http://www.reeusda.gov/1700/legis/s-l.htm

South Carolina Regulatory Environment:

- **Livestock-Poultry Health Programs: Animal Health and Diagnostic Laboratory:** Provides statewide surveillance for diseases that affect both man and animals. Enforces state and federal animal health laws and regulations. Protects animal and public health through eradication and control of endemic, foreign, and emerging diseases. Provides veterinary diagnostic laboratory facilities and diagnostic expertise to assists veterinarians, animal industries, and animal owners in diagnosing livestock and poultry diseases of economic impact. The laboratory provides diagnostic assistance for diseases of companion animals and wildlife. Coordinates the statewide animal emergency response planning to protect animal health, public health, and food safety in the event of major disasters, whether natural or manmade. Sections 47-4-10 et seq. of the SC Code of Laws authorizes Clemson-PSA to perform these duties as assigned by law.

- **Regulatory and Public Service Programs: Plant Industry (DPI):** DPI delivers statewide programs to ensure the quality of fertilizer and lime through registration, inspection, and analysis; to provide certification programs for the nursery, organic, and seed industries; to prevent and control plant and honeybee pests; to deliver quality assurance and identity preserved programs for value added planting stock; to approve the release of genetically modified organisms in the state; to enforce the imported red fire ant quarantine; to carry out the boll weevil eradication program; and to deliver homeland security programs related to plant agriculture with the mission of prevention, mitigation, and emergency response. The following sections/chapters of the SC Code of Laws authorize DPI to carry out the above listed regulatory functions: 46-7, 46-9, 46-10, 46-21, 46-23, 46-25, 46-26, 46-33, 46-35, 46-37.

- **Regulatory and Public Service Programs: Pesticide Regulation (DPR)** DPR carries out state and federal mandated programs of pesticide regulation to ensure safe and legal use of pesticides in the state through product registration, licensing of dealers and applicators, and conduct compliance and misuse investigations. Related programs include pesticide container recycling, groundwater sampling and analysis, Integrated Pest Management in Schools, Federal Worker Protection Standard and Endangered Species programs. Legal authority for these programs is derived from the SC Code of Laws Section 46, Chapters 1, 7, 9 and 13 as well as the [Federal Insecticide, Fungicide, & Rodenticide Act, the Worker Protection Standard Regulations](#) and the [Endangered Species Act.](#)

- **Regulatory and Public Service Programs: Agricultural Service Laboratory (ASL) and Plant Problem Clinic (PPC):** ASL provides unbiased, scientifically sound information and analytical testing of soil, plant tissue, forage, animal waste, irrigation water and compost samples to guide proper nutrient and resource management. PPC analyses and reports plant pest identification to growers, homeowners and other interested persons to determine appropriate control measures. Authority to provide these services is derived from Section 46-7 of the South Carolina Code of Laws.

- **Regulatory and Public Service Programs: Agricultural Biosecurity:** Regulatory and Public Service Programs employees coordinate statewide surveillance for naturally occurring and introduced pests and diseases of plants under Homeland Security Presidential Directives 8, 9, and 10. In addition, educational programs are developed and implemented for agricultural chemical security and all-hazards disaster preparedness, prevention, mitigation and response. Section 46-9 of the South Carolina Code of Laws authorizes RPSP to carry out these activities.

As a division of Clemson University, PSA is subject to safety regulations, certifications, and financial policies and procedures as mandated by the State of South Carolina.

II.8 STRATEGIC CHALLENGES

See Section I.4 on page 25.

II.9 PERFORMANCE IMPROVEMENT SYSTEM

University Level Systems	PSA Level Systems

- Faculty Systems
  - Faculty Activity System
  - Promotion, Tenure and Reappointment Processes
  - Post-Tenure Reviews
- Master Campus Planning
- Research Compliance
- Faculty and Staff Evaluations
  - Annual Faculty Evaluations
  - Employee Performance Management System
- InfoEd – Grant Management Information System
Clemson University Business System – Accounting and Human Resource Information System
	- Clemson University Management Information System (CUMIS) – CES
	- Current Research Information System (CRIS) – Experiment Station
	- Public Service Accountability Office
	  - Accountability Reports
	  - Annual Assessment Plans and Reports

II.10 ORGANIZATIONAL STRUCTURE

The Vice President for PSA reports to the President of Clemson University. See **Figure II.10-1**. The PSA Organizational Chart can be viewed in **Figure II.10-2**.

Figure II.10-1 Clemson University Organizational Chart
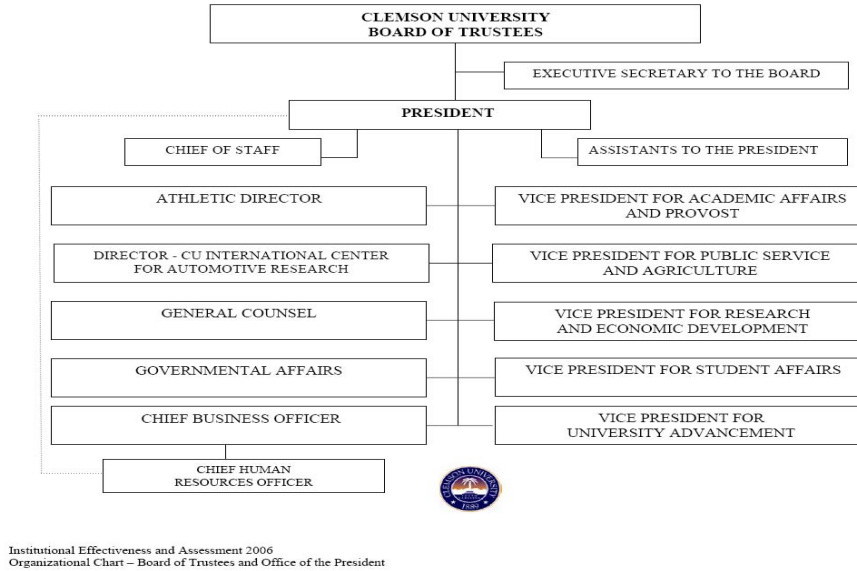
Figure II.10-2 PSA Organizational Chart
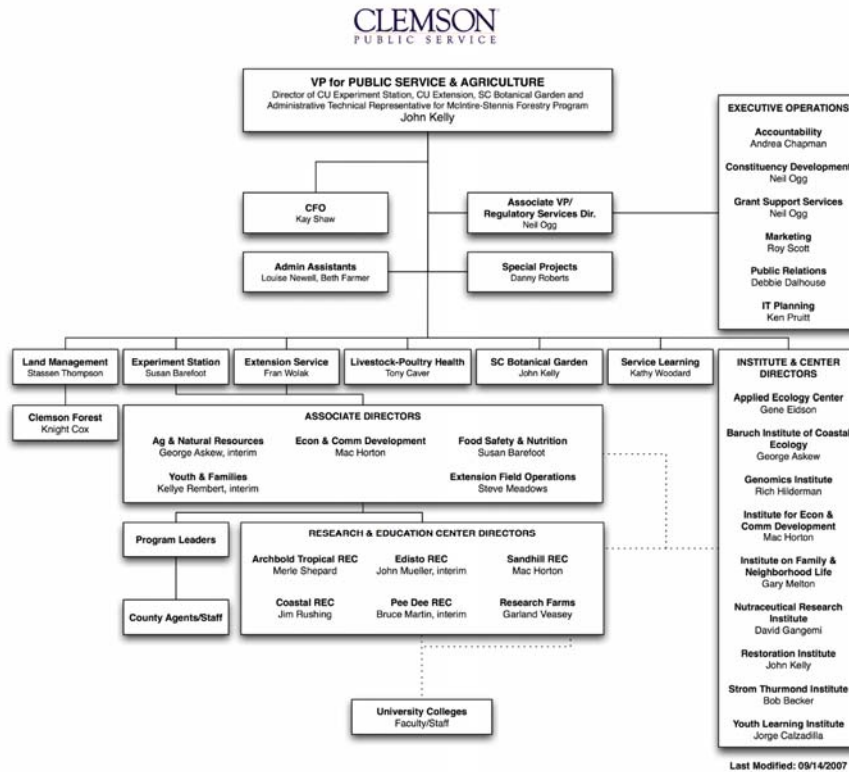
II.11 EXPENDITURES/APPROPRIATIONS CHART

Base Budget Expenditures and Appropriations						
	FY 05-06 Actual Expenditures		FY 06-07 Actual Expenditures		FY 07-08 Appropriations Act	
Major Budget Categories	**Total Funds**	**General Funds**	**Total Funds**	**General Funds**	**Total Funds**	**General Funds**
Personal Service	$37,706,251	$24,774,561	$39,912,833	$26,982,243	$45,043,970	$36,332,135
Other Operating	$23,068,417	$ 9,414,534	$24,586,480	$ 9,592,669	$15,771,574	$ 4,308,038
Special Items	$ 134,974	$ 134,974	$ 134,974	$ 134,974	$ 134,974	$ 134,974
Permanent Improvements						
Case Services						
Distributions to Subdivisions	$ (219,393)	$ (219,393)	$ (235,722)	$ (235,722)	$ (235,722)	$ (235,722)
Fringe Benefits	$10,064,731	$ 6,927,318	$11,376,849	$ 8,200,980	$13,456,279	$10,080,012
Non-recurring						
Total	**$70,754,980**	**$41,031,994**	**$75,775,414**	**$44,675,144**	**$74,171,075**	**$50,619,437**

Other Expenditures

Sources of Funds	FY 05-06 Actual Expenditures	FY 06-07 Actual Expenditures	
Supplemental Bills		$ 849,008	*
Capital Reserve Funds			
Bonds			

