

## Accountability Report Transmittal Form

Agency Name: **Public Service Activities – Clemson University**

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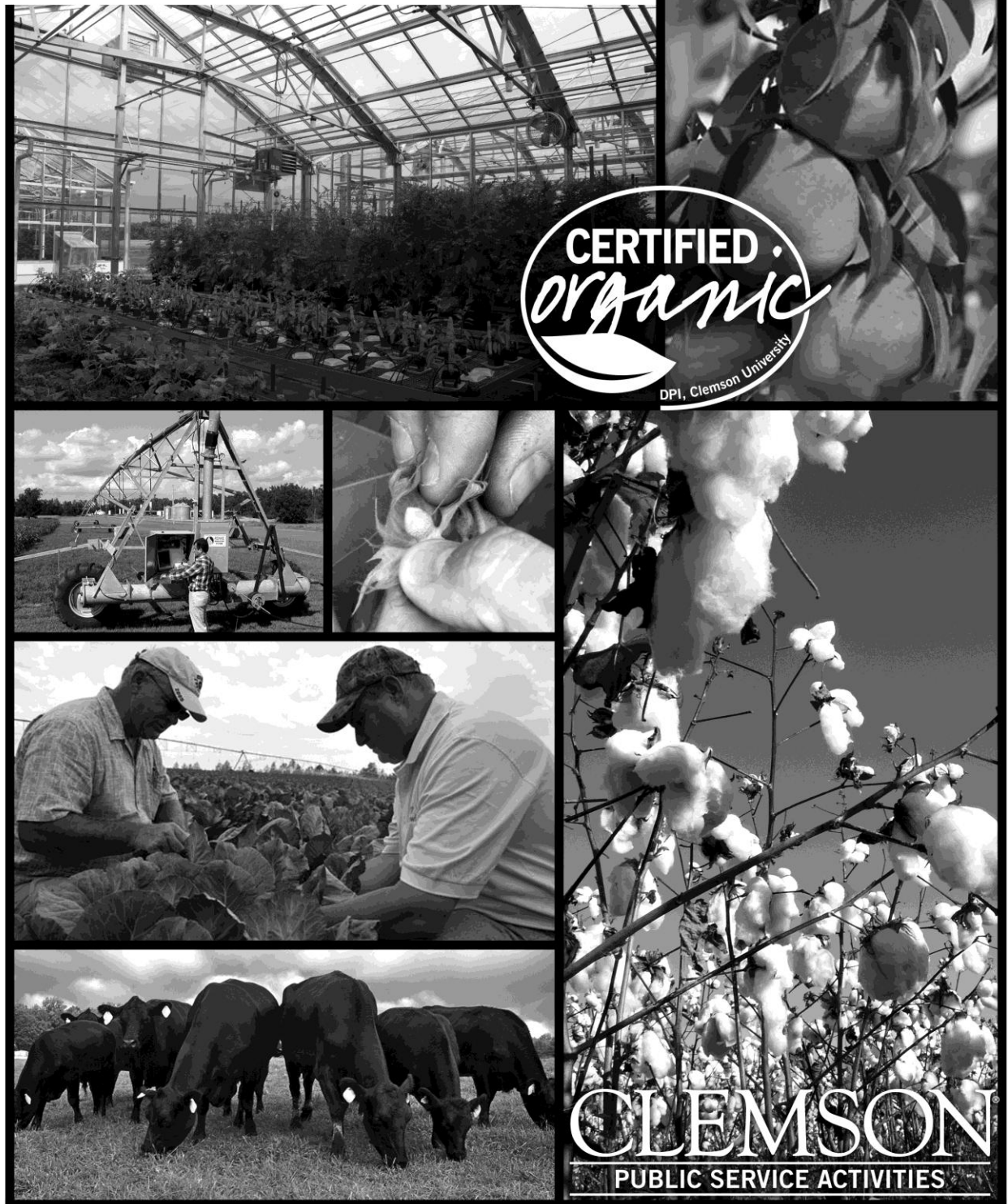
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# Clemson University Public Service Activities

Budget and Control Board

Accountability Report for 2010-2011



# Table of Contents

## Section 1 – Executive Summary

I-1 Mission .....	1
I-2 Major achievements from 2010-11 .....	4
I-3 Key strategic goals for present and future years .....	18
I-4 Key strategic challenges .....	20
I-5 How the accountability report is used to improve organizational performance .....	21

## Section II – Organizational Profile .....

II-1 Main products and services and the primary delivery methods .....	22
II-2 Key customers segments and their key requirements/expectations .....	22
II-3 Key stakeholders (other than customers) .....	23
II-4 Key suppliers and partners .....	23
II-5 Operation locations .....	23
II-6 Number of employees .....	24
II-7 Regulatory environment under which your organization operates .....	24
II-8 Performance improvement system(s) .....	27
II-9 Organizational structure .....	28
II-10 Expenditure/Appropriations chart .....	29
II-11 Major program areas chart .....	30

## Section III – Elements of Malcolm Baldrige Award Criteria .....

III-1 Leadership .....	31
III-2 Strategic planning .....	36
III-3 Customer focus .....	41
III-4 Measurement, analysis and knowledge management .....	42
III-5 Workforce focus .....	43
III-6 Process management .....	46
III-7 Business results .....	48

## BCB 2011 Cover Caption

About the cover pictures (clockwise from top):

**Greenhouse and nursery plants** produced in South Carolina cannot be sold until they are certified as free from pests by Clemson Regulatory Services. **Peach** research has developed a test to target treatment for brown rot fungus that has saved SC and Georgia peach growers \$20 million by reducing spray costs and preventing yield loss. **Organic Certification**, increasingly important to consumers, is assigned by Clemson Regulatory Services after verifying that the farm meets USDA standards. **Cotton variety trials** (early boll formation to left) in Calhoun, Orangeburg, and Richland counties allow farmers to compare yield and fiber quality data among the industry's top varieties. These three counties have 49,490 acres of cotton production. **Forage-fed beef** research and extension programs are reducing production costs while maintaining bull performance in the Clemson Bull Test on campus and at the Edisto Research and Education Center. Clemson Livestock-Poultry Health certifies disease-free status to allow sales of South Carolina's \$6 billion livestock and animal products. **Collard** growers can reduce crop losses and production costs by adding a half rate of potassium phosphite to other fungicides to prevent downy mildew. South Carolina is the nation's leading producer of collards. **Variable rate irrigation** technology matches needs to specific zones, increasing crop yields while reducing water and fertilizer use, and saving up to 40% in production costs. The system uses sensors and computer controls to apply water only in the areas and amounts needed, based on soil type and terrain.

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## Section I – Executive Summary

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### I-1 Mission

We are 635 highly qualified men and women with a passion for improving the quality of life for South Carolinians through public service in our focus areas. We also have state and federal mandates to protect animal and plant health. 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.

Public Service Activities (PSA) is at the core of Clemson's land-grant university mission of teaching, research, and public service. We are **part of a national USDA system of research and knowledge transfer**, with a mandate to improve the quality of life for the citizens of South Carolina by developing and delivering research and education programs that support the state's largest industry, the \$34 billion agriculture and forestry (agribusiness) sector.

Steeped deeply in the history of Clemson University is its service to South Carolina as an economic engine through the land-grant university mission to generate and communicate new knowledge.

Schejbal and Wilson (2008) describe land-grant university research and extension outreach in terms of not only being an economic engine; but contributing directly and in a multifaceted fashion to the common good. Land-grant universities generate and make accessible a great deal of the knowledge that drives our economy; they help develop an understanding of our society and the world for our students; and they help develop the personal, social, and human competencies without which, to use the words of Thomas Hobbes, life would be poor, nasty, brutish, and short. Land-grant universities represent the most original and distinctive contribution the United States has made to higher education (as suggested by Arnold Toynbee, the British historian).

### ***Science, Service, Solutions – Clemson University Public Service Activities (PSA) Return on Investment!***

In 1940 an average American farmer could feed 19 people. Today the average farmer feeds 155 people. The growth in agricultural productivity over the past 70 years can be attributed largely to investments in agricultural research and technology development [USDA n.d.]. Research results reach the farmer through the Cooperative Extension Service. PSA's two regulatory agencies help ensure that animal and plant agriculture is safeguarded from diseases and other injurious pests. Our mission focuses on South Carolina's \$34 billion agriculture and forestry industry and natural resources. Agriculture and forestry exceed tourism as the state's number one industry, employing 200,000 people (Miley, Gallo & Associates, 2008).

PSA's Experiment Station research and Extension outreach of that research to our clients and regulatory programs are the keys to economic development and job creation throughout the state.

### **Powerful Impacts and Return on Investment**

- **Ninety-nine percent return on dollars invested** in agricultural research and **84.6%** return on dollars invested in cooperative extension programs (Alston et al. 2000). Huffman and Evanson, (1993) rank South Carolina as the 4<sup>th</sup> in the nation on converting agricultural research dollars into revenue for the state.
- **2.2 million PSA website visits** in 2010.



- **4-H youth, by grade 8, are 1.6 times more likely to attend college** than their peers and are ranked 41% lower in risk/problem behaviors measures (Lerner et al. 2008).
- **\$16 million annual personal-income impact** through 4-H programs that encourage leadership and educational achievement and discourage risky behaviors – based on 5% increase in the number of 4-Hers earning an undergraduate degree versus high school diploma only (Battelle, 2004).
- Agents covering **46 county extension offices deliver 8,400 programs reaching over 169,000 people** this year including commercial growers, livestock producers, forest and natural resource managers, institutional food services, homeowners and families across the state.
- **Animal and plant production is protected** by regulatory programs that mitigate disease and non-native species introductions that cost the US over \$138 billion in annual losses (Pimentel et al., 1999).
- **\$25 million was saved again this year by SC soybean growers** following PSA's scientists' soybean rust pesticide scouting and spray recommendations.
- **\$10 million potentially saved again this year if SC soybean growers** reduce seeding rates as recommended by PSA scientists.
- **\$3 million saved again this year by SC peanut growers** following PSA scientists' recommendations.
- **2.4 million pounds of pesticide containers have been recycled** since 1993, helping to protect the environment from potential pesticide contamination.
- **Veterinary Diagnostic Center completed 100,697 tests and procedures** during FY 10-11 in performing its animal and food safety diagnostic duties protecting the \$6 billion SC animal industry.

### ***Science, Service, Solutions – Return on Investment: Major Units***

- **Clemson Experiment Station** scientists work to improve the quality of life for people in South Carolina, the nation and the world by providing science-based information on major issues facing decision makers. 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: animal production, horticultural crops, agronomic crops, biotechnology, food safety and nutrition, community and economic development, water quality and quantity, and forest and natural resources.
- **Cooperative Extension Service** meets the diverse needs of South Carolina citizens by delivering research-based information in agriculture, the environment, food safety & nutrition, economic & community development, and youth & families. South Carolina's citizens and PSA's stakeholders have direct input into decisions of the Extension System through statewide planning efforts and the needs identification process.
- **4-H Youth Development** programs provide leadership, citizenship and life skills training to prepare the state's workforce to compete in a knowledge-based economy.
- **Livestock-Poultry Health Programs** ensure the health and safety of livestock/poultry industries and companion animals, and protect the meat supply and public health of South Carolinians.

- **Regulatory Services** protect the environment and the crop-plant food supply by ensuring the safe, effective use of fertilizers and pesticides, and the quality of seeds and plants grown in the state.
- **PSA Institutes** conduct research and outreach in economic and community development, family and neighborhood life, genomics, and governmental and public affairs. Clemson initiated a two year plan beginning in 2010 to remove state support for institutes associated with PSA.

## ***What do we believe in?***

### **Core Values**

***Science** – Clemson PSA conducts research to discover innovative technologies, products and processes that can enhance agribusiness opportunities, 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.*

***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, industries and agencies to achieve our mission; we are responsive to their needs and we are proactive in our outreach.*

***Solutions** – 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, age, disability, or sexual orientation. We value the state's cultural diversity and strive to respect and incorporate that diversity in our staffing and services.*

## ***What do we do?***

**We provide science-based relevant research** leading to **discoveries specific to South Carolina's needs that are delivered** to our clients through the most efficient communication system in the world; i.e., extension programs located in each county; the internet; and other media outreach.

**We, alone, provide** research/outreach in our focus areas specific to South Carolina's cultural, geographic, environmental and climatic conditions.

### **Clemson University Public Service Activities Mission**

- *advancing the competitiveness of the \$34 billion agriculture and forestry industry*
- *enhancing the economic potential of rural communities*
- *safeguarding the food supply*
- *preserving natural resources*
- *preparing young people to become productive citizens*

## I-2 Major Achievements from 2010-11

### *Powerful Impacts and Return on Investment*

There is no debate about the tough times facing many South Carolinians and our state government. Indeed, one can readily argue that there are few times in recent history as daunting. Our state faces double digit unemployment, precipitous declines in state revenues, rising energy costs, the housing bubble, drought, and environmental challenges – all in the midst of population growth and development. We strongly believe that there also has never been a more relevant time for the work of Clemson's Public Service Activities. As *Newsweek* reports in the August 23, 2010 issue: *The country that out-educates us today will out-compete us tomorrow, US Education Secretary Arne Duncan warned.* That's not just rhetoric. A recent study by McKinsey and Co. showed that the growing gaps in educational achievement between the United States and other leading nations —*impose the economic equivalent of a permanent national recession—one substantially larger than the deep recession the country is currently experiencing.*

PSA research, education, and community development programs directly affect South Carolinians. We recognize that PSA's unique programs are the key to rural economic recovery and success.

Achievements are presented by PSA unit to include 1) Experiment Station, 2) Cooperative Extension Service, 3) Livestock-Poultry Health, 4) Regulatory Services, and 5) PSA Institutes.

### EXPERIMENT STATION

[http://www.clemson.edu/public/experiment\\_station/](http://www.clemson.edu/public/experiment_station/)

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 researchers have produced more than 100 new varieties of food and fiber crops, as well as 50 patents.

In 2010-11 the Experiment Station had more than 110 active research projects. Researchers issued seven intellectual property disclosures, submitted seven patent applications, and received four patents. One license agreement was signed. Faculty also submitted 127 technical contributions for publication.

Clemson's problem solving research sustains companies and jobs and creates new opportunities. The Experiment Station invests in creative, productive scientists that know how to identify and solve problems.

Major achievements for 2010-11 include:

- New production techniques shared with growers by Extension agents made it **possible for the average farmer to feed 155 people in 2010 vs. 19 people in 1940** through improvements in varieties, agronomic practices, and disease and pest resistance.
- **Planting high-yield cotton increased from 22% in 2002 to 70% in 2009** because of research on varieties, production techniques and resistance to disease and weeds. About 30 field studies are conducted each year at the Pee Dee and Edisto Research and Education Centers, and on commercial farms. The tests evaluate cotton varieties, pesticide systems,

plant growth regulators, harvesting equipment and techniques, and agronomic practices such as plant density, planting date, tillage systems and irrigation.

- Biofuels renewable energy research led to a **contract of \$20 million per year for S.C. growers** to sell switchgrass to European power plants as a substitute for coal. Researchers at Clemson's Pee Dee Research and Education Center investigate switchgrass production systems, including soil and crop management, new variety development and measuring environmental impacts. Their studies found that switchgrass, a native perennial warm season grass, is very hardy, drought tolerant, and can thrive in soil that cannot support other crops. The plant produces twice as much ethanol per acre than corn, and the energy return ratio from switchgrass can be as much as five times that of corn-based ethanol.
- Turfgrass research at the Pee Dee REC **saved a Myrtle Beach golf course thousands of dollars a year in labor costs and tens of thousands of gallons in wasted water.** Scientists identified the problem as hydrophobic turf, meaning the soil was repelling water. A prescribed series of chemical treatments returned the turf to full health. Clemson scientists work to minimize economic and environmental costs of turfgrass management while meeting federal and state regulations.
- Researchers are finding alternatives to chemical pesticides that reduce both chemical use and production costs. **Leafy greens producers can reduce applications of insecticides** from about 15 per season to just two or three by using microbial agents and advanced field scouting techniques. This reduces both costs for the grower and impact on the environment.
- Variable rate irrigation technology matches needs to specific zones, increasing crop yields while reducing water and fertilizer use, and **saving up to 40% in production costs.** The system uses sensors and computer controls to apply water only in the areas and amounts needed, based on soil type and terrain. This saves in both energy and water usage, and decreases the effects of wind and evaporation as water is applied to crops.
- A test to target treatment for brown rot has **saved SC and Georgia peach growers \$20 million** by reducing spray costs and preventing yield loss. Brown rot fungus is a hardy survivalist that has adapted to resist control efforts. The test allows growers to identify the correct chemicals and correct amounts needed to control the fungus and protect their crop. The test also targets brown rot treatments for nectarines, plums, cherries and strawberries.
- Researching the ecology and management of the European corn borer and other corn pests **helps SC growers protect over 300,000 acres of corn and harvest over 30 million bushels.** Recommended controls include crop rotation, early planting, plowing under old corn residue, planting selected Bt hybrids, and using targeted insecticides.
- Peanut research and Extension programs have **improved S.C. peanut grower profitability by more than \$3 million per year** through increased yields and improved disease resistance. Research focused on biological and chemical disease inoculants, gypsum source and application timing, potash fertility under high yield conditions and foliar-applied nutrient supplements.
- Monitoring systems and reduced pesticide spraying guidelines developed by Clemson **save South Carolina soybean growers more than \$25 million a year**, with about \$10 million saved



in reduced crop losses and about \$15 million in reduced spraying costs. Based at Clemson's Edisto Research and Education Center, the monitoring program involves Clemson Extension agents, Clemson Regulatory Services agents and growers in 16 South Carolina counties, and serves as a model for the nation. In addition, reduced seeding rates developed at the Edisto Center save S.C. growers \$10 million per year.

**COOPERATIVE EXTENSION**  
[www.clemson.edu/extension/](http://www.clemson.edu/extension/)

Since the national Extension Service was founded in 1914, the Clemson Extension Service has served the diverse needs of citizens through technology transfer and training programs. South Carolina's citizens and PSA's stakeholders have direct input into decisions through statewide planning efforts and a needs identification process. Extension partners with other agencies and organizations to best meet the needs of South Carolina's citizens. The State Extension Advisory Council provides ongoing input from our diverse clients.

New knowledge was personally delivered through 307,503 contacts made by Extension personnel. Working across all 46 South Carolina counties, more than 169,633 participants attended 8,490 Extension programs.

