

Accountability Report Transmittal Form

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

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Clemson University Public Service Activities

Budget and Control Board

Accountability Report for 2011-2012



CLEMSON
PUBLIC SERVICE ACTIVITIES

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BCB 2011 Cover Caption

About the cover pictures (clockwise from top):

Nurseries and greenhouses: Growers are increasing their production capacity and profitability by using Clemson research-based guidelines for fertilizer concentration applied to stock plants. **Peaches:** Rootstock trials have been developed to guide peach growers in selecting rootstock and cultivars to use in replanting old orchard sites. **Watermelons:** Anticipating grower demand for watermelon rootstock that resists soil-borne diseases, Clemson researchers developed new methods for grafting watermelons. **Water quality:** Researchers have developed environmental monitoring and data collection technologies that are providing real-time data on water quality and flow rate. This technology also can be applied to management systems for agriculture, forestry and natural resources, potentially reducing costs and environmental impacts, and increasing profitability. **Bald Cypress:** Ongoing research on wetland forests provides long-term data on southeastern bald cypress-dominated swamps that will help land managers document existing forest conditions and monitor the effects of land-use change on coastal wetlands. **Soybeans:** Clemson researchers have identified rust-resistant soybean plants that can be used to develop resistant varieties with the potential to improve crop yields and nutritional value. They also can reduce production costs by reducing the need for chemical pesticides. **Bull:** Researchers have developed integrated gastrointestinal nematode control methods that decrease reliance on chemical dewormers.

Section I – Executive Summary



From our founding, Clemson University's mission has been to further the prosperity of South Carolina, and its campus has always been the entire state.

This year we celebrate the 150th anniversary of the Morrill Act that created land-grant universities and democratized public education in the United States. The land-grant university system is, in my opinion, one of the best ideas America ever had.



Clemson University is a proud member of this national system, working in partnership with our counterparts in each state and with the USDA National Institute for Food and Agriculture to improve economic development through teaching, research and public service.

Clemson Public Service Activities (PSA) plays a critical role in South Carolina's economic development by supporting the state's largest industry – the \$34 billion agriculture and forestry sector – with research, extension and regulatory programs. These programs complement the university's commitment to student education that develops the next generation of agribusiness leaders.

Clemson PSA scientists in the Experiment Station, Cooperative Extension, Livestock-Poultry Health and Regulatory Services share facilities and expertise to develop and deliver research-based information to agribusiness enterprises across the state.

This information improves production practices and yields, enhances profitability, protects food safety and develops new technologies so our state's agribusinesses can meet 21st century needs.

We sincerely appreciate the support that the S.C. General Assembly has provided to Clemson PSA, even during challenging financial times. This report shares results of those investments.

Jim Barker
President

John Kelly
Vice President for
Economic Development

I-1 Mission

We are 567 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 4th in the nation on converting agricultural research dollars into revenue for the state.

- According to a 2012 study conducted by Clemson's Strom Thurmond Institute for Government and Public Affairs, PSA accounted for **1,756 jobs** statewide, **\$133.4 million** in economic output, **\$9.6 million** in net local government revenue, and **\$13 million** in net state revenue in 2010.
- **The Home and Garden Information Center and other PSA Websites generated 2.3 million PSA website visits** in 2011-12 assisting people.
- **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 9,737 programs reaching over 143,122 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).
- Clemson guidelines save **cotton growers \$7 million** a year in insect management costs.
- Thresholds and spray techniques developed by Clemson scientists could save SC soybean growers **\$22 million in losses caused by the kudzu bug**.
- SC peanut growers can **earn an additional \$7.5 million** by following optimal digging guidelines outlined by Clemson researchers.
- Decades ago, large piles of used pesticide containers littered the SC landscape. Since the beginning of an aggressive Regulatory Services program over **2.4 million pounds of pesticide containers have been recycled**.
- **Veterinary Diagnostic Center completed 87,121 tests and procedures** during FY11-12 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 state from exotic and invasive species, ensure that pesticides are used safely, regulate the structural pest control industry, verify that fertilizer and lime meet standards and labeled guarantees, conduct programs for seed and organic certification, provide diagnosis of plant pests, and ensure readiness to respond to an agroterrorism event impacting the state's agriculture.
- **PSA Institutes** conduct research and outreach in economic and community development, forest and natural resources, family and neighborhood life, and youth. Clemson initiated a two-year plan beginning in 2010 to remove state support for certain 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 2011-12

Powerful Impacts and Return on Investment

We believe that now is the most relevant time in South Carolina’s history 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.*”

According to a 2012 study conducted by Clemson’s Strom Thurmond Institute for Government and Public Affairs, Clemson University’s economic impact on South Carolina is more than \$1.83 billion in economic output, nearly 25,000 jobs and a net return to state taxpayers of \$77.4 million.