* $150,992 pending transfer to capital project. Total $1,000,000.00

II.12 MAJOR PROGRAM AREAS CHART

Program Number and Title	Major Program Area Purpose	FY 05-06 Budget Expenditures		FY 06-07 Budget Expenditures		Key Cross References for Financial Results*
I	Clemson University Experiment Station	State: 16,254,544.00 Federal: 3,751,167.00 Other: 2,759,137.00 Total: 22,764,848.00 % of Total Budget:	32%	State: 16,450,254.00 Federal: 3,751,166.00 Other: 5,045,298.00 Total: 25,246,718.00 % of Total Budget:	33%	7.1-7.5
II	Cooperative Extension Service	State: 19,691,869.00 Federal: 7,386,101.00 Other: 8,816,531.00 Total: 35,894,501.00 % of Total Budget:	51%	State: 22,932,485.00 Federal: 6,294,449.00 Other: 9,372,539.00 Total: 38,599,473.00 % of Total Budget:	51%	7.6-7.19
III	Livestock-Poultry Health	State: 2,926,627.00 Federal: 2,626,455.00 Other: 629,288.00 Total: 6,182,370.00 % of Total Budget:	9%	State: 3,247,428.00 Federal: 2,378,089.00 Other: 566,840.00 Total: 6,192,357.00 % of Total Budget:	8%	7.20-7.21
IV	Regulatory and Public Service Programs	State: 2,012,466.00 Federal: 1,298,226.00 Other: 2,456,082.00 Total: 5,766,774.00 % of Total Budget:	8%	State: 1,849,515.00 Federal: 961,533.00 Other: 2,730,354.00 Total: 5,541,402.00 % of Total Budget:	8%	7.22-7.30
V	South Carolina Institute for Energy Studies	State: 36,831.00 Federal: Other: Total: 36,831.00 % of Total Budget:	0%	State: 87,530.00 Federal: Other: Total: 87,530.00 % of Total Budget:	0%	NA
VI	BioEngineering	State: 109,656.00 Federal: Other: Total: 109,656.00 % of Total Budget:	0%	State: 107,934.00 Federal: Other: Total: 107,934.00 % of Total Budget:	0%	NA

Below: List any programs not included above and show the remainder of expenditures by source of funds.		

Remainder of Expenditures:	State:
	Federal:
	Other:
	Total:
	    % of Total Budget:
		State:
		Federal:
		Other:
		Total:
		    % of Total Budget:

* Key Cross-References are a link to the Category 7 - Business Results. These References provide a Chart number that is included in the 7th section of this document.

III.1 CATEGORY 1 - LEADERSHIP

Question 1.1: How do senior leaders set, deploy, and ensure two-way communication for: a) short and long term direction and organizational priorities; b) performance expectations; c) organizational values; d) empowerment and innovation; e) organizational and employee learning; f) and ethical behavior?

Public Service Activities contributes to Clemson University's overall mission, while focusing to fulfill the research and outreach components of the University's land-grant mission. The Vice President for Public Service and Agriculture (VP-PSA), Dr. John W. Kelly, is one of the Core Mission Vice Presidents for the University and is involved in strategic planning processes at both the University and PSA levels. This ensures regular communication and an alignment of missions. In additional to University goals, the VP-PSA and Senior Leaders also consider the priorities and initiatives of the United States Department of Agriculture and the needs and expectations of South Carolina's citizens during planning processes.

PSA is entering the third year of its five-year plan, which was publicly communicated to PSA employees by Dr. Kelly during a general session at the PSA Annual Conference held in December 2004. The plan established strategic goals and objectives and designated **PSA's Guiding Principles**, which are as follows:

1. Support economic development
2. Increase per capita income
3. Encourage entrepreneurship
4. Enhance quality of life
5. Develop, transfer, and utilize knowledge
6. Build relationships with partners
7. Provide incentives and rewards

PSA employees were given an opportunity to provide feedback to the VP-PSA and Senior Leaders regarding the vision and direction for PSA. The plan was finalized and became effective on July 1, 2005. The plan is reviewed on a regular basis for progress toward each goal and objective, which is reported regularly to Clemson University President, James F. Barker, and the Board of Trustees.

In an effort to stimulate open communication among Senior Leaders, the PSA Cabinet was formed. The Cabinet meets on a regular basis to discuss short and long-term direction, as well as organizational priorities. The Cabinet is composed of the following:

- VP-PSA
- Associate VP PSA
- Directors of Research and Education Centers, Institutes, Regulatory, and LPH
- Chief Operating Officers, Clemson University Experiment Station and Cooperative Extension Service
- Special Assistants to VP PSA
- Director of Public Relations for PSA
- Program Team Leaders (Extension)
- Director of Information Technology
- Chief Financial Officer

The members of the Cabinet are responsible for representing and relaying critical information to their employees regarding organizational priorities via email, staff meetings and individual meetings. Such communications are also useful in obtaining feedback from employees.

Senior Leaders are committed to the professional development of PSA's employees. Professional development is encouraged for all employees. PSA is an organization that disseminates applicable, science-based information to South Carolina's citizens. In order to ensure citizens are provided with timely, useful and accurate information, it is imperative that PSA's professionals maintain an ongoing knowledge of current research in their fields. Administrative staff are also encouraged to participate in professional development opportunities to improve the efficiency of support processes and activities.

An organizational-wide conference was held in December 2006. This was an opportunity for both professional development and communication regarding organizational values, direction, opportunities, and performance expectations. Subject-matter and administrative trainings were conducted at the 2006 PSA Conference. The conference provided Extension agents and researchers an opportunity to communicate ideas, promoted innovation, and encouraged new collaborations. Poster sessions were held to recognize research accomplishments. Various Extension agents were recognized for external awards received during 2006, and the Chief Operating Officer for the Cooperative Extension Service, Dr. Fran Wolak, presented several awards to agents for special achievements and dedicated service.

Question 1.2: How do Senior Leaders establish and promote a focus on customers and other stakeholders?

Senior Leaders focus on customer and stakeholder needs and expectations through direct interaction with customers and meetings with advisory boards, commodity boards, industry partners, and other constituency groups. These activities are useful in identifying the needs of the state's citizens, which are considered and prioritized by Senior Leaders during programmatic and financial strategic planning processes.

Question 1.3: How does the organization address the current and potential impact on the public of its products, programs, services, facilities and operations, including associated risks?

When developing programs, Senior Leaders and programmatic staff work with Clemson University's General Counsel Office and Risk Management Office to understand the potential impacts and risks associated with research and outreach programs. These groups identify options and solutions to mitigate the risks associated with PSA programming.

Questions 1.4: How do Senior Leaders maintain fiscal, legal, and regulatory accountability?

As a division of Clemson University, PSA is subject to the same fiscal, legal, and regulatory standards as the University. The University maintains centralized offices for accounting, risk management and legal services; however, each budget center at the University maintains a decentralized business office. The business office is subject to internal audits, as well as external audits by the state, independent auditors, and granting agencies. In the event of an audit finding, the PSA Business Center works closely with auditors to develop an action plans for resolution. The PSA Business Center is dedicated to ensuring separation of duties to reduce the risk of a breach in fiscal compliance. Personnel from the PSA Business Center attend professional development, both internally and externally. The PSA Business Center also conducts training for business and administrative staff within the organization.

Legal services are provided by the University's centralized General Counsel's Office. Legal staff members work closely with PSA's Senior Leaders and programmatic staff to develop memorandums of

understanding and contracts with external parties. Risk Management is often consulted during contract negotiations to evaluate the risks of a potential program and recommend avenues to alleviate those risks.

Question 1.5: What key performance measures are regularly reviewed by your senior leaders?

- Clemson University Experiment Station
    - Number of Proposals Processed
    - Award Amounts
    - Number of Disclosures (official announcement of potential invention)
    - Number of Patent Applications (filed, issued, and licenses issued)
    - Number of Technical Contributions
- Clemson Extension Service
    - Number of Client Interactions
    - Program Participation and Completion Levels
    - Acres of SC lands Affected by Programming
    - Volunteer Contributions
    - Customer Service
- Livestock and Poultry Health
    - Disease-Free Status
    - NAIS Premises Registered
- Regulatory and Public Service Programs
    - Seed Certification Effectiveness Measures
    - Number of Inspections
    - Savings Resulting from Inspections
    - Number of Samples Processed by Type
    - Rate of Compliance
    - Fertilizer Deficiency Rates

Question 1.6: How do Senior Leaders use organizational performance review findings and employee feedback to improve their own leadership effectiveness and the effectiveness of management throughout the organization? How do their personal actions reflect a commitment to the organizational values?

Senior Leaders communicate performance review findings, both positive and negative, with each employee. Employees are given an opportunity to discuss the findings and develop an action plan for improvement if needed. In some units, employees are given an opportunity to participate in reverse reviews to provide feedback to supervisors. The following is a list of questions most frequently used in PSA's reverse review process:

1. What am I now doing that helps or supports your job performance?
2. What would you like me to consider doing that I am not doing now?
3. What would you like me to consider <u>not</u> doing that I am doing now?
4. Is there anything we can implement that would make your life easier and/or would improve your performance?
5. Is there anything in our policy or procedures that you would like to have considered for change that might help or improve your performance?

Question 1.7: How do Senior Leaders promote and personally participate in succession planning and the development of future organizational leaders?

Mentorship opportunities are provided to employees throughout the organization. During the reporting period, assistant directors were strategically appointed within various units to promote succession planning and mentorship. PSA also encourages professional development in the area of leadership. Senior Leaders often attend training events with upcoming leaders to encourage communication, broad visioning, and innovation.

Question 1.8: How do Senior Leaders create an environment for performance improvement, accomplishment of strategic objectives, and innovation?

Senior Leaders establish reasonable goals and expectations for employees during the individual planning stage process. Through interaction with personnel and direct feedback, employees and Senior Leaders are given an opportunity to adjust objectives and clearly define performance expectations. Based upon these discussions, employees have the opportunity to improve their performance.

From an organizational perspective, PSA relies on accountability systems and processes to identify strengths and weaknesses in performance. Data from these systems are analyzed to determine the source of variances and develop action plans to either alter or complete objectives to meet the overall mission of the organization.

Question 1.9: How does Senior Leadership actively support and strengthen the communities in which your organization operates? Include how senior leaders and employees contribute to improving these communities.