Major accomplishments for 2010-11 include:

- The **Clemson Bull Test Sale** program leadership has transitioned and the test continues to run smoothly. Changes in the management style of this program (transitioning from a 1.5% BW grain supplement on grass to pure forage) resulted in an approximately 60% decrease in consignment fees with no practical decreases in bull performance. This will allow our purebred producers a more economical genetics testing option while still providing our buyers with an excellent and productive resource. Consignments are currently being taken for the Clemson test that will begin in late August. There appears to be intense interest from surrounding states for this program.
- Over 4,300 **Animal Production** programs were offered including Master Cattleman, the Grass Master's program, Cattleman's Day and Bull Sale, the Artificial Insemination School, backyard poultry clinic, goat and sheep seminars, and the USDA small farm workshop. In addition, educational programs were conducted to certify newly permitted confined-livestock and poultry producers to provide annual re-certification training for all permit holders, as required by state law.
- The **County Cotton Variety Trials** allow farmers to examine the industry's top varieties side by side, and compare yield and fiber quality data in an environment much like their own. The value of these trials can be expressed in several ways. The cotton industry gains by showcasing their varieties. Clemson gains by increasing farmer interaction in field research, and farmers gain by having access to information that helps them make better decisions. Considering the total acreage of cotton in Calhoun, Orangeburg, and Richland counties (49,490 acres) and assuming that the information provided by the County Cotton Variety Trials helps farmers make variety selection decisions that gain them 50 pounds of cotton per acre, then the **value** of this effort to the farmers in these three counties alone is worth \$1,410,465 at the cotton loan rate of 57 cents per pound. Cotton prices received by farmers this year averaged 90 cents per pound, resulting in an estimated dollar value of \$2,227,050.
- **Downy mildew of collards** is common in the southeastern United States, particularly during fall, winter, and spring. Foggy weather puts collard at risk of developing downy mildew. The applied research project was started to demonstrate which fungicides provided economical control of downy mildew. A half rate of potassium phosphite in a tank-mix with other fungicides prevented yield loss

caused by downy mildew over and above the response from the other fungicides applied alone. For growers, a potential increased economic return can be realized after the cost of potassium phosphite at \$66 per acre for 6 applications was subtracted from the crop value. Based on the average yield of collards from the South Carolina collard production budget, adding potassium phosphite would increase profits by \$555 per acre, a potential statewide impact of \$1.3 million. A majority of the acres of collards grown in South Carolina were treated with several applications of potassium phosphite in 2010.

- Over 22,074 individuals received **gardening information** by telephone or in person through the Urban Horticulture Center and the Home and Garden Information Center (HGIC) toll-free telephone line. In addition, the HGIC website recorded almost 2 million visits last year. Some 14,132 consumers and horticulture professionals participated in programs. Some 281 new Master Gardeners were trained. Master Gardeners provided 36,020 hours of volunteer horticulture services to communities, which represents a \$648,360 value of program support.
- In the area of **Sustainable Production Systems for Agronomic Crops**, the gross value of Soybean Production in SC is \$139 million. The potential yield loss due to Asian Soybean Rust is \$13,900,000. Based on Clemson PSA recommendations, South Carolina growers spray less than 25% of the total acreage for rust only once at a cost of less than \$8 per acre = \$1,180,000. Less than 1% of the South Carolina soybean crop is lost to rust = \$1,390,000. (Cost of needed protective sprays is \$1,180,000; rust cost SC soybean industry is \$2,570,000; cost of original projected 20% yield loss in South Carolina is \$27,800,000. The savings to growers is \$25,230,000.)
- The **research on selected soybean seeds** showed that the seeding rates can be reduced by 40% (from 137,500 to 82,500 seeds per acre) if soybeans are planted during the optimum planting window. With this reduction, the savings would be about \$18 per acre. With anticipated soybean acreage of about 560,000 acres, South Carolina growers would save about \$10 million. Therefore, the profitability of soybeans can be significantly increased with reduced seeding rates.
- The **Clemson Extension Peanut program** had a total economic impact of over \$3 million. A conservative estimate shows that the program is increasing yield and improving resistance to diseases.
- **Cooperative Extension** nutrition agents conducted 430 programs for the general public. Seven hundred and seventy nine (779) media programs were delivered, covering topics of food safety, nutrition, and health. This represents newspaper articles published in newspapers, websites, other external publications, and information on Facebook, radio and television.
- In an effort to reduce food-borne illness, agents conducted **ServSafe®** food safety training for managers, supervisors, and other food handlers. A total of 249 participants received a course completion certificate, representing 153 food establishments. These food handlers can potentially affect 323,140 people. The National Restaurant Association has estimated that the average cost of a foodborne illness outbreak to an establishment is about \$75,000. The approximate economic value of the trainings in South Carolina was \$11,475,000.
- The **County Cotton Variety Trials** have been popular with both farmers and cotton industry representatives because they generate local data, and because they are done under farmer control and conditions. Farmers get to look at the industries top varieties, side by side, and cotton industry representatives get to put their best products on the line. The value of these trials can be expressed in several ways. The cotton industry gains by showcasing their varieties. Clemson gains by increasing farmer interaction in field research, and farmers gain by having access to

information that helps them make better decisions. When considering the total acreage of cotton in Calhoun, Orangeburg, and Richland counties (49,490 acres) and assuming that the information provided by the County Cotton Variety Trials helps farmers make variety decisions that gain them 50 pounds of cotton per acre, then the value of this effort to the farmers in these three counties alone is worth \$1,410,465 at the cotton loan rate of 57 cents per pound. Considering the current cotton price received by farmers this year averaged 90 cents per pound; that value increases to \$2,227,050.

- Through the first two years of **trials and demonstrations conducted by Extension agents** and specialists, it has been proven that early fruit, or bloom thinning by machine, can increase the size distribution of harvested fruit. In grower trials this year, percent increase in fruit size of 2.75 inch fruit ranged from 12-19% of total harvested fruit. In one trial, there was a significant increase in the amount of marketed fruit. The advantage proved to be in reduction of labor costs. Labor costs associated with fruit thinning were reduced to a range of \$93 to \$165 per acre, giving the added advantage to overall gross revenue per acre to an automated or mechanical process. South Carolina's peach industry represents approximately 17,000 producing acres with potential significant savings. Results of this and other research efforts are given to growers attending regular production update meetings and regional conferences.
- **4-H** conducted 2,565 programs that reached 69,054 youth and families. In addition, 909 adult volunteers were trained, who then trained 10,830 youth in leadership development; hunting safety; plant and animal projects; science, technology and engineering projects; day and overnight camping; and nutrition, health and fitness. 4-H adults contributed 3,402 hours of volunteer service, which represents a \$61,236 value of program support.

Coordinators and volunteers of afterschool 4-H programs have reported that youth are learning organizational and time management skills that will be useful as they enter college. Volunteers reported seeing significant improvement in the children's overall reading, writing, and math skills as well as the children's willingness to work together as a team to solve problems and make decisions. In addition, there were reports that the children's self-confidence and self-pride increased.

- **Sustainable forestry and natural resources management** programs included Master Tree Farmer, Master Naturalist, Master Wildlifer, and the Carolina Clear stormwater education programs. Master Naturalist volunteers provided 4,327 hours of service, which equates to a value of \$90,867 in program support.
- Extension **sustainable forestry** educational programs were delivered to 2,425 people who manage 252,000 acres of forest land. In one county, landowners indicated that the Extension programs would help them save \$78,000 and earn \$325,000 in the future when managing longleaf pine on their land. These programs increased the number of acres of forests in South Carolina using sustainable forestry practices, increased biodiversity in the state, restored longleaf pine ecosystems, and facilitated the conservation of ecosystems.
- Some 2,072 people participated in **Palmetto Leadership, Senior Leadership and Junior Leadership** programs. Participants strengthened their community awareness and ability to access community resources, built partnerships, and strengthened their capacity to respond to future issues and opportunities. Participants have a greater knowledge about the county in which they live and/or work including education, economic development, healthcare and social issues. The Palmetto Leadership program provides participants with a venue to give back to their community through a class service project experience. Participants are able to grow their professional and personal networks, providing new opportunities for collaboration and more efficient and effective community

service. Historically, most graduates of the leadership class will involve themselves on boards, community action groups, and task forces to help the community. Class members have become members of non-profit boards. Our last research indicated that 70% of the graduates were still involved in a responsible community project three years after graduation.

- **Locating a “U-pick,” farm stand, corn maze or pumpkin patch** in the Pee Dee region is just a few clicks away now thanks to an online resource launched by Clemson Extension. The Pee Dee AgriTourism Passport incorporates Google Maps to locate on-farm lodging, produce stands and other agriculture-related businesses. The website divides an array of businesses into easy to follow categories, including wineries, seafood, Christmas tree vendors and museums. Users of the site can see the businesses on a map and click locations to access the vendors’ websites. A printed version of the map that folds to the size of a passport will be available at area Chambers of Commerce, convention and visitor bureaus and welcome centers. Agritourism also can include anything that connects consumers with the heritage, natural resources or culinary experiences unique to the agricultural industry. The program is integrated with SC MarketMaker, a program managed by Clemson that leverages this resource and facilitates development of similar websites in other tourism regions of South Carolina. MarketMaker and the AgriTourism Passport were developed as a means of sharing information about food and farm-based businesses with the public. The programs connect all elements of the food chain — from farmers and fishermen to processors and distributors — so they can more efficiently conduct business.

## **LIVESTOCK-POULTRY HEALTH**

<http://www.clemson.edu/lph/>

The Livestock-Poultry Health (LPH) program of Clemson University has a major role in protecting the health of food animals, other livestock, and companion animals. LPH also plays a role in the quality of life for humans. LPH is composed of three areas of service; [Animal Health Programs](#), [SC Meat and Poultry Inspection](#), and the [Veterinary Diagnostic Center](#). Daily functions of LPH include conducting constant surveillance for diseases that affect both man and animals, providing the diagnostic expertise that allows for treatment and eradication of disease of domestic animals, inspecting/testing the processing of foods of animal origin, and coordinating state agricultural/animal emergency response as lead agency of ESF-17. Veterinary diagnostic support for wildlife also is provided by the diagnostic laboratory.

- **Animal agriculture in SC represents over \$6 billion and 37,253 jobs in the overall SC economy** with a \$1.24 billion and 11,782 job direct economic impacts. LPH has responsibilities that are integral to this economy which protect and monitor the health of all livestock and poultry in South Carolina and contribute significantly to its continuation and growth.
- Animal Health Programs personnel made 662 inspections at livestock auction markets, after-hours markets, dealers, and miscellaneous sales such as flea markets. These inspections are part of the requirement for **maintaining the state’s “disease free”** status and are coordinated with USDA. “Disease free” status improves access to both interstate and international markets. For the **SC poultry industry, whose exports were valued at \$145.8 billion in 2009**, monthly letters were issued certifying South Carolina’s status for certain poultry diseases. A total of 240 these letters were signed by the state veterinarian during FY10-11 as a condition for import to certain countries.
- **SC Ag-Watch** program led by LPH is providing training and materials to livestock owners about improved biosecurity practices, foreign animal disease awareness, and notification procedures. This approach emphasizes prevention of disease along with the traditional roles of disease surveillance,

control, and eradication. A total of 1,834 South Carolina Ag-Watch Manuals had been distributed through June 30, 2011 to individuals who had completed training associated with the program. These manuals are also used by state and local emergency managers as a reference for future agricultural emergencies.

- The **Veterinary Diagnostic Center** completed 100,697 tests and procedures during FY 10-11 in performing its animal and food safety diagnostic duties. Of these, 98,641 were related to regulatory duties and production animals; the remaining 2,056 were from companion animals and wildlife.
- LPH enhanced understanding of the importance of **food safety through outreach programs** presented by SC Meat and Poultry Inspection to gatherings of the South Carolina Association of Meat Processors, South Carolina Interagency Food Safety Council, South Carolina Department of Agriculture, South Carolina Department of Health and Environmental Control, SC Pest Awareness & Risk Assessment Committee, SC Large Animal Academy and the SC Agroterrorism & Food Safety Subcommittee.
- SC Meat-Poultry Inspection completed its **annual audit** by the US Department of Agriculture, Food Safety Inspection Service of its self-assessment review. SC Meat and Poultry Inspection program continues to be found to exceed or to be equal to the federal program. Department activities included 100% on-line inspection during slaughter operations on 2,752 slaughter days of approximately 37,826 livestock and over 4.5 million poultry. Additionally, during daily inspection in 82 processing facilities, 71,992 individual inspection procedures were performed.
- A three-day **Hazard Analysis Critical Control Point (HACCP)** training session was conducted by Meat-Poultry Inspection. The session was successfully completed by 18 meat and poultry industry personnel from South Carolina and North Carolina.
- National and international recognition increased as faculty were asked to serve on the Secretary's (USDA) Advisory Committee on Animal Health, NIOSH Agricultural Research Center Special Emphasis Review Panel, American Veterinary Medical Association (AVMA) Committee on Disasters and Emergency Issues, National Animal Health Information Technology Board (USDA), Research Advisory Committee for the American Jersey Cattle Club Research Foundation, as Chair of US Animal Health Association (USAHA) Committee on Transmissible Diseases of Poultry; elected as Secretary-Treasurer of National Association of State Meat & Food Inspection Directors; elected to AVMA House of Delegates, Board of American Association of Small Ruminant Practitioners, Board of the SC Horseman's Council, Board of American Association of Food Hygiene Veterinarians; and achieved Diplomate status with the American College of Veterinary Pathologists and the American College of Veterinary Preventative Medicine.
- South Carolina's **ability to respond to an animal emergency** was enhanced by participation in Foot and Mouth Disease exercise in NC at the initiation and expense of NC Emergency Management. Poultry disease response readiness was enhanced through a field exercise developed by Animal Health Program staff reviewing biosecurity and animal sampling techniques. Participants included both state and federal responders.
- LPH maintained AAVLD laboratory accreditation and met NVSL accreditation standards for all technicians to be proficiency certified.
- LPH Animal Health Programs continued the Department of Homeland Security grant-funded project entitled **Regional Food and Agriculture Criticality Assessment Project** in concert with other



Southeastern states. Project goals are to identify South Carolina's food and agricultural businesses/commodity flow chains and to determine which have economic or human health significance across multiple jurisdictions should they be affected by a terrorist attack or natural disaster.

## REGULATORY SERVICES

[www.clemson.edu/public/regulatory/](http://www.clemson.edu/public/regulatory/)

Regulatory Services protects the environment and the food supply by ensuring the safe, effective use of fertilizers and pesticides, and the quality of seeds and plants grown in the state and by conducting programs to prevent, respond to, and recover from, catastrophic events affecting agriculture, including agroterrorism.

- **SC peaches were exported to Mexico for the first time since 1994.** The Department of Plant Industry (DPI) coordinated with the SC peach industry, USDA-APHIS-PPQ and the SC Department of Agriculture to successfully complete a 3-year pilot program to reopen markets in Mexico to SC-grown peaches. DPI inspectors established and maintained a pest survey program that generated the data necessary to convince Mexican officials of the pest-free status of SC peaches. In this initial breakthrough year, at least 18 shipments crossed the border with a value in excess of \$380,000.
- DPI Achieved **USDA certification of the Molecular Plant Pest Diagnostic Lab (MPPD Lab)** to conduct official analyses to detect *Phytophthora ramorum*, the fungus that causes the disease known as sudden oak death or ramorum blight. Certification for official identification of other pests and diseases will be pursued as well in an effort to establish Clemson as a regional hub for detection and identification of exotic plant pests and diseases.
- Curt Colburn, molecular plant pathologist in the MPPD Lab, developed and published a PCR method to detect *P. ramorum* in soil and potting medium from nurseries. In comparisons with the standard baiting bioassay method, the **PCR method was found to be at least as effective and much faster (hours vs. 2-4 weeks)**. This new method will allow regulatory agencies to determine if nurseries are positive for *P. ramorum* much earlier than previously possible.
- DPI, in cooperation with other Clemson departments, USDA-APHIS-PPQ and the nursery owner, has initiated a **slow sand filtration project** at a South Carolina nursery where the *Phytophthora ramorum* has been detected. This system **will remove *P. ramorum* and other microorganisms from surface water/drainage to prevent contamination of the nearby river, and allow the water to be reused for irrigation**. This system will have a low initial cost and minimal maintenance cost, and so will offer saving options to nurseries. In addition to DPI, Clemson University Extension, Horticulture, Environmental Toxicology, Plant Pathology, Landscape Architecture, and Engineering departments are also involved in this project.
- DPI drafted and acquired **legislative approval to amend the SC Lime Law** to include provisions for regulating landplaster (gypsum). These changes will reduce the inspection fee paid by peanut farmers using landplaster by \$1.00 per ton, which equates to a **savings to farmers of \$1.00 per acre of peanuts grown (\$67,000)**.
- DPI established an **Organic Certification Advisory Committee** and conducted an inaugural meeting of the committee to review the current status of the program and provide guidance for future program direction. Recommendations from the committee included adjustments to the fee structure and realignment of application schedules.

- DPI hosted the **Southern Region of the Association of Official Seed Certifying Agencies** at the Madren Center in Clemson. Eleven states were represented at the meeting which included a tour of the Musser Farm, highlighting the success of **Clemson's *Guardian*™ rootstock**.
- The Department of Pesticide Regulation (DPR) collected 255,193 pounds of used pesticide containers for recycling. This was an **increase of 14% over the previous year**. Since the beginning of the program in 1993, over 2.4 million pounds of pesticide containers have been recycled, helping to protect the environment from potential pesticide contamination.
- DPR continued implementation of **on-line pesticide license examinations**, which allow greater flexibility and convenience in exam scheduling and test locations. This program is very popular with clients as indicated by **the adoption rate that has increased to 62% in just over two years**.
- DPR **streamlined the process of pesticide product registration** by providing a means for registrants to use credit cards to satisfy the required registration fees. This makes the registration process more efficient and convenient for all involved. DPR plans to expand the credit card option to its pesticide licensing process as well.
- The **DPR pesticide analytical laboratory** acquired a new LC/MS (liquid chromatograph/mass spectrometer) to replace a non-functioning unit. This restores to DPR the capability to analyze residues of certain herbicides as part of pesticide misuse investigations. DPR is cooperating with Clemson/PSA research units to expand the utility of this instrument to include the analytical needs of various research projects in addition to regulatory analyses.
- The DPR analytical laboratory received approval from the US-EPA of its revised **Quality Management Plan (QMP)**. The QMP provides detailed protocols for the analytical laboratory to follow in maintaining a very high level of accuracy and precision in its analytical processes thus ensuring compliance with EPA standards.
- **New Agroterrorism Course** through the Strom Thurmond Institute. David Howle and Christel Harden developed and taught a course on Agroterrorism as a part of the Masters of Public Administration program through the Strom Thurmond Institute.

## PSA INSTITUTES

[http://www.clemson.edu/public/about\\_us/overview.html#centers](http://www.clemson.edu/public/about_us/overview.html#centers)

There are five institutes under the PSA umbrella and selected achievements for 2010-11 are presented below in reverse alphabetical order.

- Youth Learning Institute
- Strom Thurmond Institute of Government and Public Affairs
- Institute on Family and Neighborhood Life
- Clemson Institute for Economic and Community Development
- Baruch Institute for Coastal Ecology and Forest Science

## YOUTH LEARNING INSTITUTE

[www.clemson.edu/yli/](http://www.clemson.edu/yli/)

The Youth Learning Institute (YLI) is a vital component of Clemson University's youth outreach effort, using the research and knowledge of faculty and staff to develop programs that benefit SC youth. More than

21,000 young people participate annually in more than 70 programs held at our leadership centers, ranging from two-week residential programs to one-day in-school training.