The report was commissioned to coincide with this year’s 150th anniversary of the Morrill Act, which created the land-grant system of universities to expand access to higher education and support economic development – initially for the nation’s agricultural and mechanical industries.

“From the beginning, Clemson University’s mission has been to further the prosperity of South Carolina, and its campus has always been the entire state,” said President James F. Barker. “This report provides just one indication of how large an impact Clemson has had and will continue to have on South Carolina’s economic health.”

Clemson’s PSA accounted for 1,756 jobs statewide, \$133.4 million in economic output, \$9.6 million in net local government revenue, and \$13 million in net state revenue in 2010.

The university also contributes \$114.9 million in net local government revenue and \$980.3 million in additional household disposable income. The figures are from 2010, the most recent year of the 10-year period analyzed.

PSA research, education, and community development programs directly affect South Carolinians. We recognize that PSA’s unique programs are the key to continued 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/

Clemson's Experiment Station is part of a nationwide system of scientist 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 2001-12 the Experiment Station had more than 112 active research projects. Researchers issued six intellectual property disclosures and submitted four patent applications. Faculty also submitted 94 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 2011-12 include:

- Clemson researchers have identified **rust-resistant soybean** plants that can be used to develop resistant varieties with the potential to improve crop yields and nutritional value. They also can reduce production costs by reducing the need for chemical pesticides. In 2011 South Carolina growers planted 370,000 acres of soybeans with a value of more than \$101 million.
- Glyphosate-resistant Palmer amaranth, also known as pigweed, has emerged as one of the most severe threats to crop production in South Carolina. Research has shown that herbicide options will become more limited in cotton and soybeans. Clemson scientists are working with farmers to develop **customized, aggressive soil herbicide programs** that will cost growers about \$34/acre versus \$2,000/acre for hand-weeding, cultivation and crop abandonment.
- Researchers have identified **proteins in alfalfa** that are involved in long distance communication and regulate the number of nodules legumes make. This may someday allow control of plant growth and limit fertilizer application.
- **Peach rootstock trials** have produced research-based information to guide South Carolina peach growers in selecting rootstock and cultivars for replanting old orchard sites to increase their productivity and profitability. Rootstocks that induce dwarfing are also being evaluated to determine which ones are best adapted for high-density orchard systems to facilitate mechanization and reduce labor costs. In 2011 South Carolina peaches generated more than \$75 million in cash receipts.
- Researchers have developed environmental monitoring and data collection technologies that are providing **real-time data on water quality** and flow rate. Previous data was months or even years out of date and costly to collect from remote sites. The real-time data is critically needed to improve water resources management as demand increases for drinking water, hydroelectric power, recreation and industrial production. Coupled with GIS data layers, this technology also can be applied to management systems for agriculture, forestry and natural resources, potentially reducing costs and environmental impacts, and increasing profitability.

- Anticipating grower demand for **watermelon rootstock that resists soil-borne diseases**, Clemson researchers developed new methods for grafting watermelons. This reduced the transplant grafting cost from more than \$1 to less than 80 cents, with potential for further savings. These cost reductions are critical to keep the state's producers competitive in U.S. and export markets. South Carolina watermelon production is valued at more than \$35 million per year.
- Researchers have developed integrated gastrointestinal **nematode control methods** that decrease reliance on chemical dewormers. This has the potential to save South Carolina animal producers \$186,000 in deworming costs and gain \$465,000 in increased production for small ruminants. This industry contributes more than \$1.5 billion per year to South Carolina's economy.
- New test coatings have been developed that demonstrate the ability to **protect marine ship hulls** from fouling by oyster and barnacle larvae. The new coatings use a non-toxic, naturally occurring compound instead of the current chemicals that are highly toxic. This research has the potential to create a new technology industry in South Carolina and make a significant contribution to the environmental quality of the world's seaways.
- South Carolina **nursery and greenhouse** growers are increasing their production capacity and profitability by using Clemson research-based guidelines for fertilizer concentration applied to stock plants. The new guidelines improve cutting production and quality, post-harvest performance and rooting in propagation an industry that generates more than \$190 million in annual cash receipts for the state.
- The quality of **South Carolina's coastal environment** is challenged by population growth and urbanization. Ongoing research on wetland forests provides long-term data on southeastern bald cypress-dominated swamps that will help land managers document existing forest conditions and monitor the effects of land-use change on coastal wetlands. Thoroughly understanding the extent to which natural coastal systems can respond to environmental and human changes and continue to provide essential services to society increases the likelihood that management efforts will be successful.
- Mosquitoes spread **West Nile virus and equine encephalitis virus** that can affect both livestock and humans. Research found that different mosquito species forage for hosts at different heights. This provides an important basis for monitoring and potentially preventing diseases spread by these pests. South Carolina animal agriculture generates more than \$1.5 billion a year in cash receipts.
- The **needle ant**, *Pachyondyla chinensis*, is an invasive species whose venomous sting causes allergic reactions ranging from hives to anaphylactic shock. The species has invaded South Carolina and other southeastern states. Research discovered that the ants prefer protein as a food source, which will be useful to guide South Carolina citizens, agricultural producers and the \$500 million pest control industry in selecting bait products.
- An environmentally sustainable water treatment system – called a **constructed wetland** – is providing an economically feasible alternative for the state's nursery and greenhouse industry to