The intent of PSA's mission is to help people in South Carolina make informed decisions that will improve their lives and the communities in which they live. PSA accomplishes this mission by developing new knowledge through research and transferring the knowledge gained to the citizens of the state through a wide range of educational techniques. With agents serving in every county and field specialists at research facilities in key agricultural areas within the state, PSA is constantly involved with community activities and economic growth opportunities.

III.2 CATEGORY 2 – STRATEGIC PLANNING

Question 2.1: What is your Strategic Planning process, including Key participants, key process steps, and how does it address: a) your organization's strengths, weaknesses, opportunities and threats; b)financial, regulatory, societal and other potential risks; c) shifts in technology or the regulatory environment; d) human resource capabilities and needs; e) the opportunities and barriers you described in the Executive Summary; f) business continuity in emergencies; g) and your ability to execute the strategic plan?

Each PSA unit develops an annual assessment plan, which is submitted to the Clemson University Office of Institutional Effectiveness and Assessment. These plans contain the goals and objectives for each unit, which are reviewed annually for progress toward completion. Based upon the assessed progress, units must formally explain how the results will be used to develop an action plan to meet or alter the stated objectives.

PSA units also submit an annual strategic plan aligning with the assessment plan, PSA Five-Year Plan, PSA's Focus Areas, and Clemson University's Year 2011 Goals to the PSA Accountability Office. Appropriate indicators and measures are assigned to the annual objectives, and the relevant data is

collected throughout the year in various accountability systems. The data is reviewed quarterly to determine if organizational performance is on target. The results and variances are analyzed and used to address strengths and weaknesses in the current plan. These analyses, an assessment of the risks, and changes in financing and human resource capital are used to make decisions and develop action plans to complete the stated objectives.

Question 2.2: How do you develop and track action plans that address your key strategic objectives, and how do you allocate resources to ensure the accomplishment of these plans?

Action plans are based on the progress made toward a given goal or objective. Action plans continue to be submitted in the form of proposals, formal progress reports, and assessment reports. Action plans are reviewed by Senior Leaders, who suggest alterations to, approve or disapprove the proposed plans. Action plans are also submitted to the Clemson University Office of Institutional Effectiveness and Assessment. The University has purchased an information system that will allow Senior Leaders the opportunity to review, approve and track action plans via the internet.

Question 2.3: How do you communicate and deploy your strategic objectives, action plans and related performance measures?

Senior Leaders participate in Cabinet meetings to discuss strategic objectives and action plans. These objectives, plans, and associated performance measures are communicated to individuals at the unit level via email, staff meetings, personal communications, and employee planning stages. Strategic objectives and action plans are also communicated to employees during internal leadership seminars, trainings, and conference sessions.

Question 2.4: How do you measure progress on your action plans?

Action plans and projected results are reviewed in conjunction with the PSA Five-Year Plan and appropriate unit strategic plans and measures to determine the status of action plans. The results are used to direct future tasks to ensure goals and objectives are completed. Results are also communicated through the accountability reporting process and formal programmatic progress reports.

Question 2.5: How do your strategic objectives address the strategic challenges you identified in your Organizational Profile?

PSA's Senior Leaders work closely throughout the organization and University to identify critical hires. Focused hires and prioritized funding result in positions that are better defined; thus, it is easier to identify and recruit qualified candidates and offer marketable compensation.

Technological advances are a consideration during program reviews and development. The costs and benefits of integrating new technologies are analyzed to determine the appropriate action for a given program.

Changes in laws, regulations, policies, and procedures have varying affects on PSA programs and processes. PSA responds by sending employees to training sessions and determining the impacts of these changes. PSA programs, processes and best practices are modified to implement the changes.

Question 2.6: How do you evaluate and improve your strategic planning process?

Senior Leaders and the PSA Accountability Office solicit feedback from unit heads to assess the strategic planning process. Based upon feedback, changes in reporting requirements, and upgrades to

accountability systems, the PSA Accountability Office and Senior Leaders develop strategies to streamline planning and reporting processes.

Additionally, the University has purchased new software to assist units and departments with strategic planning and assessment. The PSA Accountability Office will coordinate efforts between PSA and the University Offices of Institutional Effectiveness and Assessment to ensure a smooth transition.

Question 2.7: If the agency's strategic plan is available to the public through the agency's internet homepage, please provide an address for that plan on the website.

The PSA strategic plan is an internal working plan that has not yet been released. It is available via the internet to all PSA employees. Please see **Figure III-2:7-1** for the Strategic Planning Chart.

Figure III-2:7-1: Strategic Planning Chart

Program Number and Title	Supported Agency Strategic Planning Goal/Objective	Related FY 06-07 Key Agency Action Plan/Initiative(s)	Key Cross References for Performance Measures*
I. Clemson University Experiment Station	• Agrisystems Productivity and Profitability • Economic and Community Development • Environmental Conservation • Food Safety and Nutrition • Youth Development and Families	**1. Agricultural Productivity and Profitability** To improve agricultural productivity and profitability in all the major crops, livestock, poultry, fish, forest products, biofuels, and advanced plant technology. **2. Enhanced Economic Opportunity and Quality of Life for Americans** To provide research that will enhance economic opportunities and improve the quality of life for South Carolinians, particularly in the knowledge-based economy. **3. Greater Harmony between Agriculture and the Environment** To protect and enhance South Carolina's natural resources and water quality, to ensure the quality of life and the future economic development potential in the state. **4. A Safe and Secure Food System and a Healthy Well Nourished Population** To improve the quality of life for South Carolinians by developing food safety and nutrition knowledge, and enhancing the nutritional content of plant-based foods. **5. Family and Community Living** To strengthen the support for families and young people in South Carolina, through ongoing family and youth development research programs.	**7.1-7.5**

| II. Cooperative Extension Service | • Agrisystems Productivity and Profitability
• Economic and Community Development
• Environmental Conservation
• Food Safety and Nutrition
• Youth Development and Families | **1. Sustainable Forest Management and Environmental Enhancement**
To conduct educational programs that promote sustainable management of forest resources and understanding of natural forest systems through: 1) proactive leadership, 2) continuing education, and 3) educational training on public issues affecting forestry.

2. Risk Management Systems for Agricultural Firms
To conduct educational programs to assist farm managers in agricultural market assessment and appropriate marketing strategies for agricultural commodities in South Carolina.

3. Agricultural Biosecurity
1) To improve state, regional, and local capabilities to detect, recognize, diagnose and prevent agroterrorism and threats to food safety, through training exercises and the dissemination of educational information and 2) To respond to agroterrorism, foreign plant and animal diseases, and other disasters that threaten agriculture or food safety.

4. Sustainable Agricultural Production Systems
To support the development of niche markets for beef, dairy, and poultry producers to allow farmers in the state to diversify their operations and make local products available to the citizens of the state, develop and implement animal production systems that are economically sustainable and environmentally sound, and provide training that will increase herd management skills and assist producers in making informed business decisions.

5. Reducing the Impact of Animal Agriculture on the Environment
1) To develop and deliver educational programs for training and certification of animal facility operators to reduce the environmental impact of animal waste. 2) To present county and state programs on environmentally sound manure treatment, storage, and utilization systems.

6. 4-H, Youth and Families
1) To develop communities of young people in South Carolina who learn leadership, citizenship and life skills by creating healthy experientially educational environments in the local community which support the positive development of young people ages 5 to 19. Youth will develop life skills and the corresponding competency, coping and contributory skills through a variety of | **7.6-7.19** |

Continued: Cooperative Extension Service		educational experiences. 2) To train 4-H volunteers and staff who will provide land-grant based subject matter curriculum and educational experiences so that youth might develop specific life skills. **7. Natural Resources and the Environment** 1) To develop models which will provide a scientific basis for decisions on long term water quality issues in South Carolina and to teach Best Management Practices (BMP's) of natural resources at all levels of land ownership to minimize the negative environmental impacts on water. 2) To provide landowners and natural resource managers with the tools, information, and economic incentives to maintain and enhance lands for wildlife and to provide services and solutions to mediate and resolve human-wildlife conflicts as they occur. **8. Household and Structural Pest Control and Pesticide Training** To conduct educational programs to increase consumer knowledge of structural design conducive to pest damage, wood-destroying insect control alternatives, implementation of safe pesticide application, and responsibilities under pesticide regulations. **9. Integrated Pest Management** To teach producers and homeowners to use practices to reduce costs, negative environmental impacts, and increase profitability. 2) To encourage growers to adopt new agronomic and horticultural production practices. **10. Environmental Horticulture Education** 1) To educate consumers, horticulture professionals, and master gardeners on environmentally sound horticultural practices. 2) To recruit and train volunteers to assist with educating consumers on environmentally sound horticultural practices. **11. Food Safety and Nutrition** 1) To conduct educational programs to reduce the prevalence of obesity and the associated health risks, teach consumers safe food handling and good nutrition practices, and promote healthy lifestyles of South Carolinians. 2) To improve the quality and safety of food for citizens of South Carolina. **12. Community, Leadership and Economic Development** 1) To conduct educational programs, training, and activities that enhance leadership, communication, team building and strategic planning efforts of citizens.	