- Clemson University has been offering experiential education for South Carolina youth since 1934. Since that time, Clemson camping has touched the lives of more than 250,000 participants. Initially founded as summer 4-H camps, our mission has expanded to include other young people and adults in year-round programs. YLI proposed legislation to the SC General Assembly for declaration of **SC Family Play Day**, a day that would serve as the kickoff for a month-long public awareness campaign for the National Childhood Obesity Prevention Month. The legislation was introduced by Upstate Senator Larry Martin in the Senate on February 9, 2011 and the bill was adopted into law on March 9, 2011, naming Friday, September 2, 2011 as SC Family Play Day.
- YLI partnered with a group of concerned parents of children with autism, educators and youth development professionals to establish the **Autism Academy of South Carolina (AASC)**, a new, Columbia-based, not-for-profit school offering intensive, individualized instruction to students with Autism Spectrum Disorder (ASD). AASC was founded in response to the rapidly growing need for resources and support for families of children diagnosed with ASD. The school opens Fall 2011, with YLI chiefly responsible for day-to-day oversight and fiscal management.
- YLI received approval from the SC Public Charter School District Board for the development of the **Youth Leadership Academy**. This charter public school is expected to open in the fall of 2012 for sixth and seventh grade students who want to experience success outside the traditional school setting in a small-group, hands-on learning environment. The school will be located on YLI's main campus in Pickens.
- Since transition of the program to the Youth Learning Institute, **Zest Quest** has become a USDA approved curriculum for use in providing nutrition education to populations eligible to receive benefits from the SNAP (Supplemental Nutrition Assistance Program — formerly the federal Food Stamp program). As an official SNAP-Ed provider, YLI will continue use of the Zest Quest curriculum for nutrition education efforts across the state. Other successful efforts toward program expansion for Zest Quest include:
  - Creation and implementation of a nutrition education and wellness-focused, residential summer camp called Zest Quest University
  - Zest Quest curriculum components were incorporated into the New Horizons and Youth Development Center (YDC) programs operated by YLI. New Horizons serves teen mothers in foster care and their babies. The YDC serves low-level juvenile offenders in a camp-like setting who are serving short-term sentences.
- During the 2010 and 2011 summer seasons, YLI successfully partnered with the 1890 Extension Program at SC State University to develop and implement a summer camp program focused on **health and wellness for economically disadvantaged youth** from across South Carolina.
- The first phase of development for **Camp Hannon at Pinnacle Falls** was completed with the construction of two custom-built cottages on property in the Jocassee Gorges. The Scott Hannon Memorial Foundation invested over \$1 million in improvements to property that had been donated to the Clemson Foundation for the benefit of YLI. The new facilities will enable YLI to greatly expand the youth development programs conducted at this site.

## STROM THURMOND INSTITUTE OF GOVERNMENT AND PUBLIC AFFAIRS

[www.strom.clemson.edu/](http://www.strom.clemson.edu/)

The Strom Thurmond Institute (STI) is a multidisciplinary public affairs institution conducting research and service at the local, regional, state, and national levels. With an established record of collaborative partnerships with academic, governmental, and private sector scholars, the Institute also enhances awareness of current public policy issues throughout the state and region through formal and informal educational programs.

To further its public service mission, STI offers two dynamic academic programs: the Master of Public Administration and the Doctorate in Policy Studies.

Accomplishments in 2010-11 include:

- Received funding from the **Army Corps of Engineers Institute for Water Resources** to evaluate adaptive management practices in Corps projects across the nation.
- Initiated the **Lake Thurmond Economic Impact** project to follow past work completed on Lake Hartwell and evaluate the effect of changing lake levels on local economies.
- Completed the **Pickens County Water Supply Plan** for the Water Authority. This plan is intended to inform the Authority of ways they can better manage resources among the water purveyors in the county and improve forecasting.
- Expanded the **economic development partnerships** along the I-95 corridor to build a competitive advantage in the area, through funding from the General Assembly. Growth companies include:
  - September Oaks Vineyard
  - Bluffton Brittle
  - Gullah Farmers' Cooperative
  - Southern States Energy
- Dr. Jeff Allen served as President-Elect of the **National Institutes of Water Resources (NIWR)**, hosting the annual conference in Washington, DC.
- Established a new nonprofit service group, the **Nonprofit Excellence Network (NExNet)**, to build research and evaluation opportunities with the nonprofit organizations across the Southeast.
- Dr. Holley Ulbrich published a new edition of her book ***Public Finance***.
- **Economic impact analyses** were completed for multiple organizations including, The Citadel, Alcoa's Mt. Holley, Clemson's Madren Center & Walker Course, and SC Green Jobs Impact Analysis for the SC Department of Commerce.
- STI faculty and staff were named to the following **state or national committees and task forces**:
  - SC Information Technology Solutions Committee
  - Savannah River Basin Advisory Committee
  - Advisory Board for the Carolinas Integrated Sciences and Assessments (CISA)
  - State Recycling Task Force
  - SC Revenue Committee to Evaluate School Funding
  - Southern Growth Policy Board
  - Piedmont-Atlantic Mega-Region Task Force
- Completed the **Green Jobs Survey** for the SC Department of Commerce, noting the impact that this new sector is having on the SC economy.
- The **MPA program** completed the 2010-11 year with a \$58,000 positive cash flow, achieving 141 percent revenue growth in just two years.

## INSTITUTE ON FAMILY AND NEIGHBORHOOD LIFE

[www.clemson.edu/ifnl/](http://www.clemson.edu/ifnl/)

The Institute on Family and Neighborhood Life (IFNL) helps to generate, apply, and share the research foundation for youth, family, and community development. Work at IFNL begins with the premise that strong communities support strong families and vice versa, and that both are necessary for healthy development of children and youth.

- Professor Limber was given the **Distinguished Career Award** from the American Psychological Association's Division of Psychologists in Public Service, in recognition of her national efforts to prevent bullying.
- Adjunct Professor Dan Olweus received the prestigious **Award for Distinguished Contributions to International Advancement of Psychology** from the American Psychological Association for 2011.
- Professor Mark Small was reappointed as one of eight national consultants to the **USDA Child, Youth, and Families at Risk Program**.
- Doctoral student Jill McLeigh received the **Distinguished Student Award** from the American Psychological Association's Division of Psychologists in Public Service for her stellar research and public service engaging the faith community in prevention of child maltreatment, studying the contributions of international faith-based organizations, and organizing resource centers for families with young children.
- In FY 2011, faculty and staff trained 298 trainers to assist schools in implementing the **Olweus Bullying Prevention Program**, for a total of more than 1,000 trainers nationwide.
- In FY 2011, volunteers in the **Café Cultura** project contributed 2,600 hours of service in the provision of educational, socio-cultural, recreational, and motivational activities to Hispanic families in southern Greenville County.
- In FY 2011, the **Center for Community Services** in Simpsonville, which is managed by IFNL, delivered human services, case management, orientation, referrals, and family programming to approximately 6,000 clients. Most of these clients attend CCS programs and activities on an ongoing basis.
- In FY 2011, through a competitively obtained federal Health and Human Services grant, the “**SC Rural Communities Compassion Project**” completed distribution of \$240,000 to 14 rural faith and community-based organizations to build their capacity for providing services to children and families. To date, over \$2,200,000 has been distributed to 140 non-profit organizations across South Carolina.
- **Building Dreams** serves children impacted by incarceration. Since its inception, Building Dreams and its partners have served nearly 1,000 youth in mentoring relationships across 17 counties of South Carolina. Nearly 1,100 adult volunteers have been recruited to provide support to children in Building Dreams. IFNL has partnered with 49 businesses, religious, educational and civic organizations to implement Building Dreams.
- In collaboration with the American Orthopsychiatric Association, the International Family Therapy Association, and the International Society for Child Indicators, IFNL hosted and co-sponsored the **Third Annual Greenville Family Symposium** in April. The theme of the meeting was *The Quest*



*for Health and Community: Democracy, Spirituality, and Neighborly Caring*. The Symposium provides an opportunity to bring world-class authorities on family issues to Greenville and to communicate their ideas through special sections in the *American Journal of Orthopsychiatry*, co-edited by IFNL Director Gary Melton.

- In conjunction with the Family Symposium, IFNL also co-sponsored a **Student Pre-Conference on Assessment and Study of Personal, Family, and Community Well-Being**. The Department of Psychology at the University of South Carolina collaborated with IFNL in presenting the program for doctoral students and post-doctoral fellows from those institutions and other universities across the nation.

#### CLEMSON INSTITUTE FOR ECONOMIC AND COMMUNITY DEVELOPMENT

<http://www.clemson.edu/sandhill/>

- **Rural Community Leadership Development:** Clemson Institute for Economic and Community Development (CIECD) professionals facilitated leadership programs throughout the state. Through these programs **883 youth and adults** gained the knowledge and skills necessary to provide productive leadership in their communities and the state. Many also benefited through direct contact with local or state leaders who participated as guest speakers and/or panelists. Programs include Leadership South Carolina, Palmetto Leadership in Dillon and Chester Counties, Women's Leadership Georgetown County, Leadership Georgetown County, Senior Leadership Beaufort County and National Issues Forums in conjunction with the Operation Military Kids initiative. The impact of these programs includes building business and professional support for K-12 public education, supporting a free medical clinic and a home for disadvantaged boys, enhancing communication among local leaders, creating a community garden at a public housing complex, developing solutions to issues facing local communities, and addressing environmental, social and economic sustainability.
- **Leadership South Carolina:** Leadership South Carolina continues its well established tradition of having some of South Carolina's best and brightest professionals participate in its program. This wholly self-sustained program, annually host 50 professionals from across the state providing participants a forum to explore and share differing perspectives on the challenges facing our state and prepare them for public service. With more than 1,300 graduates, Leadership South Carolina achieves its mission through two programs – a core class program and an alumni program. The core program consists of six three-day sessions focused on: the history of South Carolina, public education, natural resources and the environment, social issues and health, the economy, and future challenges.
- **Rural Community Enhancement and Improvement:** CIECD staff facilitated programs to assist communities in identifying and developing sustainable economic development activities that improve the quality of life for all their citizens. These include strategic planning sessions in McClellanville to develop a charter school; supporting the Pee Dee Agritourism initiative through business planning, marketing and training; organizing distribution of local agricultural products to coastal restaurants; and collaboration with the Horry County Industrial Alliance; domestic violence prevention for the Catawba and Pee Dee tribes; training SC Afterschool Alliance program providers in program design, implementation and evaluation; assisting the City of Georgetown with marketing programs to promote downtown businesses; and developing the state's first Family Justice Center as a one-stop shop for victims and their families

- **Rural Community Economic Development:** CIECD conducted statewide programs to enhance economic development through workforce analysis, business development strategies and policy formation, as well as surveys to enhance workforce preparedness and business retention efforts. Many of these efforts were centered on the agribusiness sector of state and local economies: conducted the Beginning Farmer and Rancher Program through USDA; developed a master plan to promote agritourism in the 10-county Pee Dee region; established the Catawba Regional Agriculture Economic Development Center for Chester, Lancaster and York counties; conducted grant-writing workshops for rural businesses and value-added agricultural product development; assessed economic and community development progress in the three-county Charleston region and 10-county Upstate region for leaders in Charleston and Greenville; and supported efforts to develop an agribusiness cluster in Barnwell County.

### **BARUCH INSTITUTE FOR COASTAL ECOLOGY AND FOREST SCIENCE**

<http://www.clemson.edu/baruch/>

The mission of Clemson University's Belle W. Baruch Institute for Coastal Ecology and Forest Science is to advance sustainable coastal environments through science. The vision of the Institute is to become a wellspring of knowledge addressing human needs within sustainable coastal environments.

- To support faculty research efforts, **funding agencies** include National Science Foundation, US Environmental Protection Agency, US Geological Survey, US Department of Interior, US Fish and Wildlife Service, USDA-NRCS, SC Sea Grant, Andrew W. Mellon Foundation, US Forest Service, SCDHEC State Revolving Fund, Pee Dee Research and Education Endowment, Pate Foundation, and National Audubon Society. **Collaborative efforts** aside from internal university partners include projects with the US Geological Survey, the US Forest Service, Horry County Stormwater Management, SC NRCS, SC Sea Grant, the College of Charleston, the University of South Carolina, N.C. State University, Auburn University, and Coastal Carolina University.
- **National and international recognition** increased as faculty were elected to hold offices in American Ecological Engineering Society and Society of Wetland Sciences; asked to serve as Proposal Panel Reviewer for National Science Foundation Environmental Sustainability Program, serve on Board of Directors of Little Leaf Louisiana, and serve on Science Advisory Board of Winyah Rivers Foundation; invited to present seminars at City University of Hong Kong, Hong Kong and South China University of Technology; won the LSU Renewable Natural Resources Alumnus of the Year award; and served as manuscript and proposal reviewers for a number of journals and agencies.
- Collaborated with the Belle W. Baruch Foundation to conduct **Firefly Watch Program**, a project to educate the public on the effect of land-use changes on environmental quality and wildlife habitat.
- **Collaborated with Waccamaw River Keeper and Waccamaw Middle School** to offer service learning opportunities to local students, particularly under-represented students, to motivate them to consider pursuing higher education and careers in science and engineering.
- **Participated in Partners of the Americas Climate Change Network**, and hosted a Fellow from Coralina, San Andrés, Colombia, S.A.
- **Support for students** included 14 graduate students and 8 undergraduate students.

- Students received an Honorable Mention Award in USEPA P3 student competition 7th National Sustainable Design Expo in Washington, DC
- Participated in two **scientific expeditions** to Chilean Patagonia in order to conduct baseline ecosystem surveys for the establishment of a National Park in that region.

### I-3 Key Strategic Goals for Present and Future Years

PSA focus areas complement the University's 10-year goals in the Southern Association of Colleges and Schools (SACS) assessment procedures and in the USDA five-year plan of work. All of the units within PSA have aligned their programming, funding, evaluation, and accountability functions around these five focus areas which are then aligned with Clemson University's academic plan:

**Academics, research and service**  
**Student performance**  
**Clemson's national reputation**

**Campus life**  
**Educational resources**

The academic plan focuses on eight broad emphasis areas that foster collaboration and promote the integration of teaching, research, and service. It also encourages programs that provide interdisciplinary research and service venues, unique platforms for enhanced scholarship, and increased opportunities for graduate and undergraduate students. These emphasis areas are:

- **Leadership and Entrepreneurship**
- **Information and Communication Technology**
- **Family and Community Living**
- **Advanced Materials**
- **Automotive and Transportation Technology**
- **General Education**
- **Biotechnology and Biomedical Sciences**
- **Sustainable Environment**

#### Central Strategy

It is due to careful planning that PSA has continued to meet our client's needs, keep all of our Research and Education Centers and Cooperative Extension offices open, meet our regulatory legislative mandates, seek alternative funding for our institutes and, yet, receive 48% less funding from state appropriations. PSA reduced its employees from 861 in 2001 to 635 in 2011 through retirement incentives. Plans were developed which devised new strategies to meet our goals while we continued to focus state revenue on our core programs in agriculture and natural resources.

Our strategic objectives are to **discover and deliver relevant new knowledge** in our five focus areas: agriculture, community, environment, food, and youth. The results of these strategic objectives are highlighted in the Major Accomplishments and Results section, but in general report results in the following areas.

- **Clemson Cooperative Extension Service**
  - Number of client interactions
  - Programs offered and participation frequency
  - Percent knowledge gained due to program participation
  - Acres of SC farm and forest land affected by programs
  - Volunteer hours and contributions
- **Clemson Experiment Station**
  - Number of proposals processed

- Amount of grants funded
- Number of disclosures (official announcement of potential invention)
- Number of patent applications or awards
- Number of technical papers and contributions published
- Livestock-Poultry Health
  - Disease-free status
  - Number of inspections at livestock markets, dealers, and miscellaneous sales
  - SC livestock premises registered
  - Maintenance of National Veterinary Services Laboratory and American Association of Veterinary Laboratory Diagnosticians laboratory accreditation
  - Number of procedures performed in Diagnostic Center
  - Maintenance of equivalency with USDA-Food Safety and Inspection Service standards
- Regulatory Services
  - Number of phytosanitary certificates issued and accepted without problem
  - Number of nurseries inspected and certified to ensure freedom from pests
  - Number of plant pest surveys conducted to detect and mitigate new pest introductions
  - Number of pesticide inspections for safe use
  - Number of Pesticide Applicator Licenses issued
  - Percentage of structural pest control operators found to be in compliance with regulations
  - Nutrient deficiency rate and number of fertilizer samples procured and analyzed
  - Percentage of Certified Seed Lots meeting standards
  - Percentage of personnel who have completed appropriate training according to Department of Homeland Security requirements
- Institutes
  - Number of proposals processed
  - Number of publications, both research and policy-oriented
  - Other noteworthy accomplishments in Section I-2

### **Central Strategy/Reduced Revenue**

Clemson University PSA state funding has been dramatically reduced. Surveys of other state Cooperative Extension Service's budgets reveal that South Carolina's extension state-appropriated budget has been cut more than any other state. Like any prudent and efficient state agency with reduced funding no small measure of planning has been focused toward efficiency measures to continue to serve our clients with fewer state resources. To address significant cuts in state appropriations, the Clemson Experiment Station and Extension Service leaders developed and implemented strategic plans that focus remaining state funds on agriculture, forestry and natural resources programs that support South Carolina's \$34 billion agribusiness sector. They worked closely with leadership in the College of Agriculture, Forestry and Life Sciences to ensure that the funding cuts did not adversely impact students. In addition, the Experiment Station moved to increase funding from non-state sources and Extension shifted to a regional business model to reduce administrative costs.

Below is a summary of measures that allowed continued high-quality research and extension activities with reduced funding.

## Experiment Station

- All Research and Education Centers remained open
  - Reduced operating costs by 15%
  - Established billing rates for acreage
  - Increased use of grants to fund support positions
- Increased external funding
  - Experiment Station scientists were awarded 164 grants worth \$23,306,021 in FY10-11
  - New peanut specialist's salary is 40% funded by Peanut Board for five years
- Assessed all animal farms
  - Reduced poultry operation
  - Closed operations of swine farm until funded by research grants
  - Closed operations of aquaculture center until funded by research grants
  - Moved equine center funding to the College of Agriculture, Forestry and Life Sciences

## Extension

- All Extension county offices remained open
  - Reduced county administrative staffing through voluntary retirement/separation programs
  - Implemented regional business centers to support multiple counties
- Adopted regional model for agriculture and natural resources agents
  - Agents now support multiple counties
- Reduced operating costs
  - Reduced travel by 50%
  - Froze hiring for vacant positions
  - Partnered with counties to fund natural resources agents
  - Limited retiree hire-backs to critical agent positions at a reduced salary and with additional responsibilities
  - Discontinued operational funding for institutes to focus on agriculture, forestry and natural resources programs

## Regulatory Services and Livestock-Poultry Health

Similar measures were taken by the PSA regulatory units to continue to serve South Carolina with reduced state funding.

## I-4 Key Strategic Challenges

### Challenges Overview

PSA maximizes **discovery and delivery of new knowledge** through **science-based relevant research** leading to **discoveries specific to South Carolina's needs that are delivered** through extension programs in our focus areas to advance the competitiveness of the agriculture and forestry industry, enhance the economic potential of rural communities, safeguard the food supply, preserve natural resources and prepare young people to become productive citizens.

This challenge must be accomplished within the current economic climate, which includes the present situation of a 48% reduction in state funding since July 2008. Though careful planning has allowed us to continue to serve South Carolina, these dramatic cuts have left us seriously understaffed in some of our core agricultural areas. There is a need for increased research, extension, and regulatory funding to



prepare for the future of South Carolina's vibrant agribusiness sector, attract new industries and research partners, and build the knowledge-based economy of South Carolina.