manage water quality. The new system developed by Clemson research produces measurably cleaner water with consistently lower levels of nitrogen, phosphorus, temperature and pathogens.

- U.S. laboratory production of plant material – called **micro-propagation** – is under pressure from foreign competitors. Clemson research is developing a liquid-matrix system that protects the health of woody and herbaceous plants, and can provide nutrients that are critical to plant growth in nurseries and greenhouses. The new system will enhance global competitiveness for the micro-propagation industry in South Carolina.

COOPERATIVE EXTENSION

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.

Educational lessons and information were delivered through **333,048 contacts** made by Extension personnel. Working across all 46 South Carolina counties, **more than 143,122 participants attended 9,737 Extension programs.**

Major accomplishments for 2011-12 include:

- Clemson University conducts official **variety trials of all major crops** in multiple locations across the state. Growers use trial results to select the varieties that perform best in their region of the state. In 2011 South Carolina growers produced a cotton crop value at \$211,848,000, a soybean crop valued at \$101,700,000, a corn crop valued at 145,860,000 and a wheat crop valued at 76,140,000. If yields were increased by 5% through proper variety selection this would result in an additional \$26,777,400 in revenue for South Carolina producers.
- **Cattle producers** in South Carolina are frequently seeking methods to enhance profitability of their cattle operations. One method is to market cattle in uniform truckload lots of properly vaccinated, preconditioned cattle. Calves marketed using this method sell at higher prices compared to calves sold through traditional marketing venues. Eighteen producers participated in an area feeder calf sale, marketing 1,010 calves. All calves were vaccinated for respiratory disease, preconditioned for a minimum of 45 days and were source and age verified through USDA Process Verified Program (PVP). Of the 1,010 calves sold, 681 were sold directly off farm and 329 were sold in commingled truckloads comprised of cattle from small farmers. Cattlemen selling on the commingled loads averaged 22 head per farmer, allowing small producers the opportunity to maximize profitability by selling in truckload lots. This year source and age verified truckload lots sold for \$0.11 per pound more than traditional weekly livestock auctions resulting in **\$78,780 in additional income for area cattle farms (\$4,376 per farm).**
- Costs of producing silage continue to rise on dairy operations, and account for a substantial percentage of the overall feed bill. Prices on corn seed and fertilizer have increased significantly in the past several years. Several producers were approached by seed companies offering **forage**

sorghum as an alternative to corn. Yield of the newer forage sorghum was acceptable, with significant acreage being harvested twice. Yields in areas of less rainfall were actually favorable to corn yields. Seed costs were approximately \$50.00 per acre less than corn. **Total savings on the three farms was approximately \$100,000.00** in seed costs alone. Quality analysis of the forage showed feed values slightly less than corn, with minimal ration changes being necessary. Several additional producers are planning some acreage shift to sorghum for the coming season, and additional variety evaluation is being planned.