Continued: Cooperative Extension Service		2) To provide communities with tools to develop a vision for transformation to a future state of increased livability, prosperity and sustainability. 3) To strengthen the economic competitiveness of rural areas.	
III. Livestock-Poultry Health	• Agrisystems Productivity and Profitability • Economic and Community Development • Environmental Conservation • Food Safety and Nutrition	**1. Disease Eradication** To maintain the livestock-poultry disease-free status for cattle brucellosis, swine brucellosis, classical swine fever, pseudorabies, tuberculosis and pullorum-typhoid for the purpose of protecting the health and marketability of South Carolina livestock-poultry. **2. Food Safety** To ensure safe, wholesome, properly labeled meat and poultry products to protect the public health; maintain "at least equal to" status to USDA Food Safety Inspection Services requirements. **3. Diagnostic Veterinary Services** To provide timely and accurate diagnoses to mitigate economic losses from animal and poultry disease outbreaks. **4. Disease Control** To increase awareness among producers of disease control programs, e.g., South Carolina Voluntary Bovine Johne's Disease Control Program (SC VBJDCP), SC Egg Quality Assurance Program (SCEQAP) and encourage participation in them. **5. National Animal Identification System (NAIS)** 1) To develop a system to consolidate premises information on South Carolina livestock-poultry operations and coordinate that information with the national premises allocator and repository. 2) To compete for Cooperative Grants from USDA to help fund activities related to populating the premises identification system. **6. Cooperative Agreements & Grants** To actively pursue available cooperative agreements and grants that are relative to our mission to supplement state appropriations. **7. Animal Emergency Response/Agro-Terrorism** To further define the role of Livestock-Poultry Health, Animal Health Programs in animal emergency response and training in SC, ultimately mitigating and animal-related agroterroism and competing for cooperative grants for funding of these activities.	**7.20-7.21**

| IV. Regulatory and Public Service Programs | • Agrisystems Productivity and Profitability
 • Economic and Community Development
 • Environmental Conservation
 • Food Safety and Nutrition | **1. Pesticide Regulation**
 To ensure safe and legal use of pesticides and regulate the pest control industry.

 2. Plant Pest Regulation, Fertilizer Inspection and Seed Certification
 To ensure the prevention and control of introduced plant pests/invasive species, and pests of honey bees; the certification of freedom from plant pests in nursery, greenhouse and transplants; the quality of fertilizer & lime; the varietal purity and germination of Certified seed and plants.

 3. Soil and Other Analyses
 To examine soil samples and provide recommendations for soil composition and nutrient levels to clients, as well as to analyze feed and forage, animal waste, plant tissue, irrigation water, and compost samples and provide results to clients.

 4. Plant Problem Clinic
 To examine samples to diagnose plant diseases, insect pests and other problems and to identify weeds and household insects. The Clinic also provides nematode assay services to detect plant pathogenic nematodes in soil and to determine if populations have reached damage threshold levels. All results and recommendations are reported to clients.

 5. Polymer Chain Reaction Lab
 To analyze DNA and RNA of potential plant diseases to identify specific pathogens.

 6. Homeland Security/Emergency Response/Agroterrorism
 To further define the role of Regulatory and Public Service Programs in agricultural emergency response and training in SC, ultimately mitigating and animal-related agroterroism and competing for cooperative grants for funding of these activities. | **7.22-7.30** |
| **V. Institute for Energy Studies** | • Economic and Community Development
 • Environmental Conservation | 1. To promote energy research and development in and for the state.

 2. To transfer energy technology developed by others to South Carolina applications. | **NA** |

Continued: **Institute for** **Energy Studies**		3. To contribute to national energy issues in areas of excellence. 4. To promote state-wide energy education activities.	
VI. **Bioengineering** **Alliance**	• Economic and Community Development • Environmental Conservation	1. To increase enrollment of graduate students and post-doctoral fellows in the CU-MUSC Bioengineering Program. 2. To increase infrastructure improvement through federal funding (U24 proposal with the College of Dental Medicine at MUSC). 3. To establish an undergraduate research program in bioengineering in the low country of South Carolina. 4. To initiate major funding for research programs in bioengineering at the CU-MUSC Bioengineering Program. 5. To consolidate bioengineering education and research in the State of South Carolina. 6. To disseminate bioengineering education and research conducted in SC nationally and internationally. 7. To significantly impact cardiovascular, and orthopedics, dental, and neurological healthcare research in SC.	**NA**

III.3 CATEGORY 3 – CUSTOMER FOCUS

Question 3.1: How do you determine who your customers are and what their key requirements are?

As a land-grant university, Clemson University exists to provide research, education, and outreach programs to improve the lives of South Carolina's citizens. PSA's services are directed by its Focus Areas. End-use customers are identified through direct contacts, referrals, and market analyses. PSA works closely with individual clients, advisory boards, local governments, commodity boards, and other stakeholders to identify customer needs and expectations. PSA obtains feedback regarding customer service, program impacts, and customer satisfaction via surveys and client contacts.

Question 3.2: How do you keep your listening and learning methods current with changing customer/business needs and expectations?

Extension agents and specialists are in constant contact with PSA's customers. The organization uses web surveys, focus groups, client contacts, advisory boards and other mechanisms to gain information regarding the customer needs and expectations. PSA also conducts market analyses to determine the needs of various customer segments on a county and regional basis.

Question 3.3: How do you use information from customers/stakeholders to keep services or programs relevant and provide for continuous improvement?

Feedback from customer surveys, client contacts, and stakeholder interactions are analyzed to determine customer satisfaction and program impacts. Senior Leaders use this information to identify areas of improvement in programming, delivery and customer service. Implementation of the knowledge gained from the various listening and learning methods is critical. To succeed in its mission to improve quality of life within the focus areas, PSA must continue to meet the needs of its customer base.

Question 3.4: How do you measure customer/stakeholder satisfaction and dissatisfaction, and use this information to improve?

PSA uses a customer satisfaction survey as a measure of programmatic quality control and customer satisfaction. The data gathered from these surveys are analyzed to identify areas of improvement. Senior Leaders use the results in the planning process to adjust programs and services to meet the needs of PSA's clientele. The following primary indicators have been identified to assist Senior Leaders in determining areas of improvement:
1. Is the program, information, or service current, relevant, and understandable?
2. Is the program, information or service delivered applicable to the customer's circumstances?
3. Do customers share the learning experience with others, and would they recommend the program, information, or service to others?
4. What is the customer's level of satisfaction with the program, information, or service delivered?

Question 3.5: How do you build positive relationships with customers and stakeholders? Indicate any key distinctions between different customer groups.

In order to build a positive relationship with customers and stakeholders, these groups must have a positive experience with PSA. Positive experiences are provided through stewardship and meeting or exceeding customer expectations. By interacting directly with customers and stakeholder groups to clearly understand, identify, and prioritize needs and expectations, PSA is better able to provide relevant services, methodology, and accurate information in a timely manner.

III.4 CATEGORY 4 – MEASUREMENT, ANALYSIS, AND KNOWLEDGE MANAGEMENT

Question 4.1: How do you decide which operations, processes and systems to measure for tracking financial and operational performance, including progress relative to strategic objectives and action plans?

PSA measures the financial and operational performance of all its units, including support units. Unit heads, Senior Leaders, and staff decide which processes demonstrate performance, and appropriate measures and indicators are selected to support the decision-making process.

Measures and indicators are classified as pertaining to performance objectives established in the University, PSA, and unit-level strategic plans through various accountability systems. Data is collected and queries are developed to assess and analyze relevant information throughout the fiscal year. The information is reviewed periodically to ensure performance is on target.

Question 4.2: How do you use data/information analysis to provide effective support for decision making throughout your organization?

Data and information is gathered from various databases maintained by the University and PSA. The data is analyzed and compared against benchmarks and forecasted results for key measures to generate action plans. Senior Leaders also request ad hoc reports to address emerging organizational priorities.

Question 4.3: What are your key measures, how do you review them, and how do you keep them current with organizational needs and direction?

Key measures have been identified in Section III: Category 1-5 on page 37. Senior Leaders and staff review the measures on a quarterly basis to ensure objectives are on target. Measures and indicators are also reviewed to determine if they are still relevant to the current business system. When measures and indicators are deemed irrelevant, unit heads and senior leaders review the business system to identify new measures and indicators that provide information to support decision making processes. Ad hoc reports are generated upon request. Information is gathered from University and PSA information systems and analyzed. Accountability databases also undergo upgrades. When this occurs, database administrators merge historical data with the new systems to ensure institutional knowledge remains intact.

Question 4.4: How do you select and use key comparative data and information to support operational and strategic decision making and innovation?

The University and PSA maintain numerous information systems pertaining to operational activities. Predefined queries are established to compare performance across multiple years, departments, and individuals. The data is used to gauge the success of operations and strategically determine appropriate action plans. Comparative studies across land-grant institutions are generated to compare PSA's operations and performance with its peer institutions.

Question 4.5: How do you ensure data integrity, timeliness, accuracy, security and availability for decision making?

University and PSA information systems are designed with data limits and validation mechanisms to ensure accuracy. Timely data entry is encouraged through regularly scheduled deadlines and official year-end closings. Those with oversight of the information systems also communicate directly with personnel via emails and telephone conversations to remind them to complete data entry tasks. Data is secured

through the use of user IDs, passwords, and firewalls. Data is made available to appropriate parties by enforcing restricted access.

Question 4.6: How do you translate organizational performance review findings into priorities for continuous improvement?

The objectives contained within each unit's annual plan are reviewed to determine the actual results performed. Units submit an action plan at the University and PSA levels explaining how the results will be applied to improve performance during the upcoming fiscal year. Senior Leaders collaborate to determine priorities for improvement given identified opportunities and managerial constraints.

Question 4.7: How do you collect, transfer, and maintain organizational and employee knowledge (your knowledge assets)? How do you identify and share best practices?

Best practices are identified through feedback from employees, customers, and stakeholders, and process improvements resulting from changes in policies, procedures, laws, and regulations. Institutional knowledge and best practices are communicated via the internet, policy and procedure manuals, mentoring, email communications, and professional development opportunities.

III.5 CATEGORY 5 – WORKFORCE FOCUS

Question 5.1: How do you organize and manage work to enable employees to develop and utilize their full potential, aligned with the organization's objectives, strategies, and action plans; and to promote cooperation, initiative, empowerment, innovation and your desired organizational culture?

Objectives identified within the PSA Five-Year Plan are assigned to the appropriate unit(s). Tasks required to complete the objectives are identified and assigned by unit heads to teams and individuals. When multiple individuals, units, and divisions are involved, committees and project teams are created to complete tasks. PSA also collaborates with faculty and staff throughout the University to meet its objectives.

Question 5.2: How do you evaluate and improve your organization's human resource related processes?

As a division within Clemson University, PSA is subject to the same Human Resource policies and procedures as the University, which are mandated by the State of South Carolina. Human Resource processes occur at the state, University, and PSA levels. Feedback is provided to human resource officers regarding the efficiency of the processes involved. Where there is flexibility to change the process, improvements are made at the University and PSA levels.