The remaining state funding is less than is necessary to support PSA's current staff. The funding reduction is more than a challenge. It is a plan-changing mandate as we are becoming more entrepreneurial, reducing operating expenses, and making difficult decisions regarding the best use of the funding that remains. These new strategies and decisions are maximizing the return on the investment of state dollars for our clients. They center on continuing to provide relevant, research-based information to the state's agriculture and natural resources industries but with fewer personnel and resources. Refer to Section I-3 "Central Strategy/Reduced Revenue" for illustrations of how we have met previous challenges.

Key indicators of success are measured through the annual research grant proposal submissions, sponsored research awards, the number of participants in Extension training programs, and other specific unit performance measures described in Section III-1-5 and Agency Action Plans in the Strategic Planning Chart Section III-2-7.

## **I-5 How the Accountability Report is Used to Improve Organizational Performance**

The purpose of assessment and accountability is to evaluate performance and make improvements as all organizations strive to evolve. Assessment helps ensure that planned activities, measures, outputs and outcomes are met and improved. This increases the efficiency, the effectiveness, and/or the reach of an organization. New initiatives are identified to address a need by a PSA constituency.

PSA believes this report serves the public well in explaining our service to the state and its citizens. Consideration of the goals and initiatives described herein occurs throughout the year in formal and informal settings.

Results from this report are used to further the following:

- **Activity planning** – encouraging units across PSA to review this report initiates collaboration, new research projects, and new service concepts.
- **Personnel planning** – as positions become available through retirements or resignations, new hires can be targeted to areas of greatest impact across the state based on annual performance of a unit.
- **Financial planning** – use of annual assessment correlates funding with results so that funds are distributed to areas of greatest potential statewide impact.

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## Section II – Organizational Profile

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### II-1 Main Products and Services and the Primary Delivery Methods

As stated in the Executive Summary, we provide **science-based relevant research** leading to discoveries specific to South Carolina's needs, which are delivered **to our clients through the most efficient communication system in the world**. Our primary clients are the citizens of South Carolina who rely on this knowledge to manage and improve their farms, businesses, and communities.

*PSA utilizes the following primary units to connect with the public:*

- **Clemson Experiment Station (Agricultural Research)**
- **Cooperative Extension Service**
- **Regulatory Services**
- **Livestock-Poultry Health Programs**
- **The Institutes of PSA:**
  - Baruch Institute for Coastal Ecology and Forest Science
  - Clemson Institute for Economic and Community Development
  - Institute on Family and Neighborhood Life
  - Strom Thurmond Institute of Government and Public Affairs
  - Youth Learning Institute

PSA units actively strive to solicit ideas and issues from SC citizens. Through websites, public forums, advisory committees, and thousands of programs, PSA personnel are active across South Carolina *for* South Carolina. Faculty and specialists in these units are active on state boards, commissions, task forces and other committees that can benefit from researchers' expertise.

PSA is fully committed to strengthening its services through technology and greater utilization of its staff in all of the above units. Each unit develops programs, training and educational materials for citizens and constituent groups.

### II-2 Key Customers Segments and Their Key Requirements/Expectations

PSA's customer segments include, but are not limited to the following:

- |   |   |
|---|---|
| • <b>Citizens of South Carolina</b>         | • <b>Communities</b>                                |
| • <b>Agricultural producers and growers</b> | • <b>Local and county governments</b>               |
| • <b>State, local, and county agencies</b>  | • <b>Pesticide and fertilizer sellers and users</b> |
| • <b>Natural resource/forestry managers</b> | • <b>Practicing veterinarians</b>                   |

PSA programs are accessible to all citizens. The mission and goals of the organization lend themselves to people who are associated with agriculture, agricultural and forest products, business and industry, landowners and natural resources managers, families and youth, limited resource families, and community leaders.

In order to continually assess our own performance and ensure we meet the expectations of our customers, surveys and follow-up calls to participants are part of our regular processes. Customer comments are considered vital to PSA success, and surveys note the following as important expectations:

- **Accurate and practical information**
- **Timely programs based on important public issues**

- Ethical approaches with clients
- Thoughtful and efficient use of financial resources
- Educational opportunities for all ages
- Excellent customer service
- Accountability

## II-3 Key Stakeholders (other than customers)

PSA's key stakeholders include, but are not limited to, the following:

- Citizens of South Carolina
- Federal, state, and local governments
- Federal, state, local, and private granting agencies
- PSA employees
- PSA suppliers
- Private donors
- Commodity boards and associations
- Agriculture and forestry including industry and related associations
- Advisory boards

## II-4 Key Suppliers and Partners

PSA's key suppliers and partners include, but are not limited to, the following:

- Federal, state, local, and private granting agencies
- Federal, state, and local governments (direct funding allocations/support for infrastructure)
- Private donors
- Strategic partners with federal, state, and local agencies and the agribusiness sector
- Vendors maintained in the Clemson University accounting information system

## II-5 Operation Locations (Figure II-1)

Although Public Service Activities continues to reorganize and consolidate its services to better serve our citizens, every county in the state is served by an Extension office through a cooperative agreement with local county governments. Research activities are primarily carried out at the Clemson University campus but much is done at locations throughout the state. Research and Education Centers (RECs) are located in areas where the soil conditions and climates best represent specific challenges faced by our stakeholders in the surrounding area. Below is a list of the sites where much of this activity takes place :

Aiken County	W. W. Long Leadership Center
Barnwell County	Edisto Research and Education Center
Charleston County	Coastal Research and Education Center
Clarendon County	R.M. Cooper Leadership Center
Florence County	Pee Dee Research and Education Center
Georgetown County	Baruch Institute of Coastal Ecology and Forest Science
Pickens County	Clemson Experimental Forest
	S. C. Botanical Garden
	T. Ed Garrison Livestock Arena
	Youth Learning Institute
Richland County	Sandhill Research and Education Center
	Clemson Institute for Community and Economic Development
	Livestock-Poultry Health
York County	Matthews Environmental Center
Dominica, West Indies	Archbold Tropical Research and Education Center

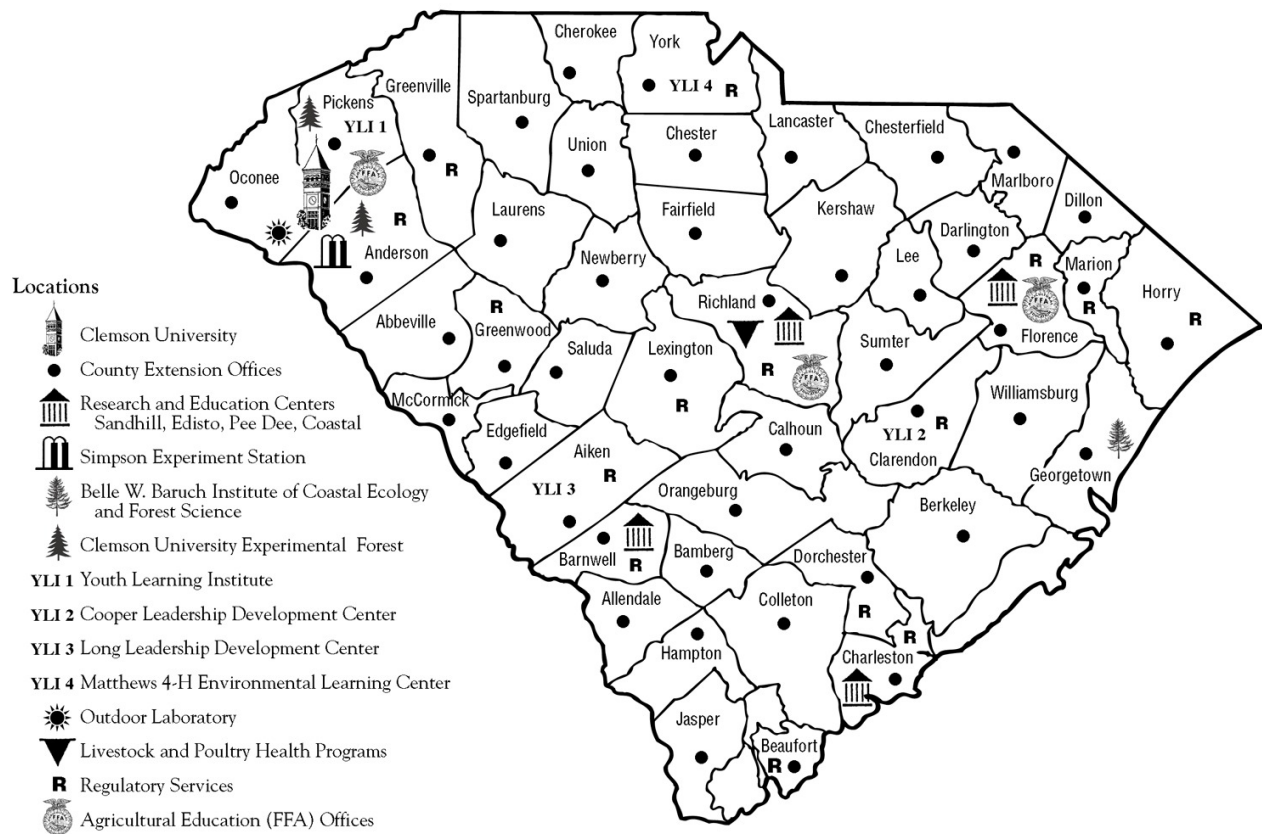


Figure II-1

## II-6 Number of Employees

As of August 2011, PSA had 635 employees in 502 FTE's. Of these employees, 48 FTE positions are funded from grant and gift funds.

Type	Headcount	FTE
Classified	335	287
Unclassified	300	215
<b>Total</b>	<b>635</b>	<b>502</b>

## II-7 Regulatory Environment Under Which Your Organization Operates

PSA operates under federal and state mandates. Most mandates are listed below, with links to websites that better explain the full extent of what is expected of PSA. The federal mandates require extensive reporting to comply with federal funding and compliance regulations. Although not listed below, PSA is also subject to the University's academic reporting requirements. For instance, PSA is required to meet requirements of the federal Department of Education through Southern Association of Colleges and Schools (SACS) accreditation requirements as well as specific requirements for research.

**SECTION 59-119-10.** Acceptance of the Clemson devise and bequest.

The honorable Thomas G. Clemson having departed this life on April 6, 1888, leaving of force his last will and testament which was duly admitted to probate on April 20, 1888 in the office of the judge of probate for the county of Oconee, in this State, wherein he devised and bequeathed to his executor, Richard W. Simpson of Pendleton, South Carolina, a tract of land situate on Seneca River in the said Oconee County, containing eight hundred and fourteen acres, more or less, known as the Fort Hill plantation, as well as all his other property, both real and personal, except certain legacies in said will mentioned and provided for, all in trust to convey to the State when the State should accept the same for the purpose of establishing and maintaining an agricultural and mechanical college upon said Fort Hill plantation upon the terms and conditions of said will, the State has heretofore expressly declared that it accepted the devise and bequest of Thomas G. Clemson subject to the terms and conditions set forth in said last will and testament and the State Treasurer has received and may securely hold such property, both real and personal.

**SECTION 59-119-20.** Clemson Agricultural College established; location and studies.

The deed and transfer of such property to the State having been duly executed and made by the executor, in accordance with the provisions of the will, an agricultural and mechanical college has been established in connection with the aforesaid devise and bequest, styled The Clemson Agricultural College of South Carolina and situated at Fort Hill, in Oconee County, on the plantation so devised. In the college shall be taught all branches of study pertaining to practical and scientific agricultural and other industries connected therewith and such other studies as are not inconsistent with the terms of such will.

**SECTION 59-119-120.** Division of public land fund under act of Congress.

All sums which shall be received by the State from the United States Government under the provisions of the act of Congress, approved August 30, 1890 entitled "An Act to Apply a Portion of the Public Lands to the more Complete Endowment and Support of Colleges for the Benefit of Agriculture and Mechanical Arts Established under the Provisions of an Act of Congress approved July second, eighteen hundred and sixty-two," shall be equally divided between South Carolina State College and Clemson University to be applied to the purposes specified in such act.

**SECTION 59-119-140.** Annual report by board.

The board of trustees shall make to the General Assembly an annual report of the university, of all farming operations and tests and experiments and of all receipts and expenditures, with a statement of the condition of the property and funds of such university and of all receipts and expenditures of money appropriated thereto by the State.

**SECTION 59-119-165.** Transfer of certain agricultural funds to Clemson-PSA (Public Service Activities); use of funds; report.

The Budget and Control Board, in conjunction with the Department of Education, shall transfer all federal funds associated with Agricultural Education at the Department of Education to Clemson-PSA (Public Service Activities) no later than July fifteenth of each fiscal year. Notwithstanding any other provisions of law, funds and positions transferred to Clemson-PSA from the Department of Education for Agricultural Education shall be used for personnel positions and related office and travel expenses to provide overall leadership, coordination, and structure for agricultural education programs, and South Carolina Association of Young Farmers activities in the public schools of this State. Clemson-PSA shall provide a report to the Department of Education on the use and expenditure of the federal funds transferred by the Department of Education to Clemson-PSA no later than December first of each fiscal year.

**SECTION 4-11-50.** Each county shall have farm and home demonstration agents.

The extension service of Clemson University shall place at least one farm and one home demonstration agent in each county in this State, subject to confirmation by a majority of the county delegation, such agents to be employed as at present and payment of their salaries to be made through the treasurer of the extension service as provided for the payment of that portion of the salaries of such agents contributed by the State and Federal governments.

In Berkeley County, appointments made pursuant to this section are governed by the provisions of Act 159 of 1995.

In Dorchester County, appointments made pursuant to this section are governed by the provisions of Act 512 of 1996.



## Mandates

**USDA Cooperative State Research, Education and Extension Service** [www.csrees.usda.gov/](http://www.csrees.usda.gov/)

**Morrill Act 1862** [www.csrees.usda.gov/about/offices/legis/morrill.html](http://www.csrees.usda.gov/about/offices/legis/morrill.html)

*Provided*, That the monies so invested or loaned shall constitute a perpetual fund, the capital of which shall remain forever undiminished (except so far as may be provided in section 5 of this Act), and the interest of which shall be inviolably appropriated, by each State which may take and claim the benefit of this Act, to the endowment, support, and maintenance of at least one college where the leading object shall be, without excluding other scientific and classical studies and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes on the several pursuits and professions in life.

**Hatch Act of 1887** [www.csrees.usda.gov/about/offices/legis/pdfs/hatch.pdf](http://www.csrees.usda.gov/about/offices/legis/pdfs/hatch.pdf)

The Hatch Act of 1887 authorized federal-grant funds for direct payment to each state that would establish an agricultural experiment station in connection with the land-grant college established under the provisions of the Morrill Act of 1862, and of all supplementary acts.

**Smith-Lever Act 1914** [www.csrees.usda.gov/about/offices/legis/pdfs/smithlev.pdf](http://www.csrees.usda.gov/about/offices/legis/pdfs/smithlev.pdf)

SEC. 1.<sup>(1)</sup> In order to aid in diffusing among the people of the United States useful and practical information on subjects relating to agriculture,<sup>(2)</sup> home economics, and rural energy,<sup>(3)</sup> and to encourage the application of the same, there may be continued or inaugurated programs in connection with the college or colleges in each state.

## Legislative Authorization for Clemson Public Service Activities

### Extension Agricultural Service Laboratory (ASL)

ASL provides research-based, scientifically sound information based upon analytical testing of soil, plant tissue, forage, animal waste, irrigation water, and compost samples to guide proper nutrient and resource management.. Authority to provide these services is derived from Section 46-7 of the South Carolina Code of Laws.

### Livestock-Poultry Health Programs - Animal Health and Diagnostic Laboratory:

Provides statewide surveillance for diseases that affect both humans and other 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 assist 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 man made. Sections 47-4-10 et seq. of the SC Code of Laws authorizes Clemson-PSA to perform these duties as assigned by law.

### Livestock-Poultry Health Programs - Meat and Poultry Inspection:

Administers an inspection program for state permitted meat and poultry slaughter and processing facilities in cooperation with USDA FSIS. Sections 47-17 and 47-19 of the SC Code of Laws authorize Clemson-PSA to perform these duties as assigned by law.

### Regulatory and Public Service Programs: Plant Industry:

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 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:**

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 conducting 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](#).

### **Agricultural Biosecurity**

Coordinates statewide surveillance for naturally occurring and introduced diseases and pests of agricultural plants and animals under Homeland Security Presidential Directives 8, 9, and 10. In addition, educational programs are developed and implemented for disaster preparedness, prevention, mitigation, and response for agricultural chemicals, plants or animals, whether those disasters are natural or man made. Sections 46-7-30 et seq. and section 46-9 of the SC Code of Laws authorizes these activities.

## **II-8 Performance Improvement System(s)**

Public Service Activities operates under an umbrella of processes designed to improve performance.

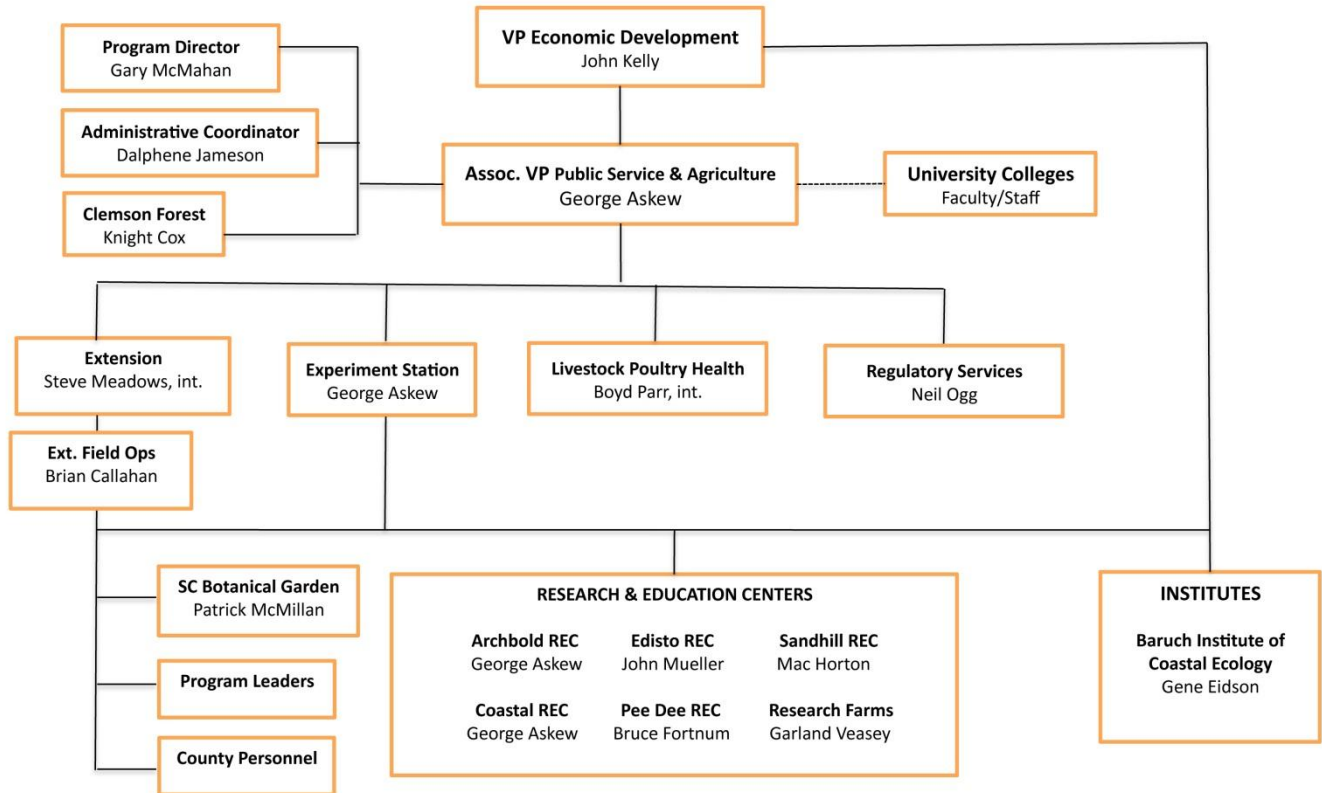
**Employee Performance:** Primary among these processes is the University's Employee Performance Management System (EPMS), which reviews the personal performance of classified employees. Similar to this process is the Faculty Activity System, which allows the faculty to report their plans for the coming academic period and post any accomplishments or measures of their activities. This information is used for promotion and tenure.