- **Over 5,400 people participated in Animal Production programs**, such as Master Cattleman, Livestock and Forage Production, Cattleman's Day and Bull Sale, poultry clinics, 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.
- Over the past eight years, **peanut production** in South Carolina has increased from 8,000 acres to around 100,000 acres. Clemson Extension specialists and county agriculture agents have carried out an aggressive training program to teach growers how to identify the optimal time to dig peanuts. Optimal digging can easily save growers at least 250 lbs. of peanuts per acre, which amounts to over \$7.5 million extra dollars for growers and the South Carolina economy.
- As a result of Extension training on controlling aphids and loose head smuts of **oats**, Colleton County oat producers can be expected to increase yields by eight bushels per acre – a potential economic impact of \$91,224. Producers learned about insect and disease recommendations and selecting top yielding varieties.
- Over 12,672 individuals received gardening information by telephone or in person through the **Home and Garden Information Center (HGIC)** toll-free telephone line. In addition, the **HGIC web site recorded over 2 million visits** last year. Some 10,358 consumers and horticulture professionals participated in programs and 176 new Master Gardeners were trained. Master Gardeners provided 57,525 hours of volunteer horticulture services to communities, which represents a **\$1,035,450 value of program support**.
- **Food Safety and Nutrition** agents conducted 211 programs for the general audience and delivered over 440 media programs. Media programs include 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 243 received course completion certificates, representing 110 food establishments. These food handlers can potentially affect 4,032 people. The National Restaurant Association has estimated that the average cost of a foodborne illness outbreak to an establishment is about \$75,000, so the potential **economic value of the trainings in South Carolina could reach \$8,250,000**.
- **Carolina Canning™** is an educational program that equips consumers with science-based knowledge to produce safe, high quality canned, dried, or frozen foods. Carolina Canning™ was tailored to South Carolina specialty crops, however its food preservation principles are applicable to all foods. In 2012, Extension staff members have recruited experienced home canners as volunteer Canning Coaches and have developed training materials to update their

knowledge so they can provide or assist with home food preservation programs. **Forty-three volunteers from 23 counties currently have been trained as Canning Coaches.** To date, at least 28 hands-on workshops have been conducted and more are planned. 386 participants have participated in the program and volunteers have contributed 426 hours of service.

- **4-H conducted 2,849 programs that reached 64,312 youth and families.** In addition, **3,213 adult volunteers were trained**, who then trained 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 **17,164 hours of volunteer service**, which represents a \$308,952 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.
- The programmatic **value of volunteer service hours for 4-H, Family and Community Leaders, Master Gardeners, and Master Naturalists totaled approximately \$2,713,176.**
- **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 over 6,347 hours of service, which equates to a value of \$114,246** in program support. SC Master Naturalists have participated in nationwide citizen science projects such as monarch watch, the backyard bird count, monitoring loggerhead sea turtle nest, eradicating fire ants and other exotic invasive plants; renovating and maintaining trails; restoring habitats and cleaning up nesting boxes. Volunteers teach school children, assist at parks and provide docent help for our many museums, nature centers and aquaria spread throughout the state. They give back to the program by assisting in the delivery of new courses and by taking or leading advanced training classes throughout the state.
- Extension **sustainable forestry** educational programs were **delivered to 1,732 people.** In one county, landowners indicated that the Extension programs would help them save \$136,000 and earn \$326,000 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 **2,992 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. Approximately 70% of the graduates were still involved in a responsible community project three years after graduation. Graduates of the leadership class involve themselves on boards, community action groups, and task forces to help the community. Many have also been inspired to write books detailing local history, assist in local schools as tutors, direct operations for Habitat for Humanity, and assist with affordable housing.

- The importance of **community-based farmers markets** as fundamental components of the local foods economy is well recognized. Several communities throughout the Grand Strand region have expressed the need for greater local foods system development and planning. Through the alignment of market operations in all portions of Horry County, Extension was able to **leverage public resources for advertising, management, marketing, programming and training related to farmer's markets**. Project partners were able to ensure consistency of regulations and applicable guidelines, thereby streamlining the participatory process for market producers and vendors. As a result, a much broader pool of producers and vendors have been engaged to participate in each market increasing the impact of each market. The total combined economic impact for the Conway Farmers Market was listed as \$1,172,019 while the total combined economic impact of the North Myrtle Beach Farmers Market was listed as \$969,076.
- The **Builders of Tomorrow (BOT) Program** worked with approximately 500 6th, 7th & 8th grade students. Of those students, 80% receive free or reduced lunch to improve academic achievement and graduation rates among participating middle school students. Participating students completed 23,475 hours of service learning including preparation, service, reflection and evaluation. These same students completed 5,499 hours of direct service to other students and in the community. Among those participating, 87% gained knowledge of civic engagement; 71% showed an improvement in grades, 72% showed improvement in the area of self-esteem, and 86% indicated that they learned useful skills. Teachers reported that 87% of students improved their connection to the community.

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. The diagnostic laboratory also provides veterinary diagnostic support for wildlife.

- **Animal agriculture in SC represents over \$6 billion and 37,253 jobs in the overall SC economy** with direct economic impacts of \$1.5 billion and 11,782 jobs. 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 744 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 247 these letters

were signed by the state veterinarian during FY11-12 as a condition for import to certain countries.