Question 5.3: How do you identify and address key developmental and training needs, including job skills training, performance excellence training, diversity training, management/leadership development, new employee orientation and safety training? How do you evaluate the effectiveness of this education and training and how do you encourage on the job use of the new knowledge and skills?

PSA employees are encouraged to participate in training and professional development opportunities to enhance job performance. Certain internal trainings are required at the University and PSA levels, which are developed to strengthen employees' knowledge of University and PSA systems and operations. For instance, new employees are required to attend the University's New Employee Orientation, offered via

the internet and in classroom settings, which provides employees with information regarding University policies and procedures, health benefits, leave, etc. Safety training is also required at the University level. PSA has developed New Employee Training, which is required for all new Extension personnel.

Trainings directly related to an employee's job are offered by the University, as well as at the PSA level. Financial and human resource staff are required by the University to attend training prior to gaining access to financial and human resource systems. PSA's business officers provide one-on-one and classroom training and support to financial personnel in completing job tasks within the PSA business system. PSA Grant Support Services offers training to principal investigators and administrative staff engaged in grant seeking activities.

PSA has an office dedicated to overseeing in-service training in the areas of subject-matter training, professional development, and technology. Subject-matter training is developed by Extension Specialists and Program Team Leaders to keep Extension agents informed of current applied research practices. Professional Development topics relate to grant writing, partnership development, survey development, Civil Rights and diversity issues and program development. Trainings dedicated to information technology (IT) develop an employee's ability to use various computer programs, accountability systems, and IT equipment.

Employees are also encouraged to attend and participate in external professional development relevant to their positions. Employees and supervisors identify and discuss professional development opportunities to determine relevance and budgetary requirements. When appropriate, supervisors assign external professional development requirements during the employee's planning stage process.

Employees are also encouraged to participate in professional associations related to their fields. This allows employees an opportunity to share knowledge with others at the state, regional, national, and international levels.

Question 5.4: How does employee training contribute to the achievement of your action plans?

When employees attend training and professional development opportunities, there is an increase in knowledge and new ideas are generated. Employees increase individual and organizational efficiency and effectiveness by incorporating the knowledge gained from training, which may result in adjustments to action plans or early completion of the plans.

Question 5.5: How does your employee performance management system, including feedback to and from employees, support high performance and contribute to the achievement of your action plans?

During evaluation, employees are encouraged to discuss their programs, achievements, and concerns. Feedback from the supervisor and employee are used to develop the employee's planning stage/action plan for the next review period and recommend measures for improved performance. Based on performance, supervisors may recommend employees for awards, performance increases, and promotion. By rewarding good employees, there is an incentive to perform at a high level.

Question 5.6: How do you motivate your employees to develop and utilize their full potential?

PSA employees are encouraged to further their education, attend professional development opportunities, engage in cross-training, and participate in mentorship opportunities, in order to develop their full potential. Because PSA is such a diverse organization, employees are oftentimes assigned tasks beyond their standard training and skill sets. Not only does this offer a challenge and opportunity to broaden

knowledge and capabilities, Senior Leaders are better able to identify an employee's strengths and weaknesses for future assignments, action plans, and career paths.

Question 5.7: What formal and/or informal assessment methods and measures do you use to determine employee well being, satisfaction, and motivation? How do you use other measures such as employee retention and grievances? How do you determine priorities for improvement?

Well-being, job satisfaction and motivation are formally evaluated during review periods, via survey instruments, and during regularly scheduled individual meetings with staff. Employees may also schedule meetings with supervisors to discuss these topics. These methods are used to assist the employee and supervisor in identifying areas for improvement for both parties in regards to job performance, work environment and structure, and conflict resolution.

Question 5.8: How do you maintain a safe, secure, and healthy work environment?

PSA is subject to Clemson University's Comprehensive Environmental Health and Safety Plan, which is applicable to all University faculty and staff. The plan also applies to University activities conducted at its off-campus locations. The plan is composed of the following sections and is available to all employees via the internet:

- Disaster Management Plan
- Compliance with Occupational Health and Environmental Laws
- Main Campus General Safety
- Hazardous Materials Emergency Response Plan
- Indoor Air Quality Plan
- Lead Management Program
- Ergonomics Plan
- Spill Prevention, Control, and Countermeasures Plan
- Scientific Diving Program
- Workplace Violence Policy
- Chemical Hygiene Plan
- Chemical Fume Hood Policy
- Biological Safety Manual
- Hazard Communications Plan

The University also maintains the following required plans:
- Chemical Waste Management Manual
- Respiratory Protection Manual
- Bloodborne Pathogens Exposure Control Plan
- Industrial Hygiene Plan
- Radiation Protection Manual

III.6 CATEGORY 6 – PROCESS MANAGEMENT

Question 6.1: How do you determine, and what are your key processes that produce, create or add value for your customers and your organization? How do you ensure that these processes are used?

Processes that add value to customers are those that create efficiency, which leads to a reduction in response time and expense and provides improved delivery. PSA program initiatives are developed to be relevant, build capacity, and improve lives. In order to create programs relevant to the lives of South Carolinians, customer needs are identified through interactions with customer, advisory boards, local governments, and other stakeholders. Programs are designed to educate customers and develop research results for applied use. By delivering relevant programs and research that increase the customers' knowledge base, capacity is increased. Customers gain the ability to improve their circumstances, which generates progress and economic opportunities for South Carolina.

Question 6.2: How do you incorporate organizational knowledge, new technology, changing customer and mission-related requirements, cost controls, and other efficiency and effectiveness factors such as cycle time into process design and delivery?

During the developmental stages of a new program, organizational knowledge is contributed by Senior Leaders, faculty, specialists and agents. The experiences of these employees with program leadership and their established relationships with customers and stakeholders assist program developers in identifying the best processes and practices for program delivery.

New technologies are a consideration for improving and broadening delivery methods and increasing efficiency. A cost-benefit analysis is conducted to determine which technologies are appropriate for new programming, as well as for upgrades to current programs.

Current programs are reviewed to determine relevance to PSA's mission and Five-Year Plan. Organizational knowledge regarding the success of past and current delivery methods, as well as new technologies, are considered in developing strategies to improve the program's delivery, relevance, and effectiveness.

Question 6.3: How does your day-to-day operation of these processes ensure meeting key performance requirements?

Strong leadership and intelligent operational activity is critical to the sustainability and success of PSA's programs. By ensuring efficient and effective delivery in programming, PSA continues to improve the quality of life for citizens in South Carolina. Senior Leaders and programmatic staff are also encouraged to seek opportunities to partner and collaborate with other agencies with complementary expertise, in order to expand services and program delivery.

Question 6.4: How do you systematically evaluate and improve your key product and service related processes?

PSA is constantly in contact with customers and stakeholders via survey instruments, meetings, and programming. The input and feedback received are used to identify weakness in the services provided and develop action plans for improvement. Additionally, research and outreach programs are reviewed on a regular basis to ensure relevance to South Carolina. Technological advances are also a means of improving the system and services provided.

Question 6.5: What are your key support processes, and how do you improve and update these processes to achieve better performance?

University Support	PSA Support
• Procurement Services • Clemson Facilities • General Counsel • Human Resources • Clemson Computing and Information Technology	• Business Center • Grant Support Services • Web Team • Marketing • Public Relations • Information Technology Planning • Accountability Office

Measures and indicators have been identified for the PSA support units. These measures assist Senior Leaders in determining staffing levels, work loads, and developing action plans for improving and streamlining these processes. Internal trainings and professional development is also encouraged for staff in the support units.

PSA also relies on feedback from programmatic staff to identify inefficiencies within its processes and services. Results are used to strategically develop action plans dedicated to process improvement.

Question 6.6: How does your organization determine the resources needed to meet current and projected budget and financial obligations?
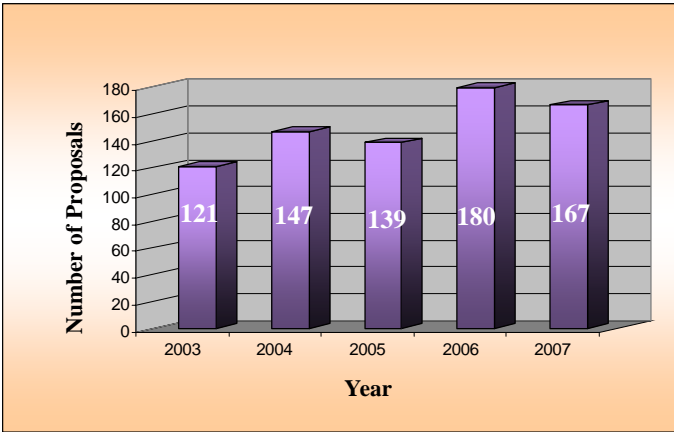
PSA identifies the resources needed to meet current and projected obligations during the planning and budgeting process. Senior Leaders identify the resources needed to meet its new, current, and revised action plans. Resources, both on-hand and projected, are identified. By understanding the organization's resources, Senior Leaders are able to work together to strategically rank priorities to optimize PSA's performance and resource allocations.
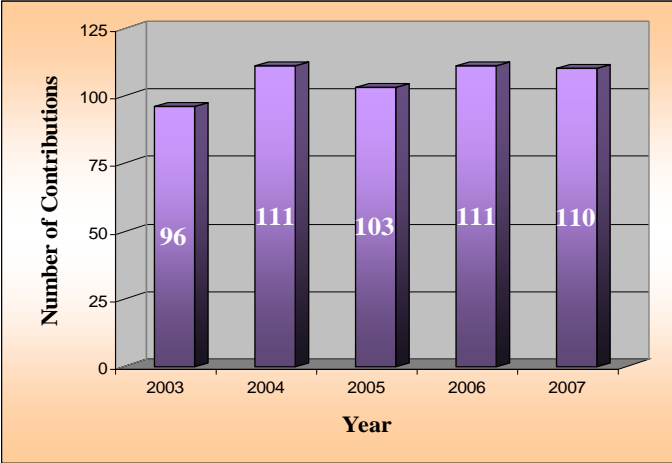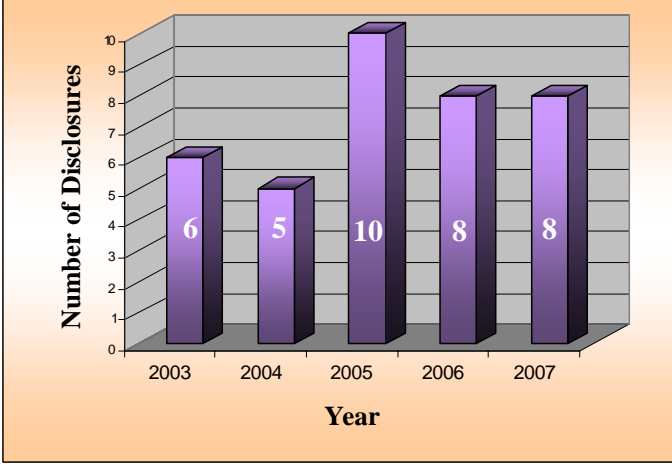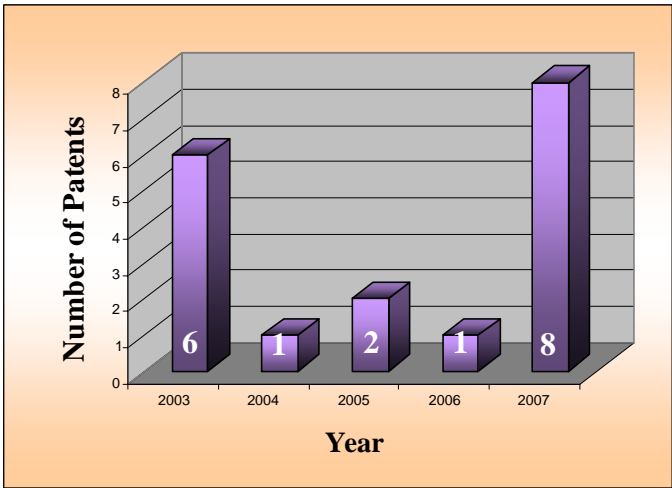
III.7 CATEGORY 7 – RESULTS