**Unit Performance:** Since 2009 the new WEAVEonline® university-wide assessment database has been used by individual units. WEAVE is: **W**rite expected outcomes/objectives, **E**stablish criteria for success, **A**ssess performance against criteria, **V**iew assessment results, and **E**ffect improvement through action.

**Agency Performance:** Information becomes a part of the strategic planning stage for PSA through assessment completion and review by unit heads and other administrators. PSA also uses the Clemson University Management Information System (CUMIS). This online system was developed for assessment reporting to the US Department of Agriculture. It collects and tracks data for the Clemson University Cooperative Extension Service, including number of programs conducted, number of participants completing programs, knowledge gain, and adoption of practice as a result of participation.

**University Performance:** Clemson University is assessed by multiple constituencies. The University is subject to accreditation reviews for both individual disciplines and the University as a whole. In addition, students, alumni and other external partners register their response to institutional performance through alumni surveys, student focus groups, and donations.

## II-9 Organizational Structure



## II-10 Expenditure/Appropriations Chart

### Accountability Report Appropriations/Expenditures Chart

#### Base Budget Expenditures and Appropriations

Major Budget Categories	FY 09-10 Actual Expenditures		FY 10-11 Actual Expenditures		FY 11-12 Appropriations Act	
	Total Funds	General Funds	Total Funds	General Funds	Total Funds	General Funds
Personal Service	\$41,055,908	\$21,832,901	\$37,084,252	\$16,261,216	\$33,877,189	\$19,847,952
Other Operating	\$18,471,107	\$5,931,761	\$16,732,175	\$5,379,727	\$15,923,167	\$203,706
Special Items						
Permanent Improvements						
Case Services						
Distributions to Subdivisions						
Fringe Benefits	\$14,229,777	\$7,100,051	\$12,910,362	\$6,830,013	\$12,543,212	\$7,615,170
Non-recurring						
<b>Total</b>	<b>\$73,756,792</b>	<b>\$34,864,713</b>	<b>\$66,726,789</b>	<b>\$28,470,956</b>	<b>\$62,343,568</b>	<b>\$27,666,828</b>

#### Other Expenditures

Sources of Funds	FY 09-10 Actual Expenditures	FY 10-11 Actual Expenditures
Supplemental Bills	\$285,000	
Capital Reserve Funds		
Bonds		

## II-11 Major Program Areas Chart

Major Program Areas

Program Number and Title	Major Program Area Purpose (Brief)	FY 09-10 Budget Expenditures	FY 10-11 Budget Expenditures	Key Cross References for Financial Results*
I.	Regulatory Services	<b>State:</b> 1,313,100.00 <b>Federal:</b> 945,320.00 <b>Other:</b> 3,254,062.00 <b>Total:</b> 5,512,482.00 <b>% of Total Budget:</b> 7%	<b>State:</b> 656,550 <b>Federal:</b> 809,956.00 <b>Other:</b> 3,819,201.00 <b>Total:</b> 5,285,707.00 <b>% of Total Budget:</b> 8%	
II.	Livestock Poultry Health	<b>State:</b> 2,621,316.00 <b>Federal:</b> 2,401,645.00 <b>Other:</b> 574,192.00 <b>Total:</b> 5,597,153.00 <b>% of Total Budget:</b> 8%	<b>State:</b> 2,490,250.00 <b>Federal:</b> 2,810,467.00 <b>Other:</b> 1,091,435.00 <b>Total:</b> 6,392,152.00 <b>% of Total Budget:</b> 10%	
III.	Agricultural Research	<b>State:</b> 15,191,839.00 <b>Federal:</b> 5,033,049.00 <b>Other:</b> 4,598,911.00 <b>Total:</b> 24,823,799.00 <b>% of Total Budget:</b> 34%	<b>State:</b> 12,352,362.00 <b>Federal:</b> 5,032,682.00 <b>Other:</b> 5,418,216.00 <b>Total:</b> 22,803,260.00 <b>% of Total Budget:</b> 34%	
IV.	Cooperative Extension	<b>State:</b> 15,729,161.00 <b>Federal:</b> 8,736,089.00 <b>Other:</b> 13,276,812.00 <b>Total:</b> 37,742,062.00 <b>% of Total Budget:</b> 51%	<b>State:</b> 12,971,794.00 <b>Federal:</b> 9,286,996.00 <b>Other:</b> 9,986,880.00 <b>Total:</b> 32,245,670.00 <b>% of Total Budget:</b> 48%	
V.	State Energy	<b>State:</b> 9,296.38 <b>Federal:</b> <b>Other:</b> <b>Total:</b> 9,296.38 <b>% of Total Budget:</b> 0%	<b>State:</b> <b>Federal:</b> <b>Other:</b> <b>Total:</b> 0 <b>% of Total Budget:</b> 0%	

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

Remainder of Expenditures:	<b>State:</b> <b>Federal:</b> <b>Other:</b> <b>Total:</b> <b>% of Total Budget:</b>	<b>State:</b> <b>Federal:</b> <b>Other:</b> <b>Total:</b> <b>% of Total Budget:</b>
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\* 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.

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## Section III – Elements of Malcolm Baldrige Award Criteria

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### III-1 Leadership

Clemson University is committed to achieving the goals first set forth by its founder, Thomas Green Clemson, who envisioned an institution dedicated to the people of South Carolina; a place dedicated to laying the foundation for the future of the state, driving change, and leading the way for generations.

The underlying philosophy of Public Service Activities has, and will always be, assisting the people of South Carolina, primarily with agricultural issues, but also with any issue under our focus areas. As Mr. Clemson requested, our leadership is built on our relationship with South Carolina citizens. Under the experienced leadership of Vice President John Kelly and Associate Vice President George Askew, our organization is focused to provide research and outreach in PSA's five areas of service.

#### ♦ 1. *Leader communication*

In May 2011, Vice President John Kelly assigned daily management of PSA to Dr. George Askew, Associate Vice President, PSA. Dr. Askew established monthly meetings with PSA administrators and bi-annual planning/progress meetings with representatives of all of PSA leadership. These meetings share efficiencies, initiatives and results of projects.

PSA faculty and staff are encouraged to share their opinions and interests with the senior leadership through formal meetings held across the state at Experiment Stations, or through informal mechanisms. Senior leaders regularly travel around the state, participating in meetings with PSA stakeholders (see Section II-3), faculty and staff to elicit ideas for improving performance.

#### ♦ 2. *Leader focus on customers and other stakeholders*

PSA leaders serve on multiple state and regional committees and organizations that are addressing the needs of the state's citizens. In addition, faculty and staff also participate across multiple arenas to gather information on current issue and concerns. For example, PSA leaders serve on multiple state and regional committees and organizations that address the needs of the state's citizens. In addition, faculty and staff participate in state and regional organizations to gather information on current issues and concerns.

#### ♦ 3. *Impact on the public*

Through annual operational planning, PSA follows a simple strategic project management philosophy.

1. **Consensus building** and broad-based public relations activities precede the introduction of new programs in the state. Internally, initiatives must align with the stated goals of the unit and must have measurable outcomes.
2. **Peer review** of research is conducted internally, externally, and at the federal level. Research must meet stringent requirements when involving human and animal subjects or recombinant DNA.
3. **Feedback loops** are vital to PSA. Its advisory system, a close working relationship with appropriate leaders at the local, state, and federal level, provides feedback on the impact of programs.
4. **Satisfaction surveys** are conducted regularly and are detailed in Category 3-Customer Focus. These surveys along with more informal information-gathering techniques provide a continual source of feedback. This feedback is used to address the current and potential impact of PSA activities on the public.



#### ◆ 4. *Maintaining fiscal, legal, and regulatory accountability*

As a part of Clemson University, PSA leadership relies on the various offices within the University and within PSA to ensure that all aspects of the organization are in compliance. The organization is well equipped to monitor and maintain fiscal, legal, and regulatory requirements. The University's Internal Auditing Office undertakes annual audits of rotating areas within our organization. The findings are submitted to the Vice President of PSA for review and action. Finally, initiatives across the state are undertaken with appropriate approvals at the local level, such as city governments or school districts.

#### ◆ 5. *Key performance measures*

PSA is unique in the breadth and depth of services offered in multiple locations across the state. An organization this large has many levels, with each level having very specific responsibilities, but also a level of independence in setting expectations. However, measures exist that are considered key to the overall "health" of the organization. By unit, they include the following:

- Clemson Cooperative Extension Service
  - Number of client interactions
  - Programs offered and participation frequency
  - Percent knowledge gained due to program participation
  - Acres of SC farm and forest land affected by programs
  - Volunteer hours and contributions
- Clemson Experiment Station
  - Number of proposals processed
  - Amount of grants funded
  - Number of disclosures (official announcement of potential invention)
  - Number of patent applications or awards
  - Number of technical papers and contributions published
- Livestock-Poultry Health
  - Disease-free status
  - SC livestock premises registered
  - Maintenance of National Veterinary Services Laboratory and American Association of Veterinary Laboratory Diagnosticians laboratory accreditation
  - Maintenance of equivalency with USDA-Food Safety and Inspection Service standards
- Regulatory Services
  - Number of phytosanitary certificates issued and accepted without problem
  - Number of nurseries inspected and certified to ensure freedom from pests
  - Number of plant pest surveys conducted to detect and mitigate new pest introductions
  - Number of pesticide inspections for safe use
  - Number of Pesticide Applicator Licenses issued
  - Percentage of structural pest control operators found to be in compliance with regulations
  - Nutrient deficiency rate and number of fertilizer samples procured and analyzed
  - Percentage of Certified Seed Lots meeting standards
  - Percentage of personnel who have completed appropriate training according to Department of Homeland Security requirements

- Institutes
  - Number of proposals processed
  - Number of publications, both research and policy oriented
  - Other noteworthy accomplishments in Section I-2

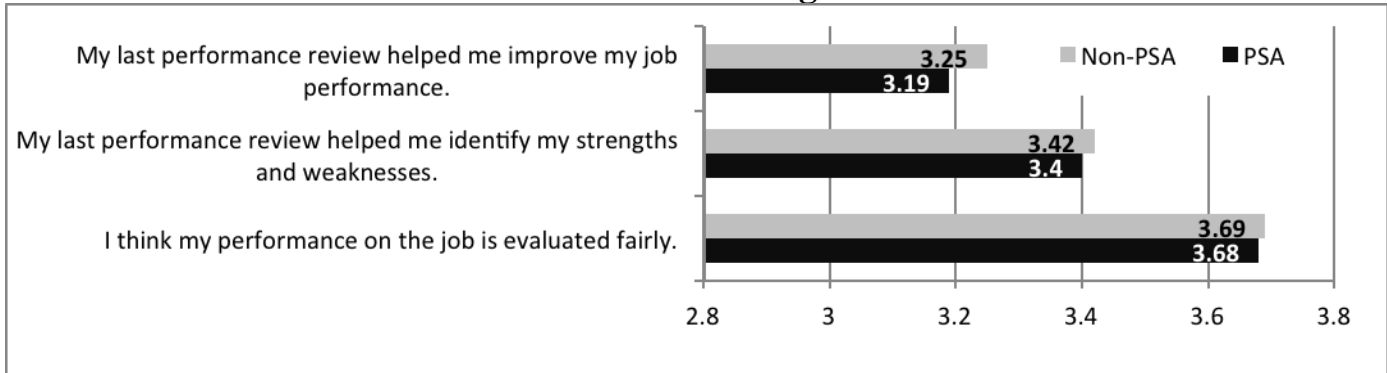
◆ **6. *Performance review and employee feedback***

An ongoing review of key performance criteria and employee feedback is used to improve leadership and management effectiveness.

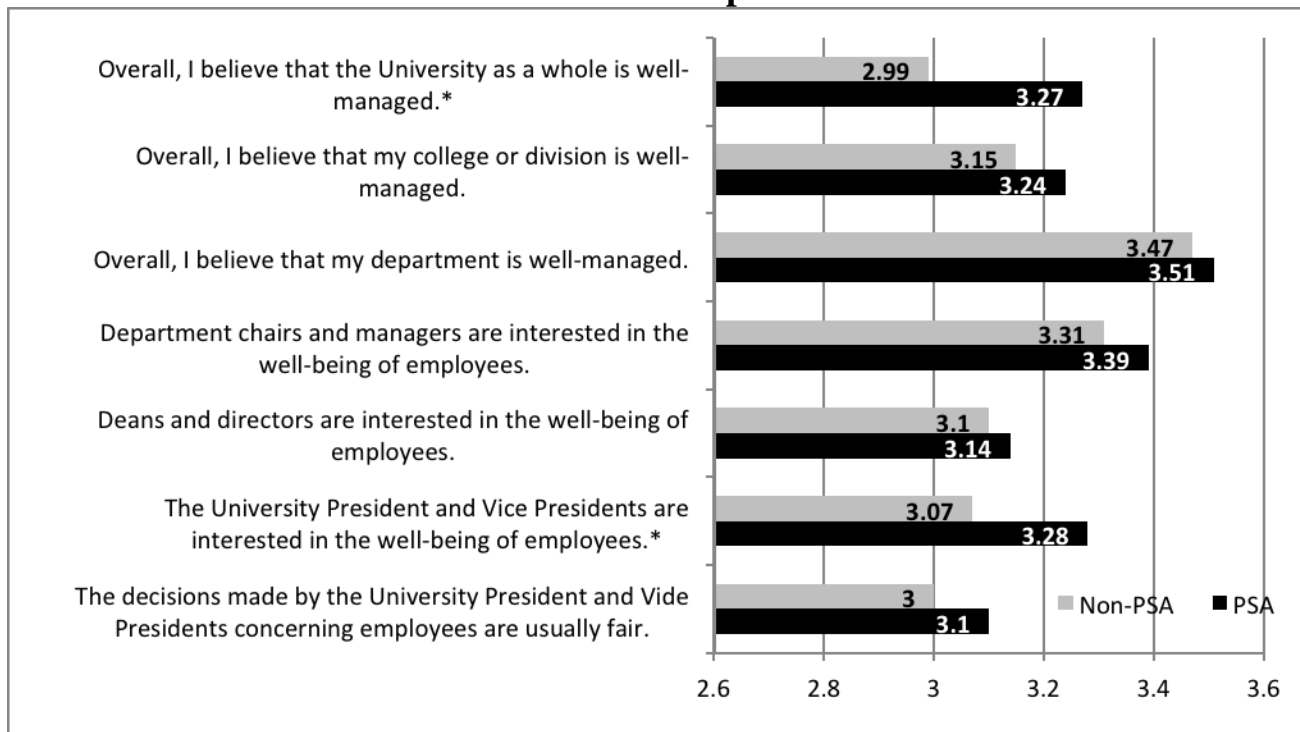
Faculty and staff have always exercised their privilege to have an open dialogue with the administration. The most powerful use of the policy has been their collective strength through the Faculty and Staff Senate organizations. These organizations represent their respective area in all concerns ranging from working conditions to compensation. Through their elected representatives, these organizations report their concerns and comments to the President on a regular basis.

In 2009, both the faculty and staff were surveyed. PSA leadership, performance management, training, and other areas scored high among staff (see graph). The faculty survey was organized by colleges but PSA faculty was not separately identified.

## Performance Management



## Leadership



\*PSA Personnel response scores significantly higher than other University personnel

### ♦ 7. Succession planning and leadership development

- **Professional development** opportunities are promoted and advocated through announcements in newsletters, emails, and directors' meetings. Senior leadership strongly recommends including professional development goals in the annual employee evaluation process.
- **Mentoring** is also important and occurs through research partnerships between senior and junior faculty.
- A **succession plan** was developed in 2005 and updated in 2009 and 2011.

### ♦ 8. Performance improvement, accomplishment of strategic objectives and innovation

Senior leaders encourage employees to pursue lifelong learning and to achieve their potential through individual performance goals and evaluations, providing each employee with an opportunity to discuss his or her own goals and concerns.

Innovation is essential to the growth and success of PSA, and many employees come to work with us because the environment facilitates innovative thought. New initiatives work their way up from individuals to their departments, to the PSA unit, and opportunities for researchers to earn internal innovation funds often lead to full proposals to external partner agencies.

Several publications highlighting achievements from the various faculty and staff from all areas within PSA are published on a regular basis. These publications go to great lengths to highlight the innovative, ground-breaking and unique contributions of our employees. Our websites, hosted by the department, unit or organization, identify accomplishments by our employees. A number of awards for various achievements are made each year. These examples and others too numerous to mention establish an environment for improved performance and recognition for that performance.

#### ♦ **9. Organizational and workforce learning**

Within PSA, there are multiple opportunities for professional and personal development that allow employees to learn about and participate in PSA initiatives. PSA personnel regularly volunteer with other units, for example, the Botanical Garden relies on volunteers to clear areas within the forest as well as to staff the semi-annual plant sales. Internal and external opportunities for professional development are encouraged, pending available funding. Senior leaders encourage this involvement by actively marketing these opportunities and enabling staff to take advantage of them with flex-time.

#### ♦ **10. Engaging, empowering, and motivating the workforce**

The office of the Associate Vice President for PSA and his leadership staff use the following as only a few of the mechanisms for establishing a collaborative, empowered, and motivated workforce:

- **Website** – the PSA website staff regularly updates the PSA home page ([www.clemson.edu/public/](http://www.clemson.edu/public/)) with stories that highlight the activities of personnel from across the state.
- **Impacts** – the PSA newsletter is published twice per year, both hard copy and electronically, to an audience of 20,000 with information from the Administration as well as informative articles that highlight accomplishments in each of PSA's units ([www.clemson.edu/impacts/](http://www.clemson.edu/impacts/)).
- **Radio** – The “Your Day” program has aired on public radio for 10 years and broadcasts interviews with local, state, and national experts on a variety of issues affecting South Carolinians (<http://yourday.clemson.edu/>).
- **PSA Conference** – The Associate Vice President's office hosts an annual conference, when funds allow, that informs PSA faculty and staff about important issues, as well as concerns that employees have voiced. This conference is scheduled for December 2011.