- **SC Ag-Watch** program led by LPH is providing training 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. South Carolina Ag-Watch Manuals continue to be available and are used by state and local emergency managers as a reference for agricultural emergencies.
- LPH initiated the **Mid-Atlantic Secure Milk Supply Project** in SC along with the State Veterinarians in TN, NC, VA and MD. This project is developing regional agreements among these states that should mitigate potential economic losses of non-infected dairy farms during a Foot and Mouth Disease (FMD) outbreak without increasing the likelihood of FMD spread. LPH is including producers, milk haulers, milk-processing plants and other industry organizations in the joint effort in South Carolina.
- South Carolina's **ability to respond to an animal emergency** was enhanced through LPH participation in June 2012 in a USDA Functional Exercise to plan for a multi-state FMD outbreak event. SC was one of 14 states that developed spreadsheets of possible federal resources that could be requested in an FMD outbreak.
- The **Veterinary Diagnostic Center** completed 87,121 tests and procedures during FY 2012 in performing its animal and food safety diagnostic duties. Of these, 85,467 were related to regulatory duties and production animals; the remaining 1,654 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, the SC Agro-terrorism & Food Safety Subcommittee and the SC New and Beginning Farmers Program.
- 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 2,483 slaughter days of approximately 31,854 livestock and over 4.1 million poultry. Additionally, during daily inspection in 81 processing facilities, 70,887 individual inspection procedures were performed.
- Meat-Poultry Inspection conducted a three-day **Hazard Analysis Critical Control Point (HACCP)** training session. 22 meat and poultry industry personnel from South Carolina and North Carolina successfully completed the session.
- **National and international recognition increased as faculty were asked to serve** on the Secretary's (USDA) Advisory Committee on Animal Health, 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, Parliamentarian of American Association of Bovine Practitioners, Board of the SC Horseman's Council, Vice President of SC Sheep Industries, Board of American Association of Food Safety Veterinarians.

- LPH maintained **AAVLD laboratory accreditation and met NVSL accreditation standards** for all technicians to be proficiency certified.

REGULATORY SERVICES

www.clemson.edu/public/regulatory/

Regulatory Services protect the state from exotic and invasive species, ensure that pesticides are used safely, regulate the structural pest control industry, verify that fertilizer and lime meet standards and labeled guarantees, conduct programs for seed and organic certification, provide diagnosis of plant pests, and ensure readiness to respond to an agroterrorism event impacting the state's agriculture.

- Regulatory Services is in the process of implementing a **new web-based database management system** for all programs. This new interface will **ensure consistency and increase productivity** throughout the division, while **enhancing access to services** for the regulated community and the public.
- Department of Plant Industry (DPI) conducted **Certified Turfgrass grower trainings** at the Edisto REC and the Pee Dee REC. All turfgrass sod producers participating in the SC Certified Turfgrass program were represented. Providing this training for those employees with responsibility for program implementation should **greatly increase voluntary compliance** with program standards.
- The DPI Molecular Plant Pathogen Detection (MPPD) Laboratory **achieved USDA certification by USDA-APHIS-PPQ's National Plant Protection Laboratory Accreditation Program (NPPLAP) for identification of the pathogen causing citrus greening disease** (Huanglongbing or HLB), a bacterial disease that poses a high risk to citrus. NPPLAP certification for additional diseases will be pursued in an effort to establish Clemson University plant pest diagnostic labs as a regional hub for detection and identification of exotic plant pests and diseases. In addition to the MPPD Lab, these labs include the DPI Plant Problem Clinic and the Clemson University Nematode Assay Lab.
- The DPI fertilizer analytical laboratory **greatly reduced the turnaround time** for reporting results of fertilizer and lime samples submitted for analysis. The addition of a second chemist, combined with enhancements to the environmental control systems and laboratory processes have resulted in reducing the turnaround time from 60 days in FY 2010 to 20 days in FY 2012.
- Department of Pesticide Regulation (DPR) has revised and updated the official S.C. Wood Infestation Form (CL-100), required for all real estate transactions in the state. DPR sought input from leadership of the SC Pest Control Association to ensure that revisions were agreed upon.