Results are presented by unit. Measures are reported for: 1) Clemson University Experiment Station, 2) Cooperative Extension Service, 3) Livestock-Poultry Health, and 4) Regulatory and Public Service Programs. A description of each measure is provided, which includes the key measure classification. The classifications are as follows:
1. Mission Accomplishment and Organizational Effectiveness
2. Customer Satisfaction
3. Financial Performance
4. Human Resource Results
5. Regulatory Compliance and Community Support

CLEMSON UNIVERSITY EXPERIMENT STATION
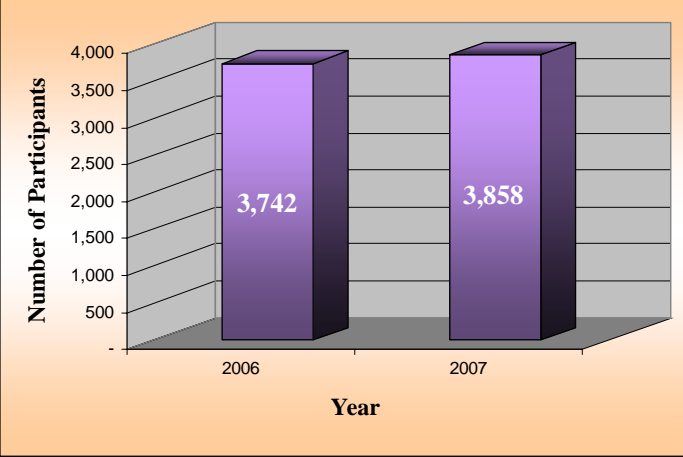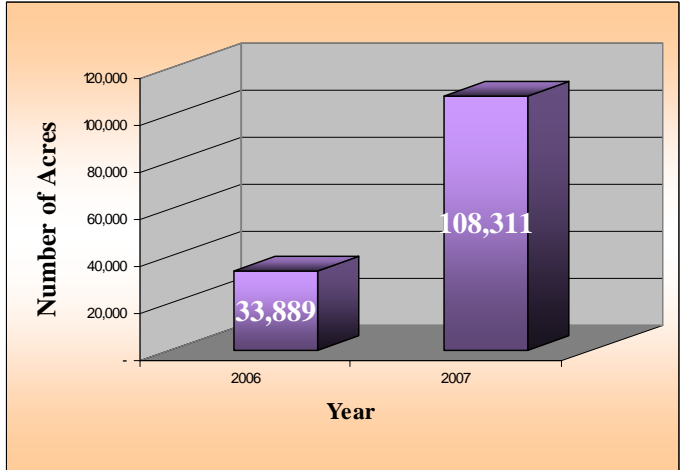
Key Cross Reference for Performance Measures	Performance Levels and Trends	Description	Measure Class
7.1 Annual Proposal Submissions		Indicates the number of research grant proposals submitted by faculty supported by the Clemson University Experiment Station. This data is used in evaluating the productivity of faculty.	**1, 4**
7.2 Sponsored Research Awards		Demonstrates PSA's annual trend with competitive grant funding. The data is cyclical in nature due to long-term funding periods, usually two to five years in length, limited levels of principal investigators, and time constraints. The data is also used at the University level to determine PSA's contribution to the President's sponsored research funding goals.	**1, 3, 4**

7.3 Technical Contributions		Indicates that PSA's faculty are contributing to the larger body of knowledge in their respective areas of expertise. Technical contributions are also a means of evaluating faculty performance.	**1, 4, 5**
7.4 Disclosures		Disclosures are the first step in the discovery process that leads to patent applications, patents, and license agreements. The data indicates faculty success in creating and inventing products and processes for South Carolinians, which may also generate revenue for the University.	**1, 3, 4, 5**
7.5 Patents		Patents indicate the merit of the discoveries submitted. Patents have the potential to generate new economic activity through licensing.	**1, 3, 4, 5**
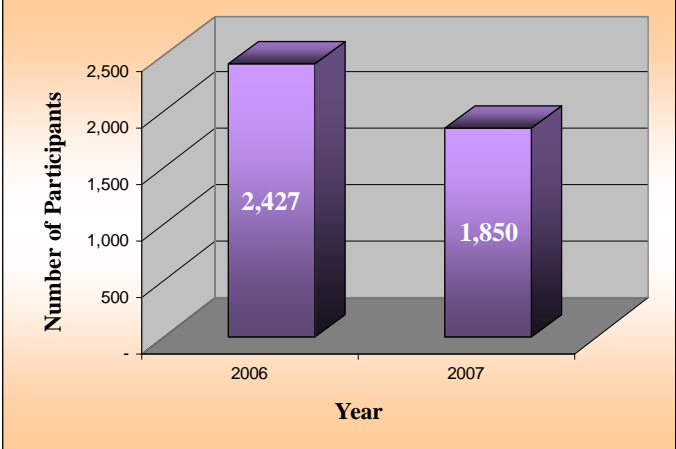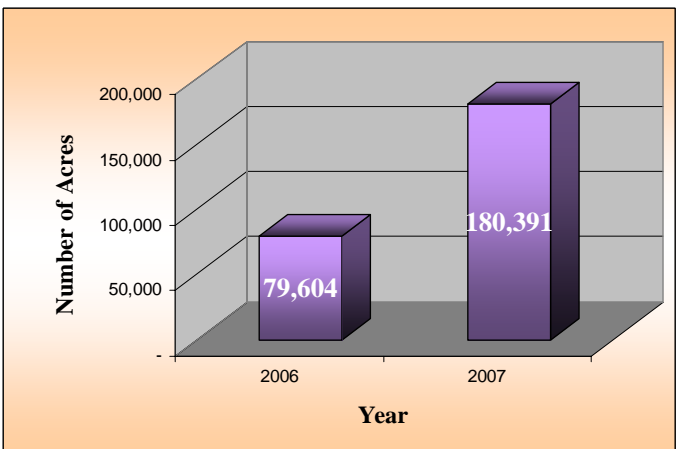
Focus Area 1: Agrisystems Productivity and Profitability
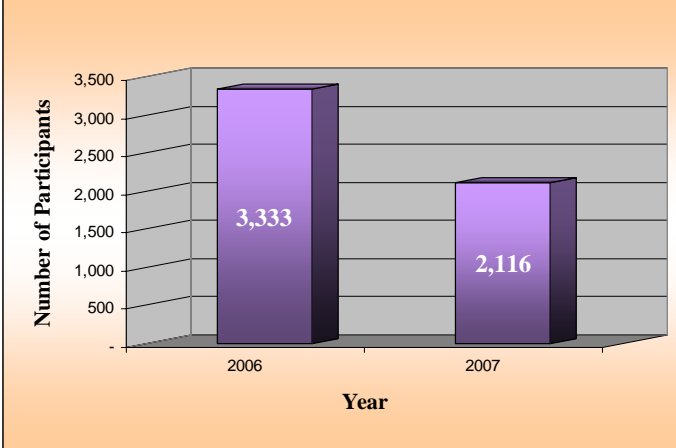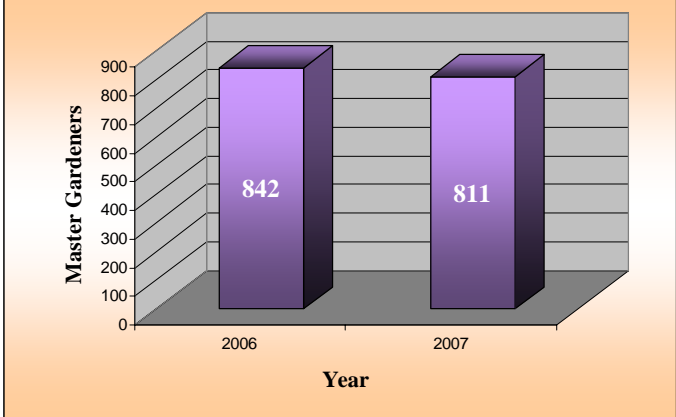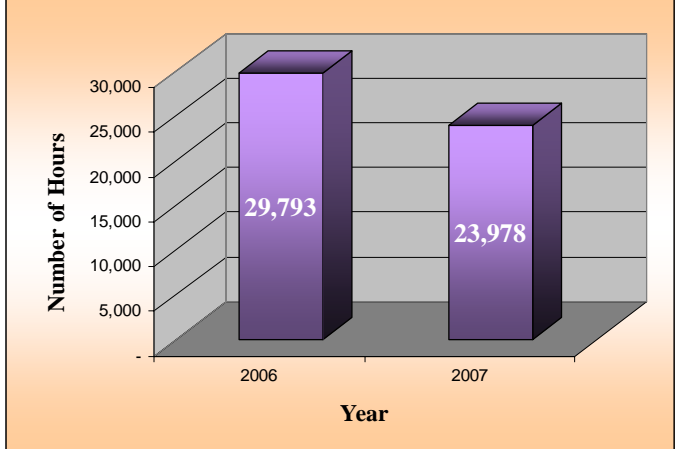
  A. Agronomic Crops
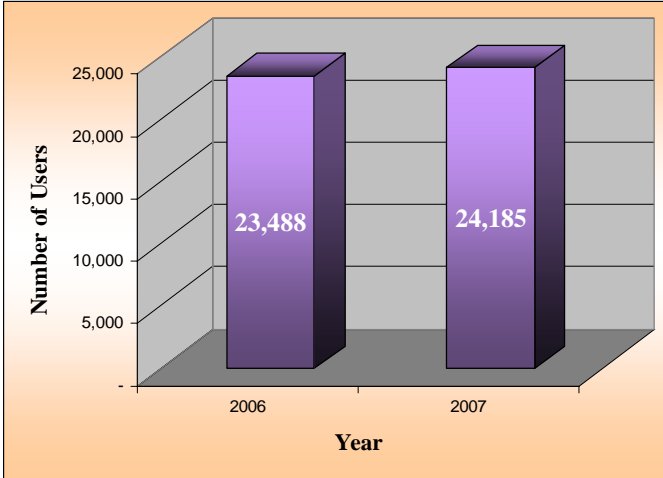
Key Cross Reference for Performance Measures	Performance Levels and Trends	Description	Measure Class
7.6 Integrated Crop Management: Number of Participants per Year		Indicates customer levels, satisfaction, retention and reach for Integrated Crop Management (ICM) programs and activities. **Note:** *Participants reported without duplication.*	**1, 2, 5**
7.7 Integrated Crop Management: Number of Acres Affected per Year		Indicates the number of acres planted with agronomic crops employing ICM practices in South Carolina as a result of Extension programs. ICM practices improve profitability for growers and reduce negative impacts on the environment.	**1, 2, 5**