When funds are available, employees may be awarded a salary increase based on merit without consideration of any cost-of-living increase that is mandatory for classified employees. Such requests for merit increases must include written justification and be approved by the Associate Vice President, the Vice President and the President.

#### ♦ **11. Supporting and strengthening communities**

PSA's mission is to assist South Carolinians in making informed decisions that will improve their lives, their communities, and their state. PSA accomplishes this by developing new knowledge through research and then applying that knowledge in communities where it has a positive impact. In addition, community support is also demonstrated through participation on, or interaction with, local, regional, and state boards. A limited set of examples includes:

State Enterprise Architecture Oversight Committee  
State Extension Advisory Committee  
Education and Economic Development Act

SC Association of Counties  
SC Farm Bureau Federation  
Shoreline Policies Advisory Committee

Ocean Planning Task Force  
SC Department of Education Task Force on Revenue  
and Funding  
United Way of the Midlands Early Childhood  
Council

Southern Association of Agricultural Scientists  
SC Forestry Association  
SC Biotechnology Alliance  
SC Commodity Boards (crops & livestock)  
Palmetto Partners

As mentioned earlier, senior leaders value the service contributions made by their faculty and staff because it is considered essential to understanding our primary customer – the South Carolina citizen.

## III-2 Strategic Planning

Strategic planning within PSA is an ongoing process that includes all levels of the organization. It starts at the top with PSA leadership and is communicated throughout the organization via a number of processes.

### ♦ 1. *Strategic planning process*

PSA is committed to taking a leadership role in addressing challenges and realizing opportunities in South Carolina. Points in the process include:

- **Establishment** of Clemson University's goals and priorities for the year through senior leadership meetings
- **Review** of University goals and priorities with PSA leadership to determine where the strengths of PSA, in alignment with its mission, can best set public service goals
- **Development** of unit and institute objectives into measurable statements
- **Input** from all PSA employees and consideration of previous stakeholder input when composing the plan that administration uses to chart the course
- **Feedback** is provided by employees to their directors, and to the PSA leadership. If appropriate, the plan is refined.

### ♦ 2. *Addressing strategic challenges*

Our strategic challenge is to maximize **discovery and delivery of new knowledge** through **science-based relevant research** leading to **discoveries specific to South Carolina's needs that are delivered** through the extension programs in our focus areas: advance the competitiveness of the agriculture and forestry industry, enhance the economic potential of rural communities, safeguard the food supply, preserve natural resources, and prepare young people to become productive citizens.

To accomplish our strategic challenge within the worst economic slump since the great depression (Willis, 2009: [www.bloomberg.com/apps/news?pid=20601110&sid=aJEEqW5QmJLg](http://www.bloomberg.com/apps/news?pid=20601110&sid=aJEEqW5QmJLg)) we continued our review of every program in PSA, making appropriate changes in light of 1) the 48% reduction (\$25 million cut) in state funding, 2) the state's needs, 3) the projected economic climate, and 4) the quest to minimize as much as possible the loss of services provided to our clients.

This year's strategy to deal with budget reduction is outlined in Section I-3.

### ♦ 3. *Developing and tracking action plans*

WEAVEonline® is a Web-based assessment management system that PSA participates in and which supports the SACS Standards for Accreditation. WEAVEonline® captures standard program-level assessment areas: mission, outcome/objectives, measures/findings, action plan, and analysis. It has expanded capabilities in linking to larger institutional perspectives within each program's outcomes/objectives. This system allows every department and unit at Clemson the opportunity to link to: general education competencies, professional accreditation standards, institutional priorities (goals), and institutional and college strategic plans.

Unit information is submitted to the Clemson University Office of Assessment. Each unit must complete an initial plan and a self-assessment of their efforts each year. At the end of a reporting period, each unit must report why they did or did not meet those objectives and explain what improvements they will make based on the results of that knowledge.

Information becomes a part of the strategic planning stage for PSA through assessment completion and review by unit heads and other administrators. PSA also uses the Clemson University Management Information System (CUMIS). This online system was developed for assessment reporting to the US Department of Agriculture. It collects and tracks data for the Clemson University Cooperative Extension Service, including number of programs conducted, number of participants completing programs, knowledge gain, and adoption of practice as a result of participation.

Allocation of resources for the subsequent fiscal years can be based on whether or not the goals were accomplished, or if satisfactory progress has been made to justify continuation. The evaluation process seeks to ensure that new initiatives receive appropriate funding. All appropriate sources of revenue, state, federal, and sponsored activities are used to accomplish the plan.

#### ◆ **4. Communication and deployment**

As noted in III-2.1 above, the strategic planning process is an inclusive process, with experienced senior leadership, in conjunction with input from employees and stakeholders, determining PSA's goals.

Communication to PSA faculty and staff occurs through multiple opportunities, both formal and informal.

- **PSA Administrators Meetings** – Section III-1.1 details the periodicity and function of these meetings.
- **Presentations** – To increase efficiency, presentations are made across the PSA locations via video conference; additional presentations are made in person as schedules and travel funds permit.
- **Printed media** – *Impacts* newsletter regularly reports on PSA efforts to meet annual objectives.
- **Websites** – Efforts have increased to make more information available on PSA websites, with a current initiative underway to standardize the content management of the sites.

#### ◆ **5. Measuring progress on action plans**

This process begins with individuals accounting for their progress on their own employment goals. These individual goals have been related to unit and agency goals. If an identified goal is not fully complete, an evaluation of progress towards completion is made on each objective.

PSA administrators then report to the Associate Vice President on the achievement of unit-specific assignments and, as with individuals, evaluation of progress is made on each objective.

Finally, the Associate Vice President reports to the Vice President Economic Development's office on PSA's achievements. The Vice President reports to the President of Clemson University.

#### ◆ **6. Evaluating and improving the strategic planning process**

The Associate Vice President's office and the PSA Accountability Office solicit feedback on the process throughout the fiscal year.

#### ◆ **7. Strategic plan availability**

PSA recognizes the importance that the Internet plays in today's society. PSA does not currently place the strategic plan on its website, but efforts to inform the public can be found in PSA's website [www.clemson.edu/public/](http://www.clemson.edu/public/) and in *Impacts* newsletter.

#### ◆ **Strategic Planning Chart**

*Please note that the Strategic Challenges identified in Section III.5 are nested in the Initiatives below.*



Program Number and Title	Supported Agency Strategic Planning Goal/Objective	Related FY 10-11 and beyond Key Agency Action Plan/Initiative and Timeline	Key Cross References for Performance Measures*
I. Agricultural Research (Experiment Station)	<p>Advance the competitiveness of the agriculture and forestry industry</p> <p>Enhance the economic potential of rural communities</p> <p>Safeguard the food supply</p> <p>Preserve natural resources</p> <p>Prepare young people to become productive citizens.</p>	<p>Timeline: note the Experiment Station timeline is based on a five year rolling NIFA (USDA) annually updated Plan of Work that continues from year to year.</p> <ol style="list-style-type: none"> <li><b>Sustainable Animal Production Systems</b> – Conduct research to improve the health &amp; productivity of livestock &amp; poultry in SC Increase the number of technical papers &amp; presentations. Focus on transferring technology in emerging areas such as forage-fed beef.</li> <li><b>Sustainable Horticultural Crop Systems</b> – Improve the productivity &amp; profitability in the horticultural crops, fruits, vegetables, turfgrass &amp; ornamentals. Increase the number of technical papers &amp; presentations. Focus on transferring technology in emerging areas such as pest management &amp; genetically modified crops.</li> <li><b>Sustainable Agronomic Crop Systems</b> – Improve the productivity &amp; profitability in all the major agronomic crops, soybeans, grains, &amp; cotton. Increase the number of technical papers &amp; presentations. Focus on transferring technology in emerging areas such as peanut production, pest management, &amp; genetically modified crops.</li> <li><b>Agricultural Biotechnology</b> – Utilize molecular technology to address issues of practical importance to agriculture. Increase the number of technical papers &amp; presentations. Focus on transferring technology in emerging areas such as animal &amp; plant production systems.</li> <li><b>Community, Leadership, and Economic Development</b> – Conduct research to enhance economic opportunities &amp; improve the quality of life for South Carolinians. Assess local labor markets and quantify spatial dynamics. Evaluate opportunities &amp; threats to rural markets.</li> <li><b>Forestry and Natural Resources</b> – Develop models to understand the hydrology of SC's coastal plain to improve development. Evaluate forest management practices to decrease fuel burns. Evaluate new methods to manage timber for improved wildlife management. Research soil properties &amp; their relationship to urban land use properties on lawns &amp; golf courses.</li> <li><b>Food Safety, Nutrition and Human Health</b> -- Develop nanotechnology applications for food safety &amp; quality; seek new methods to control harmful microbes in foods; emphasize effects of plant-based foods on health and nutrition. Increase collaboration with MUSC to evaluate health benefits of plants. Increase the number of technical papers &amp; presentations.</li> <li><b>Water Quality and Quantity</b> - Conduct research programs focused on developing strategies for economically viable land use to coexist with good water quality, &amp; identifying wetland &amp; watershed management practices to improve water quality &amp; wetland and aquatic</li> </ol>	7.0, 7.1

		wildlife habitat. Increase the number of technical papers & presentations.	
II Cooperative Extension	<p>Advance the competitiveness of the agriculture and forestry industry</p> <p>Enhance the economic potential of rural communities</p> <p>Safeguard the food supply</p> <p>Preserve natural resources</p> <p>Prepare young people to become productive citizens.</p>	<p><b>1. Sustainable Management of Forest Resources and Forest Systems</b> - At least 80% of the foresters &amp; landowners will report a gain in knowledge as a result of participating in sustainable forest &amp; natural resource programs by the end of the fiscal year.</p> <p><b>2. Sustainable Horticultural Crop Production</b> – At least 80% of the persons completing sustainable horticultural programs will report a gain in knowledge &amp; skills by the end of the fiscal year.</p> <p><b>3. Sustainable Agronomic Crop Production</b> – At least 80% of the persons completing sustainable agronomic programs will report a gain in knowledge &amp; skills by the end of the fiscal year.</p> <p><b>4. Livestock and Forages</b> – At least 80% of the persons completing livestock &amp; forages programs will report a gain in knowledge and skills by the end of the fiscal year.</p> <p><b>5. 4-H, Youth Development and Families</b> – At least 80% of the youth ages 9-19 will demonstrate skills learned as a result of participating in 4-H projects by the end of the fiscal year.</p> <p><b>6. Volunteer Development</b> - At least 500 volunteers will be trained &amp; will conduct programs, serve on boards, committees, county organizations, &amp; in cooperative relationships to establish, revitalize, improve, and/or expand the scope of youth &amp; families programming efforts by the end of the fiscal year.</p> <p><b>7. Food Safety and Nutrition</b> – At least 70% of the people completing food safety &amp; nutrition programs will report a gain in knowledge by the end of the fiscal year.</p> <p><b>8. Economic and Community Development</b> – At least 80% of the participants who complete Community, Leadership &amp; Economic Development (CLED) programs will report knowledge gained by the end of the fiscal year.</p>	7.0, 7.2

<p>III. Livestock- Poultry Health</p>	<p>Advance the competitiveness of the agriculture and forestry industry</p> <p>Enhance the economic potential of rural communities</p> <p>Safeguard the food supply</p> <p>Preserve natural resources</p>	<ol style="list-style-type: none"> <li><b>1. Animal Health Programs</b> – Protect animal &amp; public health through control of endemic, foreign, &amp; emerging diseases; enforce state and federal animal health laws &amp; regulations by monitoring interstate movement of animals &amp; inspecting livestock auction markets; expand traceability system designed to enhance animal disease control, surveillance, &amp; eradication programs.</li> <li><b>2. Meat/Poultry Inspection Program</b> - Regulate state meat/poultry plants; protect the health of consumers by providing a comprehensive inspection service to ensure that meat &amp; poultry products are safe, wholesome &amp; accurately labeled.</li> <li><b>3. Veterinary Laboratory</b> - Provide accurate &amp; timely veterinary diagnostic &amp; surveillance testing for early detection of disease, thus improving the response activities &amp; mitigating economic losses; maintain AAVLD accreditation; meet NVSL accreditation standards &amp; criteria for technicians to be proficiency certified.</li> </ol>	<p>7.0, 7.3</p>
<p>IV. Regulatory Services</p>	<p>Advance the competitiveness of the agriculture &amp; forestry industry</p> <p>Enhance the economic potential of rural communities</p> <p>Preserve natural resources</p>	<p>Timeline: note Regulatory Services timeline is based on mandates that continue from year to year.</p> <ol style="list-style-type: none"> <li><b>1. Regulation of Structural and Ornamental Pesticide Applications</b> – Ensure the safe &amp; legal use of pesticides by the structural &amp; turf/ornamental pest control industries.</li> <li><b>2. Pesticide Regulation</b> - Monitor the use of pesticides in South Carolina to ensure their safe &amp; effective use &amp; prevent harm to humans, plants, animals, &amp; the environment.</li> <li><b>3. Fertilizer Regulation</b> – Ensure the quality of fertilizer, lime, &amp; soil amendments distributed to end users in SC by verifying that they meet label guarantees &amp; are free of contaminants.</li> <li><b>4. Plant Pest Regulation</b> - Prevent &amp; control introduced plant pests/invasive species &amp; pests of honeybees &amp; certify freedom from plant pests for the nursery, greenhouse, &amp; transplant industries.</li> <li><b>5. Plant Diagnostics</b> –Analyze samples for plant pests &amp; diseases &amp; provide results &amp; recommendations to clients.</li> <li><b>6. Seed and Organic Certification</b> – Apply official quality &amp; purity standards in the certification of eligible seeds &amp; plants produced in SC Provide USDA –NOP accredited certification services for organic producers, processors, &amp; handlers who seek certification through our agency.</li> <li><b>7. Emergency Preparedness and Response</b> – Collaborate with other state agencies to develop alert systems &amp; response plans for exotic plant pests &amp; diseases. Conduct training exercises for state &amp; local responders to ensure readiness. Conduct targeted surveys for potential threats to plant agriculture.</li> </ol>	<p>7.0, 7.4</p>

## III-3 Customer Focus

### ♦1. *Key customers and stakeholders*

More than 357,000 contacts were made by PSA units in 2010-11, which reinforces our core belief that our customers are the citizens – young and old, rich and poor, rural and urban – of South Carolina. According to program participation, assessment efforts, Internet traffic, and personal contacts, the key requirements are identified across our units.

- **Timeliness** – PSA customers expect assistance quickly, whether that response is a phone call, email, website, radio, training workshop or demonstration site.
- **Accuracy** – PSA must strive to provide only the most current and accurate information, keeping citizens in touch with the latest research, products, or safety requirements.
- **Practicality** – Customers expect information and services from PSA to be relevant to their needs and interests as South Carolinians.

### ♦2. *Keeping current with changing needs*

PSA was one of the first agencies to utilize the strength of the Internet for communicating with constituent groups. In addition, current efforts have utilized distance technologies such as video conferencing to make programs more accessible across the state. Agents, faculty members, and staff are constantly working to ensure communication remains open in all the traditional methods and new technologies.

### ♦3. *Customer access mechanisms*

- **Research and Education Centers and Extension Service County Offices** – PSA's physical presence across South Carolina provides important access points for many of our customers. All locations are staffed with professionals who are trained to utilize PSA resources to make sure accurate information is provided.
- **Public Boards and Meetings** – As stated earlier, PSA professionals serve the state through appropriate boards, commissions, task forces, grass-roots level county advisory councils, and research groups. This interaction provides a valuable access mechanism through which people can voice praise or concern about PSA operations.
- **Websites** – PSA maintains numerous websites to provide information 24 hours per day. Each website has contact information for additional details.

### ♦4. *Measuring satisfaction*

PSA has implemented assessment and accountability processes to evaluate the quality of services provided in all counties of the state. A customer satisfaction survey collects data from clients to determine ways to improve program quality, information delivery, and more importantly, customer service. These evaluations serve as an important part of our accountability efforts.

Four indicators (benchmarks) were identified to assess the quality and satisfaction of services provided: 1) up-to-date, useful, relevant, and easy to understand information, 2) the extent to which recipients had the opportunity to use the information, 3) the extent to which they have shared the information with others, and 4) the extent to which they are satisfied with the services provided.

### ♦5. *Building positive relationships*

Daily interaction, made possible by the location of PSA resources and personnel in every county, coupled with the delivery of information that is accurate, timely, and usable are the keys to positive relationships with customers and stakeholders. Industries, large business operations, and local governments require different levels of assistance than citizens who may have very specific individual needs.

For PSA, the top priority for positive relationships occurs through communication and collaboration across the 46 South Carolina counties.

## III-4 Measurement, Analysis, and Knowledge Management

### ♦1. *Determining measures*

- **Financial performance** is ensured by rigorous University and state accounting procedures.
- **Operational performance** is ensured through internal accountability measures, feedback from constituent groups, and state reporting requirements.
- **Unit performance** is ensured through assessment of initiatives that fit within PSA goal areas as well the University goals/emphasis areas. These units have established processes to determine their success in addressing the needs of their customers/stakeholders.
- **Personnel performance** is ensured through the state's Employee Performance Management System process as well as internal opportunities for professional development, occupational health and safety, and adherence to state hiring practices.

### ♦2. *Using data/information in decision-making*

The PSA Office of Accountability works in coordination with the Associate Vice President's office, as well as with the unit directors, to outline data requirements:

- Data is collected through PSA's network of information systems (survey instruments, advisory board sessions, focus groups, etc.).
- PSA's Accountability Office synthesizes the information, aligns results with strategic goals, and submits reports that are distributed to the Directors and the PSA leadership.
- Financial reports are merged with the assessment data upon request by the Chief Financial Officer for the directors and the PSA leadership team.

### ♦3. *Key measures*

Key measures have been identified in Section III-1 and on the Strategic Planning Chart. The PSA leadership team regularly reviews objectives and initiatives throughout the year as projects are discussed. Adaptations are made mid-year if appropriate.

### ♦4. *Comparative data use*

PSA maintains numerous information systems related to the operational aspects noted in III.4.1 above. Through these systems, data may be obtained to compare performance across multiple years, departments, and individuals. As much as appropriate, external comparisons from other public service agencies at land-grant institutions are also used.

### ♦5. *Data integrity, timeliness, accuracy, security and availability*

To the extent possible, the authenticated data source is used for all PSA information; for example, financial reports are pulled from audited financial data not from self-reported information. In addition, efforts to gather data from multiple sources provide valuable checks on achievement of objectives.

Those responsible for collecting and reporting data communicate with personnel to remind them to enter data in a timely manner. In order to ensure data is secure, both the University and PSA systems are protected by requiring passwords and using firewalls.

♦6. *Translating performance review findings into continuous improvement priorities*

PSA units submit via WEAVE™ annual plans containing objectives for the reporting period. At the end of the reporting period, the plans are compared to the results. The units submit the findings and action plans to meet any unmet measures using the WEAVE™ database.

♦7. *Organizational knowledge / best practices*

Policy and procedure manuals containing best practices exist to ensure employees are aware of federal and state laws and regulations pertaining to a given process, as well as of Clemson University's specific policies and procedures.