- A special U.S. Environmental Protection Agency (EPA) grant of \$35,000 was awarded to the DPR to support a project entitled ***Integrated Pest Management (IPM) in Schools: South Carolina School District Assessment and Improvement***. Leslie Godfrey, DPR's Reduced Risk Specialist, will lead and coordinate the project which will significantly enhance the School IPM program already in place in South Carolina. The program seeks to **reduce pesticide exposure to children** by helping the schools incorporate IPM practices in controlling pests on school property.
- DPR initiated an **on-line pesticide license examination** option in FY 2009, which provides greater convenience in exam scheduling and test locations for clientele. This has been very well received by the public with 68% of the exams taken on-line in FY 2012, an increase every year from the low of only 7% in FY 2009. Also, **individuals can now register on-line** for pesticide license examinations, making the registration process more convenient for the client and more efficient for DPR administrative staff.
- Before the DPR pesticide recycling program began, the rural SC landscape was too frequently littered with large stacks of waste pesticide containers. These containers were a threat to the environment and wildlife. DPR has **collected 215,059 pounds of used pesticide containers for recycling in 2011**. Since the program began in 1993, over 2.66 million pounds of pesticide containers have been recycled – more than 3 million individual containers. The program helps protect the environment from possible pesticide contamination and unnecessary filling of waste landfills in the state.
- DPR **initiated a credit card payment process for on-line renewal** of pesticide product registrations in South Carolina. This accommodation streamlines the registration process for both the registrant and for DPR.

PSA INSTITUTES

There are four institutes for which accountability data and selected 2011-12 achievements are presented. In reverse alphabetical order:

- Youth Learning Institute
- 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/

- Helped establish the **Pre-Collegiate Programs Office** at Clemson University to provide faculty, staff, students and external clients with an array of support services for educational and recreational programs for youth under the age of 18. The goals of the Pre-Collegiate Programs office are to enhance the quality of programs, increase the size and scope of Clemson University youth programs, and to minimize the risks to participants and staff through the development of program guides and operating standards.

- Began a **partnership with the S.C. Department of Corrections** to provide training to approximately 300 upper and mid-level managers in areas of conflict resolution, leadership skills, and building and maintaining effective teams, with an emphasis on service to youthful offenders in the SCDC system.
- Developed partnerships between Clemson University, the Youth Leadership Academy (a state approved charter school) and Pitsco, Inc., a supplier of math/science labs made up of multimedia-based curriculum and uniquely designed workstations. The result of this partnership has been the **creation of a model charter middle school program, operated at the YLI Headquarters and Education Center** in Pickens. Forty-eight students in the sixth and seventh grades will begin class in the fall of 2012.
- Partnered to establish and operate the **Autism Academy of South Carolina**, in Columbia, SC providing service to children with Autism Spectrum Disorder. In some cases, **students were able to meet 12-month improvement goals in only six months**. After providing support for several months, YLI was able to turn over all operations to the school's board, which now operates the program independent of YLI's oversight and fiscal management.
- Leveraged YLI resources with donations of materials and volunteers from partners to complete the **renovation of two dormitory facilities at Camp Bob Cooper**. This included replacing of all bathroom fixtures, upgrading electrical and plumbing systems and resurfacing floors and walls.
- Conducted the sixth annual **"Empowering Girls Symposium"**, a statewide program offered to professionals who deliver programs and services to girls. This year the program was expanded to include not only educators and practitioners, but to allow students and girls who are receiving services to attend and participate in the conversations that are shaping the nature of programming.
- Developed **Web-NEERS** for the National Institute of Food and Agriculture. The Web-based Nutrition Education Evaluation and Reporting System (Web-NEERS) replaces the Nutrition Education Evaluation and Reporting System version five (NEERS5). Web-NEERS is a secure system designed, hosted, and maintained by Clemson University. Web-NEERS is accessed through the internet via Internet Explorer, Firefox, Google Chrome, and Safari web browsers. It incorporates local, university, and federal components of the current budget justification, and the social ecological framework of the Community Nutrition Education (CNE) logic model.

INSTITUTE ON FAMILY AND NEIGHBORHOOD LIFE

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 Susan Limber was given the **Nicholas Hobbs Award** from the Society for Child and Family Policy and Practice (Division 37 of the American Psychological Association) in recognition of her national efforts to prevent bullying.

- Professor Susan Limber was invited by the American Psychological Foundation to give the **William Bevan Lecture on Psychology and Public Policy** at the 2012 Annual Convention of the American Psychological Association.
- Faculty and staff trained 255 trainers to assist schools in implementing the Olweus **Bullying Prevention Program**, for a total of more than 1,300 trainers nationwide.
- Professor James McDonnell was awarded a grant from the National Institutes for Health for a four-year, multi-level, cohort-sequential study of **rural adolescent dating violence victimization** and perpetration. This study will identify individual, family, organizational, and community-level factors that influence the growth trajectory of dating violence from 6th through 12th grade (approximate ages 12 to 18). This is believed to be the most comprehensive study of rural adolescent dating violence to date.
- Professor Mark Small was reappointed as one of eight **national consultants to the USDA Child, Youth, and Families at Risk Program**.
- A Child, Youth and Families at Risk Program **five-year community grant** was awarded to Professor Small to begin implementation and evaluation of evidence-based Science, Technology, Engineering and Math curriculum in afterschool programs in Spartanburg, SC.
- 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.
- 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.
- Through a **competitively-obtained federal Health and Human Services grant**, the “SC Rural Communities Compassion Project” completed distribution and monitoring of \$240,000 to 14 rural faith and community-based organizations to build their capacity for providing services to children and families. To date, the decade long project has resulted in over **\$2,200,000** that 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 business, 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 *Children, Families and Society: A Half-Century of Change*. 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*.