B. Horticultural Crops
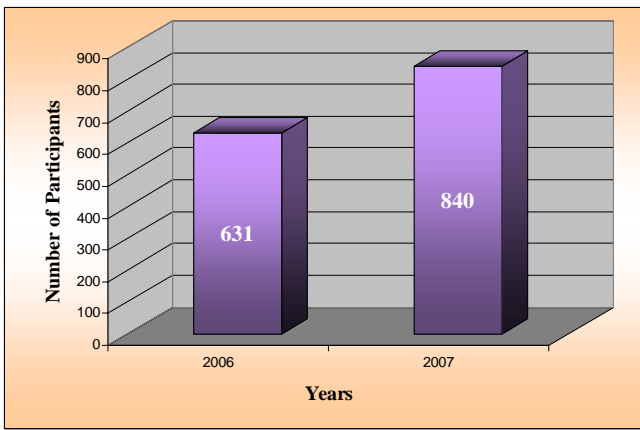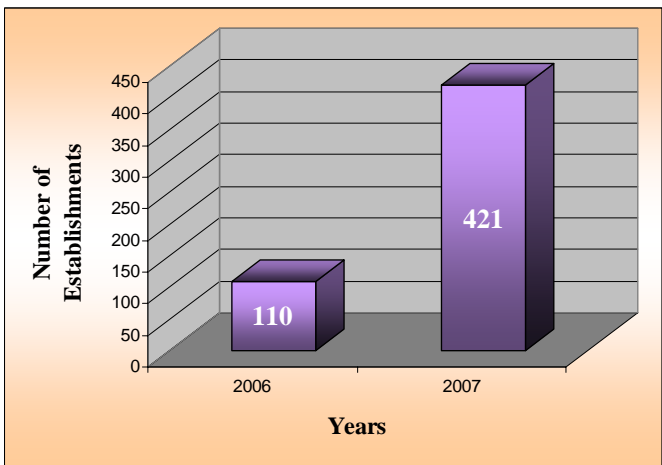
Key Cross Reference for Performance Measures	Performance Levels and Trends	Description	Measure Class
7.8 Integrated Crop Management: Number of Participants per Year		Indicates customer levels, satisfaction, retention and reach for Integrated Crop Management (ICM) programs and activities. **Note:** *Participants reported without duplication.*	**1, 2, 5**
7.9 Integrated Crop Management: Number of Acres Affected per Year		Indicates the number of acres planted with horticultural crops employing ICM practices in South Carolina as a result of Extension programs. ICM practices improve profitability for growers and reduce negative impacts on the environment.	**1, 2, 5**

Focus Area 3: Environmental Conservation

Key Cross Reference for Performance Measures	Performance Levels and Trends	Description	Measure Class
7.10 Sustainable Forest Management and Environmental Enhancement: Number of Participants per Year		Indicates customer levels, satisfaction, retention and programmatic reach. **Note: *Participants reported without duplication.***	**1, 2, 5**
7.11 Number of New Master Gardeners Trained per Year		Indicates customer levels, satisfaction, retention and programmatic reach. **Note: *Participants reported without duplication.***	**1, 2, 5**
7.12 Number of Master Gardner Service Hours		Indicates success with training and utilization of volunteers in South Carolina communities.	**1, 5**
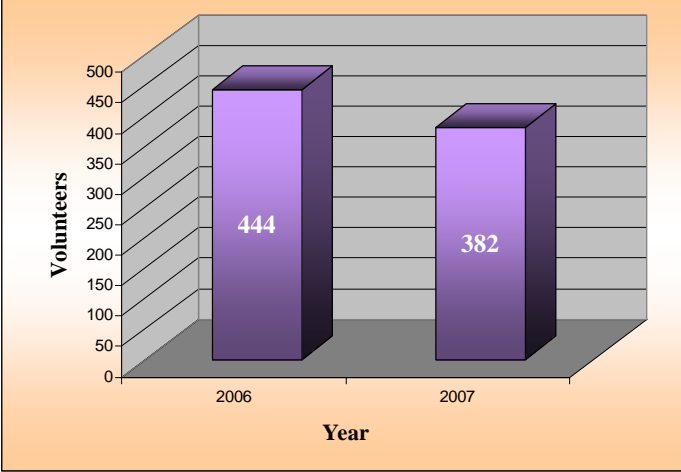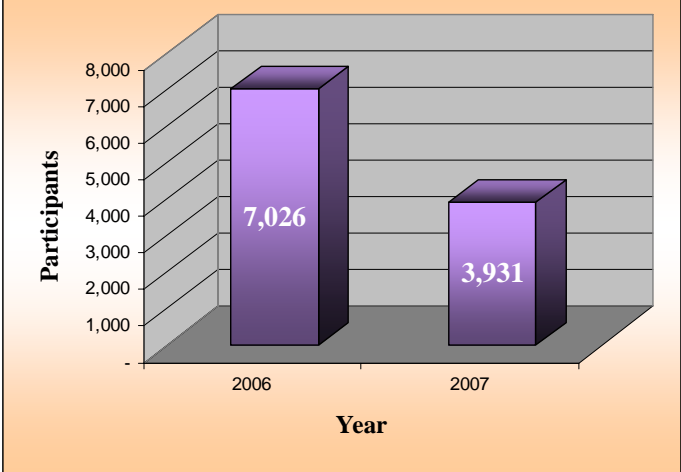
| 7.13 Number of Garden Resources Users | | Indicates customer levels, satisfaction, retention and programmatic reach. Measure also demonstrates the relevance of the resources to the daily lives of South Carolinians. | 1, 2, 5 |

Focus Area 4: Food Safety and Nutrition

Key Cross Reference for Performance Measures	Performance Levels and Trends	Description	Measure Class
7.14 Food Safety Training for Food Handlers: Number of Participants		Indicates the number of trained certified food protection managers available to train employees at various locations across the state. **Note: *Participants reported without duplication.***	1, 2, 5
7.15 Food Safety Training for Food Handlers: Number of Service Establishments Represented		Reflects the number of establishments represented, which identifies customer segments and satisfaction. Also indicates the reach of the programs within communities.	1, 2, 5

Focus Area 5: Youth Development and Families
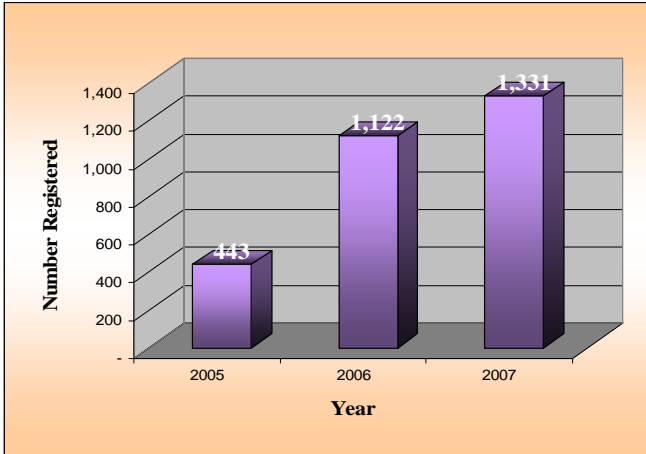
A. Family and Community Leaders Volunteer Management and Leadership Development