In addition, PSA faculty and staff participate in conferences, meetings, and technical presentations where they learn new practices and determine how appropriate changes can be integrated in PSA to improve efficiency and effectiveness.

## III-5 Workforce Focus

PSA maintains an Office of Staff Development to ensure that PSA staff members are trained to meet the needs of their profession and achieve their potential. PSA's Business Services works with Clemson University's Office of Human Resources for all employee policies and procedures. Commitment to our employees is best exemplified in the Human Resources Philosophy:

### **Clemson University Human Resources Philosophy**

Clemson University's mission, as an agency of the State of South Carolina, is to serve the State and its people through teaching, research, and public service. Clemson is committed to the following fundamental beliefs:

1. To continually seek the highest degree of excellence possible. Employees, individually and collectively, must be committed to the goal of excellence in the performance of their duties.
2. To treat every employee fairly, ensuring that respect for the individual dignity and worth of each is maintained regardless of position and that no employee or applicant for employment is discriminated against because of race, sex, national origin, handicap or veteran status.
3. To provide the kind of open and honest leadership that fosters faith and confidence in management, expecting all those who supervise the work of others to treat those under their direction as they would want to be treated.
4. To provide free and open channels of communication for employees at all levels and to handle complaints of employees promptly and fairly.
5. To provide each employee with worthwhile and honest work with competitive wages and benefits and safe working conditions which are as convenient and pleasant as possible.
6. To provide every possible opportunity for self-improvement and advancement at the University.

These six statements of basic personnel philosophy are indivisible. Together they express the basic human resource management philosophy of Clemson University.

♦1. *Organization and measurement of work*

PSA senior leadership recognizes the strength that comes with experienced and well-prepared workforce. Professional development is a priority, whether in a small on-campus class to learn a new software package or through internal and external professional development opportunities. Support is offered individually, with the development of teamwork and innovation within and across units.

♦2. *Evaluating human resource related processes*

The evaluation of human resource related processes is a part of the Employee Performance Management



System process (EPMS) that takes place each year. Our employees are required to establish a planning stage in concert with the supervisor. An interview takes place to discuss the actual performance and open dialogue is encouraged as part of that interview. Objectives for the new assessment period are discussed.

### ◆3. *Recruiting, hiring, placing, and retaining employees*

PSA faces the same opportunities and challenges as all state agencies in tough economic times – balancing potential budget cuts with the need to perform required services. Recruitment and hiring follow the specified state guidelines for advertising and classification. Placement within PSA is completed as part of the classification process to ensure qualified specialists are located in their local service areas, understanding that the mission of PSA may require many professionals to travel across South Carolina.

Retention of exceptional employees is of paramount importance to PSA leadership, who recognize the time, effort, and funds required to bring in new personnel. Efforts are made with staff to offer non-monetary benefits that interest employees, such as flex-time, professional development opportunities, mentoring, and continuing education.

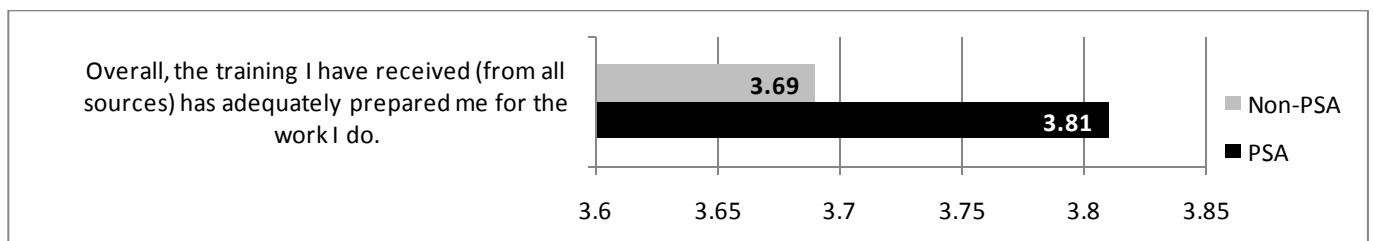
### ◆4. *Assessing workforce capability and capacity needs*

The Office of Human Resources conducts a needs assessment survey for each University unit to ascertain training needs. From the information gathered, sessions are scheduled specific to unit needs. OSHA training is done in accordance with regulations. New employee orientation is offered to each new staff member online and using synchronous distance technology, as well as through meetings with HR personnel.

New Extension employees are encouraged to complete a web-based New Employee Orientation. Employees are encouraged to participate in self-paced learning through e-Xtension. Additional training is offered through Adobe Connect and electronic newsletters.

In addition, the 2009 staff survey revealed that PSA staff view themselves as recipients of training that prepares them for their work.

## Training



### ◆5. *Supporting high performance*

Communication during the **planning phase** of the process sets expectations, and employees provide input into formulating annual objectives.

The **evaluation phase** includes not only a category for meeting the expectations, but also one for exceeding and one for substantially exceeding. The possibility of achieving a higher rating for work that is accomplished encourages performing at a higher level.

**Performance pay** is also tied to the evaluation process and surveys have shown it to be a strong incentive for higher level performance, although this incentive has not been funded recently in state appropriations.

#### ♦6. *Development and learning system for leaders*

PSA provides in-service training programs for all employees, divided into three categories:

- **Subject Matter** - Extension specialists and initiative teams develop subject matter trainings each year for agents to keep them up-to-date in the various program areas. Required sessions include Ethics and Regulatory Compliance.
- **Professional Development** (which includes orientation) - A variety of professional development trainings are offered each year on topics such as grant writing, diversity, developing partnerships, developing survey instruments, etc. An orientation program is in place which includes an introduction to the Cooperative Extension Service and additional trainings in civil rights and program development.
- **Technology** – Training is offered to cover the use of many computer programs. In addition, the professional associations related to PSA offer trainings and updates at both the state and national levels.

#### ♦7. *Identifying key developmental training needs*

The University Office of Assessment, in coordination with the Office of Human Resources, regularly surveys PSA and University employees to elicit ideas for training. There is a regular set of training programs ([www.clemson.edu/faculty-staff/training.html](http://www.clemson.edu/faculty-staff/training.html)) that are offered both in class settings and online. Classes that are in higher demand are offered more often to meet employee needs.

#### ♦8. *Encouraging on the job use of new knowledge and skills*

Unit directors are strongly encouraged to use the planning stage of the EPMS process to tie new skills to new objectives, following through to evaluate achievement of objectives. In addition, many directors require that new skill application be a requirement for travel; employees may be asked what they will learn before being allowed to travel.

#### ♦9. *Employee training linkage to action plans*

The training offered through the University focuses on areas that can assist employees in improving their technology skills, important aspects of most goals areas. In addition, because employees are involved in their own evaluation process and in setting objectives, their training and knowledge are inextricably tied to PSA's plans and outcomes.

#### ♦10. *Evaluating effectiveness of workforce and leader training*

The University Office of Assessment, in coordination with the Office of Human Resources, surveys PSA and University employees to elicit ideas for training. In addition, each training session includes an assessment of the training including the ability of the instructor, the ability to use the knowledge learned, and interest in additional training. The Extension Staff Development Office regularly administers an assessment to determine training needs.

#### ♦11. *Motivating the workforce*

PSA has a number of incentive and awards programs to support employees within the system. An innovative Distinguished Agent position was created which is reserved for those agents who perform at the highest level. Each professional organization that is tied to Extension - such as the County Agricultural Agents, Family and Consumer Sciences Agents, 4-H Agents, Extension Secretaries, and Epsilon Sigma Phi, have awards programs to promote excellence in programming efforts. Three Superior Performance Awards are sponsored for agents and faculty as is an Outstanding Service Award for classified staff. In addition, the Clemson University Alumni Association sponsors the Distinguished Service Award each year for excellence in Public Service.

The prestigious Godley-Snell Award for Excellence in Agricultural Research is given each year to an individual scientist or a team of scientists whose research accomplishments benefit the citizens of South

Carolina, the region, or the nation. This work exemplifies efforts to enhance the public trust in science and to increase the public's knowledge of the benefits of agricultural research.

#### ♦ 12. *Assessment of workforce well-being, satisfaction, and motivation*

The Office of Human Resources conducts a needs assessment survey for each University unit to ascertain areas of concern for employees. Satisfaction is assessed within departments, and employees are able to move within PSA if appropriate positions come available.

Grievances are evaluated by the Faculty and Staff Ombudsmen on an individual basis and solutions are sought in conjunction with the appropriate employees and supervisors, Human Resources, General Counsel, and unit directors.

#### ♦ 13. *Managing career progression and succession planning*

- **Professional development** opportunities are promoted and advocated through announcements in newsletters, emails, and directors' meetings. Senior leadership strongly recommends including professional development goals in the annual employee evaluation process.
- **Mentoring** is also important and occurs through research partnerships between senior and junior faculty.

#### ♦ 14. *Maintaining a safe and healthy work environment*

PSA complies with all state and federal work environment regulations as overseen by the Clemson University Office of Environmental Health and Safety.

The Office of Human Resources (OHR) ensures compliance with the Drug Free Work Force Act by annual distribution and enforcement of the Employee Drug and Alcohol policy. OHR also ensures compliance with the Department of Transportation regulations governing training and drug testing of employees who are required to have a commercial driver's license. An Employee Assistance Program provides confidential assistance/referral for employees experiencing personal difficulties.

The University and PSA focus on encouraging safe work environment/habits. Ergonomics specialists on staff will provide recommendations for improving workstations and the University Wellness Center provides health programs and services at little or no cost to employees. These programs include, in part, recommendations for weight loss, improving diet, and lifestyle changes. Individual PSA units have a variety of complementary approaches in the safety area to include training in pest management for employees, safety compliance officers who stress safety in laboratory areas, and regular inspections of facilities and equipment.

### III-6 Process Management

#### ♦ 1. *Core competencies*

The design of program initiatives is built around a four-step process:

- **Needs assessment** – based on customer comments, emerging research, University goals, and comparable agencies
- **Relevance** - to PSA mission, relationship to past successful initiatives
- **Capacity** - personnel to fulfill required objectives, and availability of necessary facilities
- **Impact** - targeted towards the customer base and systematically updated

The design of the delivery systems is constantly affected by increased demand for services, new types of services, and new means of service delivery. PSA responds to changing customer needs through delivery of services via the Internet, satellite broadcasts, video conferencing, and public television and radio.

## ♦2. *Key work processes*

Feedback from program participants, annual evaluations of objectives and goals, and communication with constituent groups all are coordinated to determine the most “valued” services. PSA’s core competencies are the foundation on which goals and objectives are created and end of the year assessment ensures improvements are made in subsequent years.

## ♦3. *Incorporating efficiency and effectiveness measures into processes*

As noted in III.6.1 the processes that build PSA initiatives take into consideration multiple factors. It is the goal of PSA faculty and staff to seek new knowledge, to improve knowledge that already exists, and to use this knowledge to improve the lives of South Carolinians. Often, we find that it is new technology that increases efficiency and effectiveness, and our evaluations seek to determine the outcomes.

## ♦4. *Ensuring daily operation meets key performance requirements*

Communication is a key support process in the design, production, and delivery of products to customers. In addition, teamwork is an integral aspect of many PSA projects so that evaluation of progress on performance requirements is integrated from the bottom up to the Associate Vice President’s office. Occurring informally through intra-unit meetings and presentations, colleagues collaborate and contribute to each other’s success, thereby strengthening PSA programs and the overall performance of the agency.

## ♦5. *Evaluation and improvement of processes*

Evaluations have proven to be a reliable process to gauge how well we are meeting the needs of our customers. Our Extension Service uses evaluations for each of their workshops to determine if the training met the anticipated need of the participants. Periodic mail surveys are sent to Extension Service contacts to evaluate our overall service and to solicit suggestions for new and improved services.

Our contacts with industry and other government agencies allow us to use their feedback to monitor our usefulness to meet their needs. Our research is best judged by the number of grants awarded and the quality can best be measured by the number of publications our faculty produce, as well as the number of patents and licenses awarded. The outreach of this knowledge to our clients is accomplished by the Cooperative Extension Service, present in every county. The rapid identification, mitigation, prevention, and control of key agriculture pests; the quality of agrichemicals; the compliance with pesticide and plant industry laws and regulations, and animal disease-free status indicate the effectiveness of our regulatory programs.

## ♦6. *Key support processes*

As has been stated previously, communication and feedback from our staff, clients, and partners has been the key to achieve better performance. State, regional, and national meetings are frequently initiated or attended by key individuals in our organization to ensure that efforts are coordinated to minimize duplication while encouraging collaboration.

## ♦7. *Determining resources needed to meet obligations*

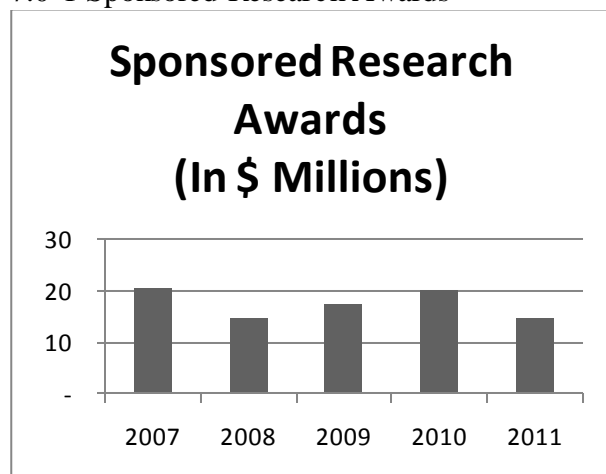
During the annual planning process, unit directors collaborate with their staff members to create and determine which initiatives will be prioritized for the coming year. Most units require that initiatives be proposed in conjunction with funding amounts and sources. As much as possible, external sources of funds are sought for research and development projects. Finally, PSA is fortunate to have a strong base of volunteers who offer their time for multiple projects across the state, thus saving the state thousands of dollars each year.

## III-7 Business Results

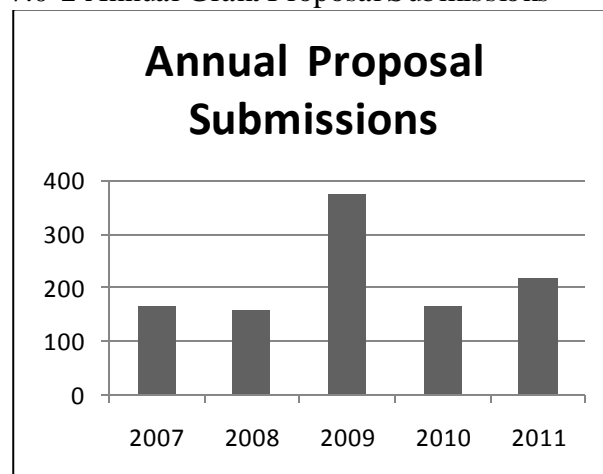
### 7.0 PSA Faculty Productivity Measures

As a leading land-grant public research institution, Clemson University highlights its federal grant activities. Sponsored Research Awards is a measure of faculty competitive grant funding activity. 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. This data is used in evaluating the productivity of faculty as well as determining PSA's contribution to Clemson University's sponsored research funding goals. The annual sponsored research awarded dollars (in millions) and the number of research grant proposals submitted by PSA faculty are shown in the two graphs that follow.

7.0-1 Sponsored Research Awards



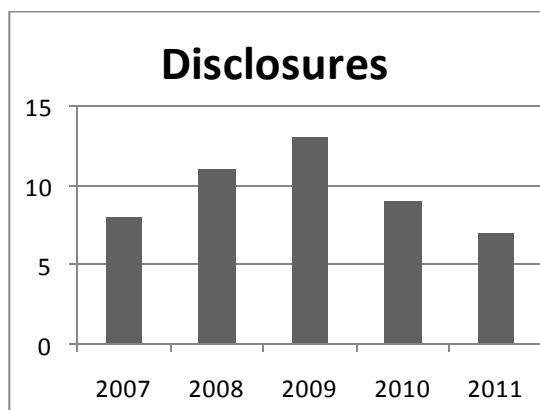
7.0-2 Annual Grant Proposal Submissions



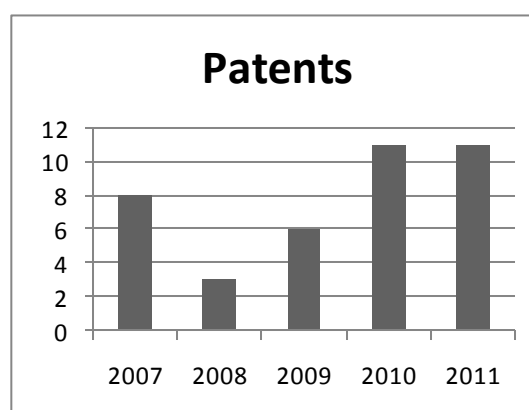
### 7.1 Agricultural Research (Experiment Station)

Patents and technical contributions demonstrate that the PSA faculty contributes to the body of knowledge in their areas of expertise. Patents indicate the merit and originality of discoveries submitted. Patents also have the potential to generate new economic activity through licensing and marketing. Disclosures are the first step in the discovery process leading to a patent. Data over time indicate that faculty is successful in inventing products as shown in the following graphs.

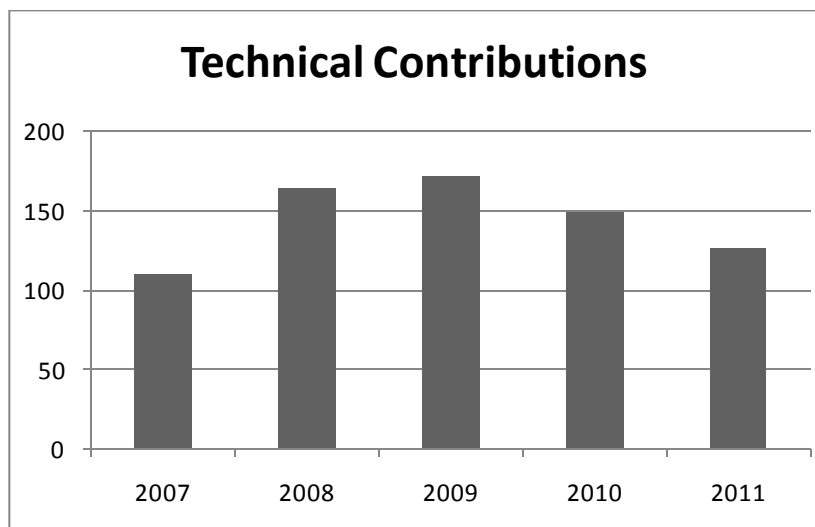
7.1-1 Patent Disclosures



7.1-2 Patent Applications Submitted



### 7.1-3 Technical Contributions by Experiment Station Faculty

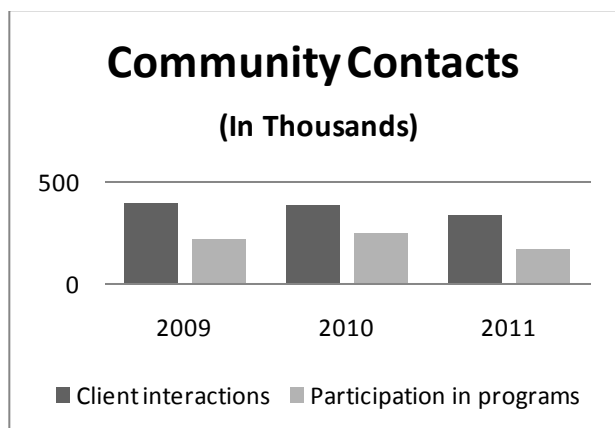


## **7.2 Cooperative Extension**

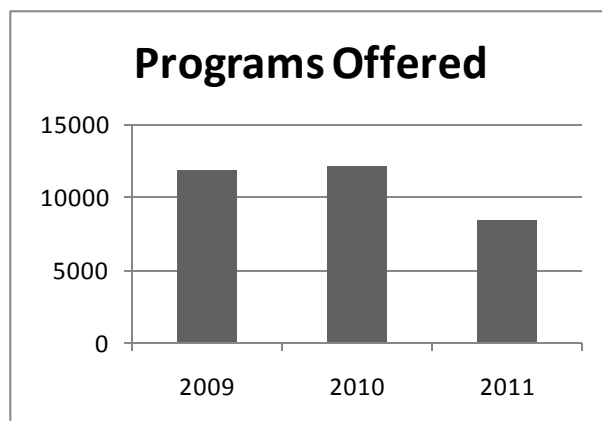
### *General*

The Cooperative Extension Service engages citizens to help build a better South Carolina by delivering research-based information in the PSA focus areas. As seen in the following graphs, the general client interaction and program participation has remained steady for the past two years, as have the number of programs being offered.