- In conjunction with the Family Symposium, IFNL also **co-sponsored a Student Pre-Conference on *Changing Concerns of Young Adults***. 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:** The Clemson Institute for Economic and Community Development (CIECD) facilitated several youth and adult leadership programs throughout the state to provide participants with the leadership skills necessary for the youth and adults to have a positive impact in their communities. Through these programs adults and youth gained the knowledge and skills necessary to have a positive impact in their community. Many also benefited through contact with local or state leaders who participated as guest speakers and/or panelists. Specific examples of the programs and issues include: Builders Of Tomorrow Youth Leadership Program; South Carolina LEADS; Leadership South Carolina; Leadership Dillon County; Chester County Palmetto Leadership Class of 2012; Beaufort County Senior Leadership Program. The impacts of these programs include increasing awareness of childhood obesity and healthy lifestyles, providing intensive leadership development experiences for a promising new generation of leaders, raising funds for a new free medical clinic in Dillon County, reporting on the economic and social impacts of a casino on the surrounding communities, and energizing and educating community leaders for state-wide public service.
- **Rural Community Enhancement and Improvement:** CIECD conducted and participated in a number of community enhancement programs this year. A major focus of our program's involvement was to assist communities on identifying and developing sustainable economic development activities, programs and plans that improve the quality of life for all of the citizens. These efforts included establishing the South Carolina Women's Agriculture Network (SCAgN) to support and provide educational opportunities for women working in agriculture and ag-related businesses; initiating Annie's Project in Newberry County which is dedicated to strengthening women's roles in the modern farm enterprise; and establishing the Catawba Local and Regional Foods Coalition to facilitate communication, coordination, and collaboration among all the sectors of the region that have an interest and role in local agriculture and local food production.
- **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. Examples include: "From York to Fork", a web-based local food guide for York County; \$99,000 grant award to establish a commercial quality, shared-use kitchen in Chester County to serve as a venue for value-added agri-business incubation; the South Carolina New and Beginning Farmers Program (SCNBFP) which is focused on enabling new and beginning farmers to be successful, productive, and innovative members of their local agricultural community.

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, U.S. Environmental Protection Agency, U.S. Geological Survey, U.S. Department of Interior, U.S. Fish and Wildlife Service, USDA-NRCS, SC Sea Grant, Andrew W. Mellon Foundation, U.S. Forest Service, SCDHEC State Revolving Fund, SCDJEC Bureau of Water, Pee Dee Research and Education Endowment, Pate Foundation, and National Audubon Society. **Collaborative efforts** aside from internal university partners include projects with the U.S. Geological Survey, the U.S. Forest Service, Horry County Stormwater Management, Horry County Schools, Georgetown County Public Works, City of Florence, City of Conway, SC Sea Grant, the College of Charleston, the University of South Carolina, N.C. State University, Auburn University, the University of Georgia, 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; serve on Board of Directors of Little Leaf Louisiana, Science Advisory Board of Winyah Rivers Foundation, and Negril Morass Restoration Committee (Jamaica); and served as manuscript and proposal reviewers for a number of journals and agencies. One faculty member was selected as a Fellow of the Clemson University Institute for Parks.
- Collaborated with the Belle W. Baruch Foundation to conduct **Firefly Watch Program**, a project to educate the public on 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**. Faculty continue to be engaged in an international partnership with Colombian agencies, including participation in a climate change education program delivered in Medellín, Antioquia, Colombia, as well as having an undergraduate student accepted to conduct research in San Andrés through the Clemson SC Life International Research Program.
- Served on the planning committee for the **Tidal Creeks Summit**, a regional conference held in Charleston.
- Support for students included that for **22 graduate students and 3 undergraduate students**. Doctoral student Stephen Jones' work was selected as one of best three abstracts in the Epidemiology Section of the American Public Health Association meeting. Doctoral student Gavin Blosser was awarded a Wade Stackhouse Graduate Fellowship.