Key Cross Reference for Performance Measures	Performance Levels and Trends	Description	Measure Class
7.16 Number of Volunteers per Year		Indicates success with training and utilization of volunteers in South Carolina communities.	**1, 5**
7.17 Number of Participants Reached by Volunteers per Year		Indicates success in utilization of volunteer service hours.	**1, 2, 5**
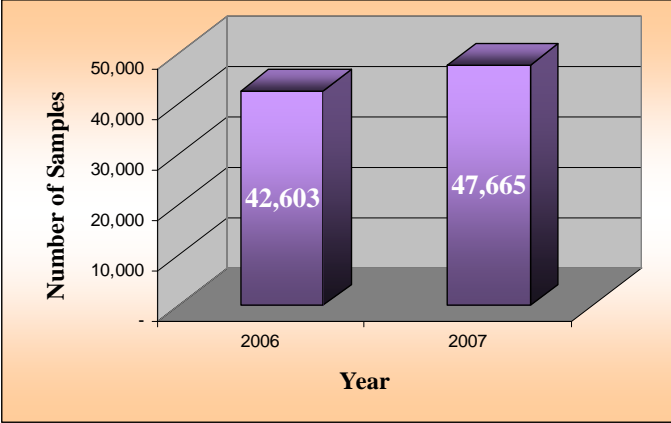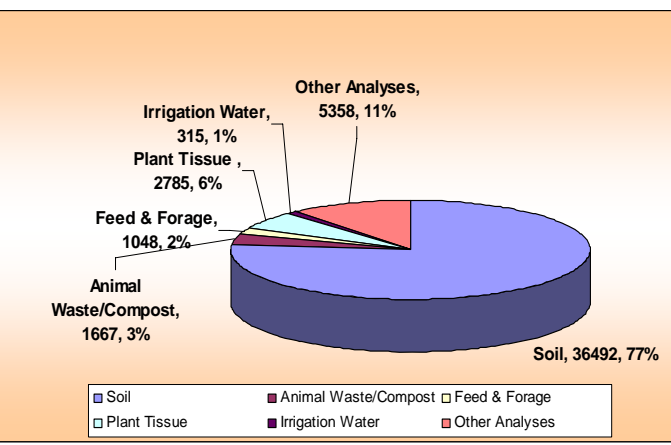
B. 4-H Volunteers

Key Cross Reference for Performance Measures	Performance Levels and Trends	Description	Measure Class
7.18 Number of 4-H Volunteers	FY07: 1,524 **Note:** *New Measure*	Indicates success with training and utilization of volunteers in South Carolina communities.	**1, 5**
7.19 Number of 4-H Volunteer Hours	FY07: 7,646 **Note:** *New Measure*	Indicates success in utilization of volunteer service hours.	**1, 5**

LIVESTOCK-POULTRY HEALTH
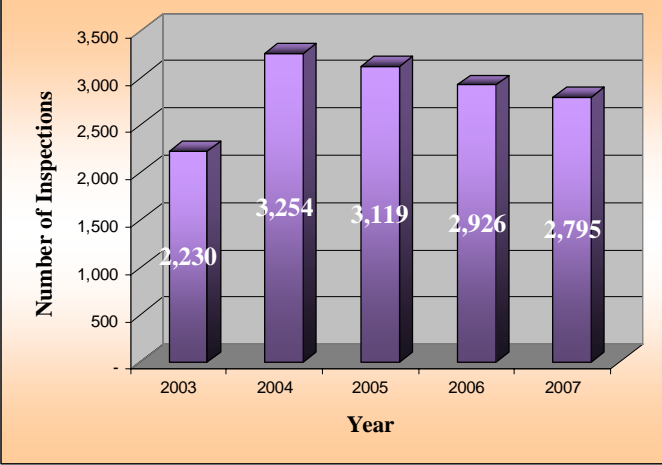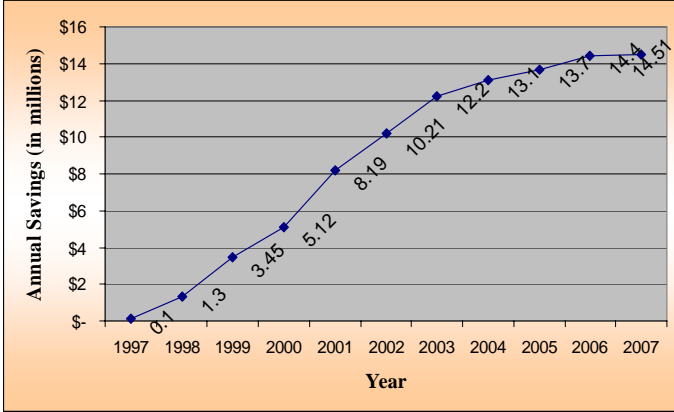
Key Cross Reference for Performance Measures	Performance Levels and Trends	Description	Measure Class
7.20 National Animal Identification System: Premises Registered per Year		Indicates progress toward implementation of the National Animal Identification System (NAIS) which is designed to enhance animal disease control, surveillance, and eradication programs.	**1, 5**
7.21 Retention of Disease-Free Status	• Free Status Since: • Brucellosis (Bovine) 1984 • Brucellosis (Swine) 1998 • Pseudorabies 1995 • Tuberculosis 1981 • Pullorum-Typhoid 1980 • Classical Swine Fever 1972	Disease status impacts the ability of SC producers to move animals/products interstate and internationally.	**1, 5**
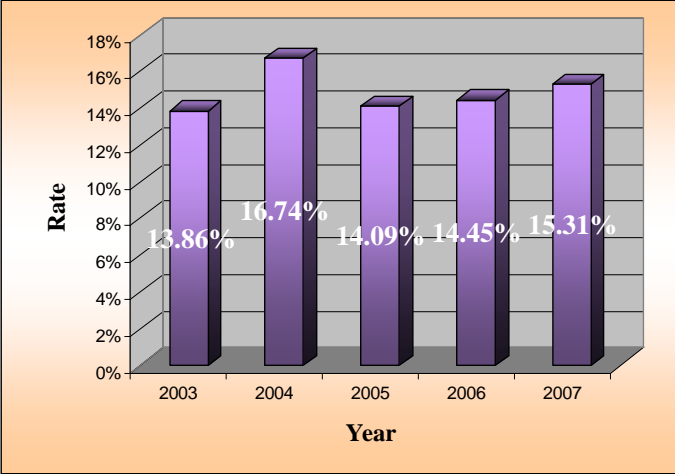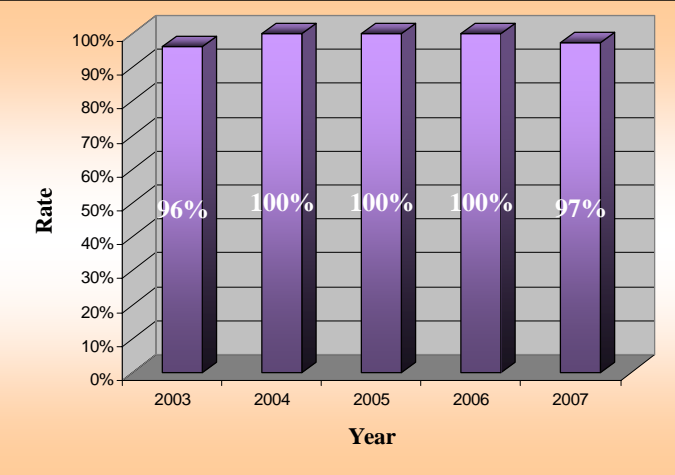
A. Agricultural Service Lab

Key Cross Reference for Performance Measures	Performance Levels and Trends	Description	Measure Class
7.22 Number of Samples Analyzed per Year		Indicates customer levels, satisfaction, and retention. Measure is also used to assess workload for lab employees.	**1, 2, 4, 5**
7.23 FY07 Analyses by Sample Type		Indicates the number of analyses performed for various sample types and the allocation of revenue generated.	**1, 3,**

B. Department of Pesticide Regulation (DPR)

Key Cross Reference for Performance Measures	Performance Levels and Trends	Description	Measure Class
7.24 Number of Inspections		Indicates that DPR personnel are meeting the objectives of the department to monitor the use of pesticides in South Carolina to ensure their safe and effective use and to prevent harm to humans, plants, animals, or the environment. **Benchmark: 2000 Inspections per year.**	**1, 5**
7.25 DPR Inspections: Cumulative Consumer Savings per Year		Measure is an indicator of the cumulative cost savings to customers resulting from DPR inspections.	**1, 5**

C. Department of Plant Industry (DPI)

Key Cross Reference for Performance Measures	Performance Levels and Trends	Description	Measure Class
7.26 Fertilizer Deficiency Rate		The deficiency rate for a company is a direct measure of its ability to meet label guarantees. This data helps protect consumer investments. **Benchmark: Maintain a deficiency rate of less than 20%. The lower the deficiency rate, the higher the quality of fertilizer for South Carolina growers.**	**1, 5**
7.27 Rate of Seed Lots Meeting Purity Standards		Direct measure of the effectiveness of seed certification inspections and programs. **Benchmark: Maintain a minimum of 95% of all seed lots inspected meeting South Carolina's certification standards for purity.**	**1, 4, 5**

7.28 Number of Nursery Inspections per Year		Indicates DPI's effectiveness with nursery inspection. Nurseries are required to undergo inspection and certification, in order to legally ship plants across state lines. The number of inspections also determines the percentage of South Carolina nurseries inspected.	1, 5
7.29 Number of Tropical Soda Apple Surveys per Year		Direct measure of DPI's impact on the Tropical Soda Apple (TSA) weed population. Indicates the number of weeds destroyed each year. The reduction in TSA populations is saving cattlemen and other agricultural producers thousands of dollars in production losses and control costs. TSA is a federal noxious weed.	1, 5
7.30 Number of Federal Phytosanitary Certifications per Year		Direct measure of DPI's ability to respond to phytosanitary certificates, which regulates the movement of product from South Carolina to other states and countries. No rejections were reported during FY07, which is a reflection of the accuracy of DPI's inspections.	1, 5