#### 7.2-1 Number of Community Contacts



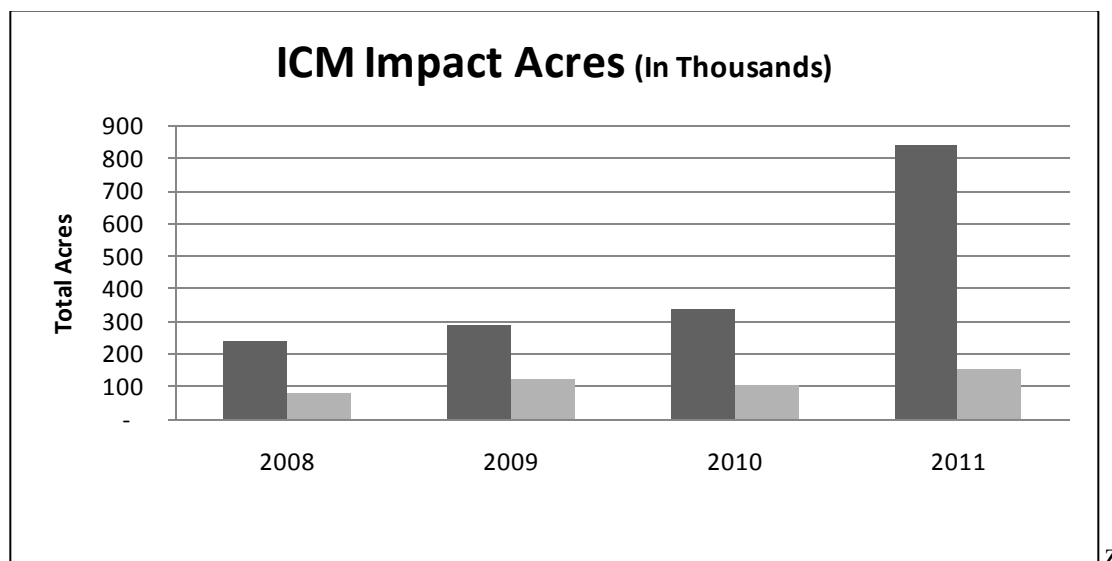
#### 7.2-2 Number of Programs Offered





### *Sustainable Resource Training*

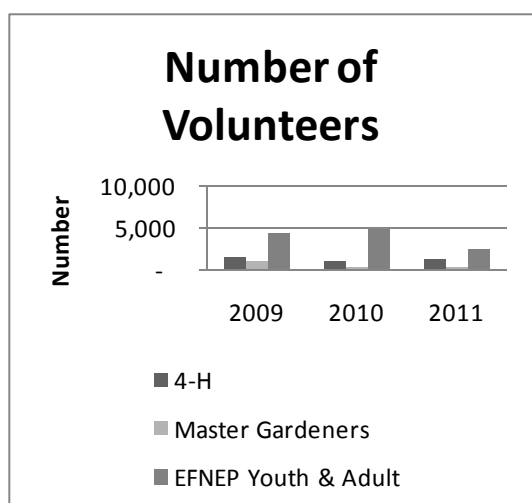
Integrated Crop Management (ICM) programs and activities improve profitability for growers and reduce negative impacts on the environment. Agronomic and Horticultural Crops are the primary focus of ICM programs. The number of acres across all programs in SC planted with agronomic crops using ICM practices has increased substantially.



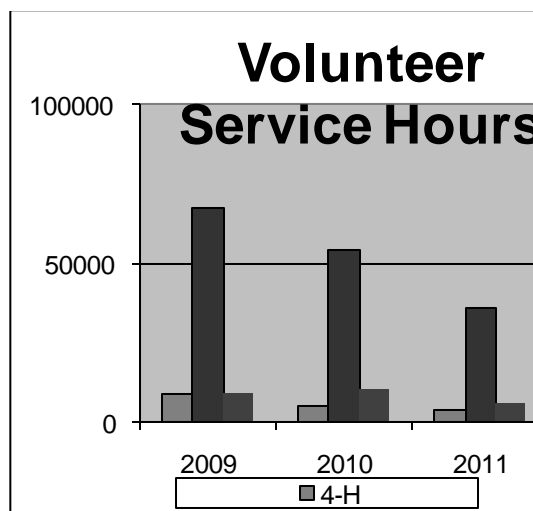
### *Volunteer Programs*

Clemson Extension programs educate and train community members for a variety of programs and services. The trained volunteers donate a substantial number of hours to their communities through service hours in Extension programs such as Master Gardener, Naturalist, Tree Farmer or Wildlifer; 4-H, EFNEP and Family and Community Life. The total value of these service hours in 2010-11 is estimated at more than \$819,600.

7.2-4 Number of Volunteers



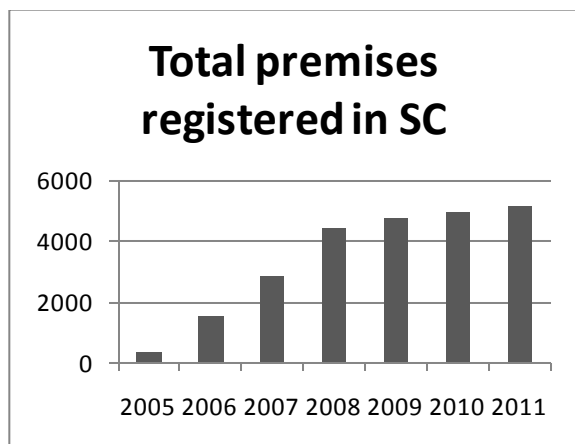
7.2-5 Total Volunteer Service Hours



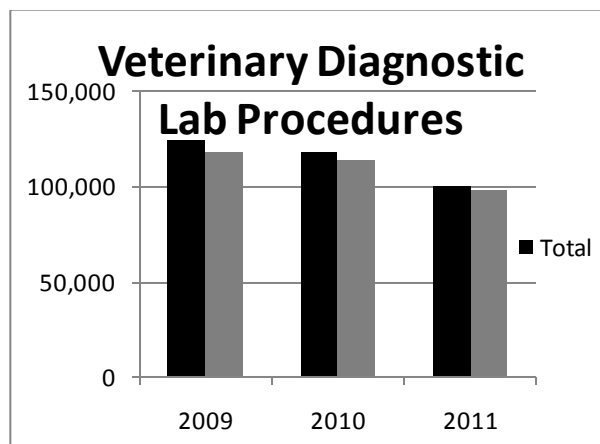
### 7.3 Livestock-Poultry Health

Livestock-Poultry Health protects the quality of life for humans, as well as companion and food animals through constant surveillance for diseases that affect both humans and other animals, providing the disease diagnoses and inspecting foods of animal origins. One measure of meeting goals is the number of SC animal premises that are registered with Livestock-Poultry Health. A registered premise allows notice for controlling and preventing the spread of diseases that could possibly affect horses and/or livestock. In 2010-11 the total number of registered sites in South Carolina was 5,187.

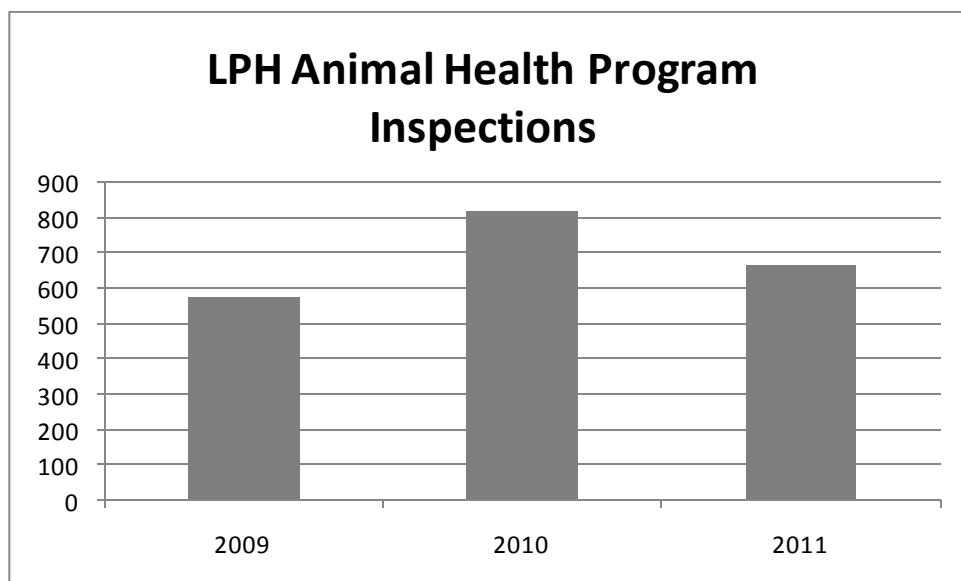
7.3-1 Number of SC Premises Registered



7.3-2 Diagnostic Lab Procedures



7.3-3 Animal Health Program Inspections



The State of South Carolina continues to strive to maintain a disease-free status to facilitate interstate and international movement of animals. Additionally, certification and licensing of the facilities and individuals ensures quality resources to carry out the mandates of health and safety. Maintenance of high standards is demonstrated through the status of being free of disease and through the on-going review of several agencies.

### 7.3-2 Animal Diseases for which SC has maintained 100% Disease-Free Status

Classical Swine Fever, since 1972	Bovine Brucellosis, since 1984
Pullorun-typhoid, since 1980	Swine Pseudorabies, since 1995
Bovine Tuberculosis, since 1981	Swine Brucellosis, since 1998

## 7.4 Regulatory and Public Service

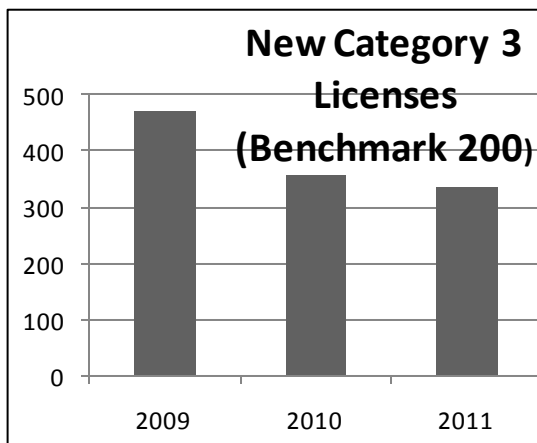
Regulatory Services serves the citizens of South Carolina by protecting our state from invasive plant and insect species, ensuring the safe and effective use of pesticides and fertilizers, providing soil and plant analysis and recommendations, conducting seed and organic certification services and safeguarding our state from catastrophic events affecting agriculture, including potential acts of agroterrorism. Training and exercises have been conducted for all personnel and resources to ensure compliance with Department of Homeland Security requirements for emergency response.

### *Pesticide Regulation*

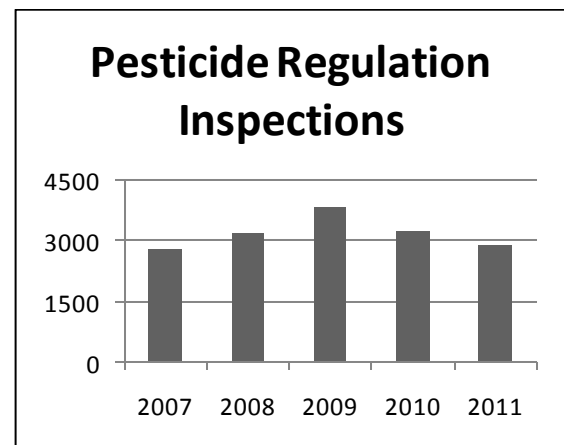
The Department of Pesticide Regulation is the enforcement and investigative authority in South Carolina for pesticide use, and works to protect health, property, and our environment by promoting the safe and proper use of pesticides. The department is significantly increasing the number of newly licensed turf and ornamental (Category 3) pesticide applicators, an area requiring mandatory licensing since 2006.

The Department of Pesticide Regulation conducted 2,885 inspections this year to ensure the safe and effective use of pesticides and to prevent harm to communities and the environment. Compliance with structural pest control regulations was 84% m exceeding the benchmark of 60%.

#### 7.4-1 New Turf and Ornamental Pesticide Licenses Issued



#### 7.4-2 Pesticide Regulation Inspections

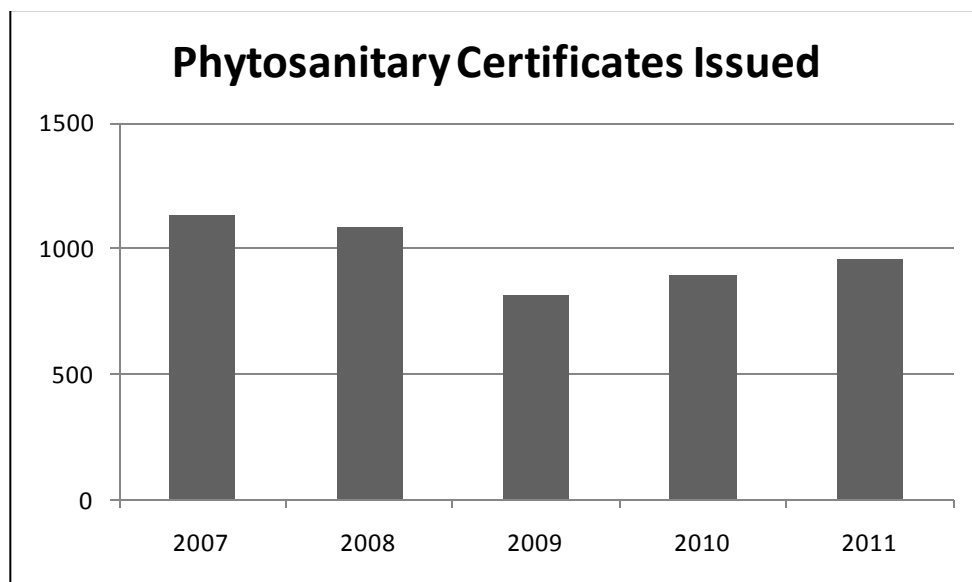


### *Plant Industry*

The Department of Plant Industry strives to prevent the introduction of new plant pests into South Carolina, as well as the spread of existing plant pests to non-infested locations, through inspections, plant pest surveys, quarantines, and control or eradication programs. Nurseries are required to undergo annual inspection and certification to ensure freedom from pests prior to shipping plants. DPI conducted inspections of 698 nurseries with a 99.7% rate of compliance with National Plant Board Standards. The department has maintained a 100% acceptance rate for the 968 phytosanitary certificates requested and issued, reflecting the

accuracy and effectiveness of inspections. These certificates facilitate the shipment of plant products from SC to other states and countries for the benefit of both SC producers and the ultimate purchasers of plants. Also, six targeted plant pest surveys were conducted by DPI inspectors and specialists to detect and mitigate introductions or new infestations of exotic and invasive pests as well as a beneficial insect that preys on fire ants.

#### 7.4-3 Phytosanitary Certificates Issued

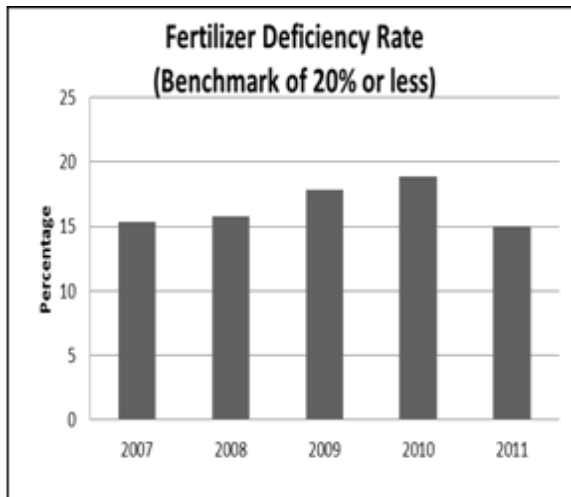


The DPI Plant Problem Clinic provides accurate and timely diagnosis of plant pest and disease samples and viable control recommendations based on this information. During the reporting period, in-house identifications were made for 1,406 plants diseases, 1,125 insects, 112 weeds/mushrooms and 1,894 nematode assays.

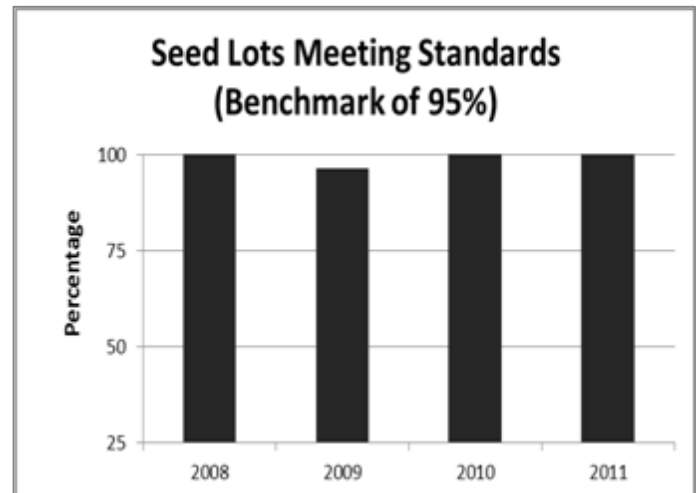
One of the primary inputs for production agriculture is essential plant nutrients or fertilizer. Growers who buy fertilizers that are deficient in nutrients pay for product they do not receive and crop production is reduced as a consequence. This program ensures that fertilizers meet labeled guarantees. During the reporting period, the department procured and analyzed 1,855 fertilizer samples, of which 286 were found to be deficient, for an overall deficiency rate of 15%, well below the target of 20%.

Use of certified seed is a best management practice that increases production while reducing cost. The percentage of seed lots (500 bushels or less) inspected for certification that meet purity standards in laboratory tests provides a measure of seed quality and program effectiveness. Seed certification ensures that producers receive the quality of seed that they expect (100% for the past two years).

7.4-5 Fertilizer Formulation Deficiency Rate



7.4-6 Percentage of Seed Lots Meeting Standards



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