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

PSA is deeply appreciative of the first new nonrecurring-funding and first absence of a state appropriation reduction since the downturn in the economy beginning in 2008. As we celebrate the hopeful rebuilding of funding loss since the onset of this long recession, service to our clients was possible through careful planning. This planning allowed us to meet our client's needs, keep all of our Research and Education Centers and Cooperative Extension offices open, meet our regulatory legislative mandates, and seek alternative funding for our institutes. We continue 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
 - 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 & Inspection 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, including speed of analysis
 - Percentage of Certified Seed Lots meeting standards
 - Organic Certification Metrics
- **Institutes**
 - Number of proposals processed
 - Number of publications, both research and policy-oriented
 - Other noteworthy accomplishments in Section I-2

Central Strategy/Reduced Revenue

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 despite almost 50% of PSA budget reduced between 2008-09 to 2010-11 fiscal years.

Experiment Station

- All Research and Education Centers remained open
 - Reduced operating costs by 15% in 2011
 - Established in 2011 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 nearly 50% 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 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.

Section II – Organizational Profile

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 reported in this document:**
 - Baruch Institute for Coastal Ecology and Forest Science
 - Clemson Institute for Economic and Community Development
 - Institute on Family and Neighborhood Life
 - 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:

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

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

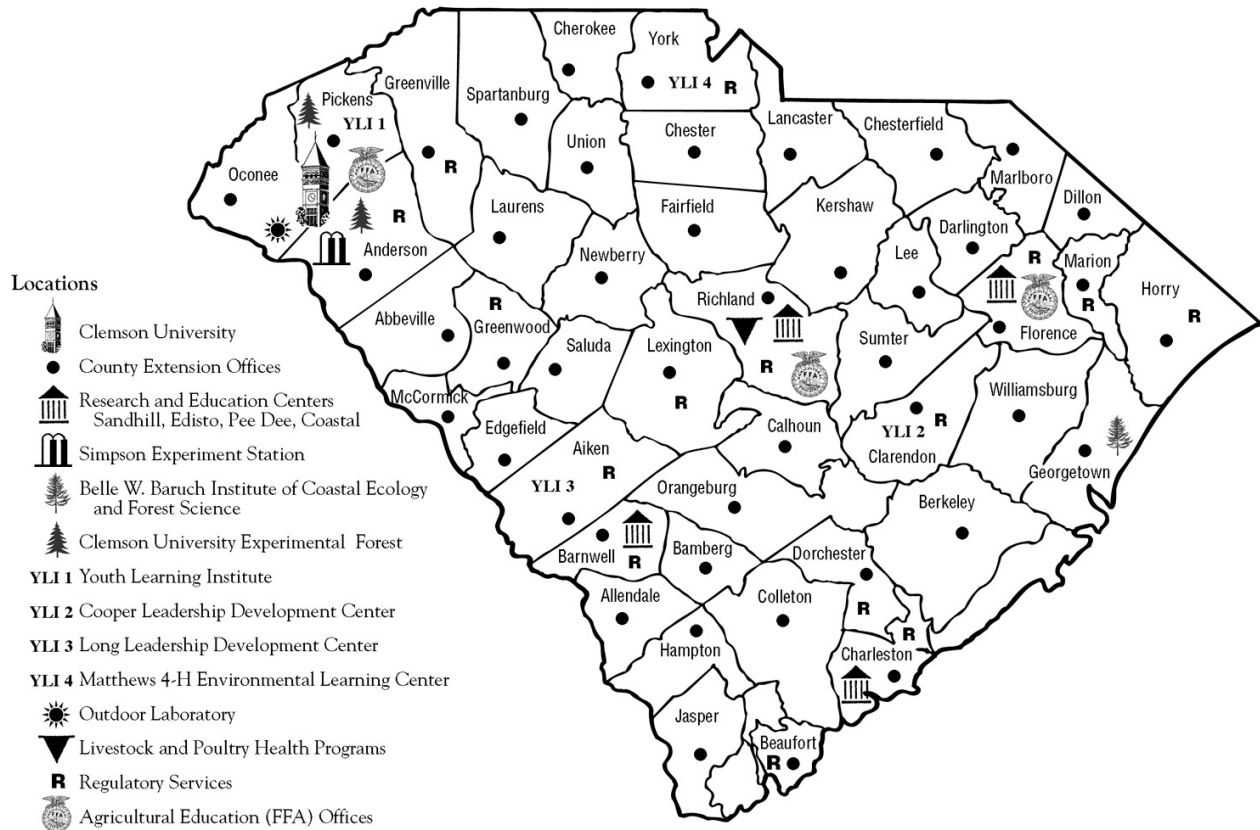


Figure II-1

II-6 Number of Employees

As of August 2012, PSA had 567 employees in 478 FTE's. Of these employees, 31 FTE positions are funded from grant funds.

Type	Headcount	FTE
Classified	335	287
Unclassified	300	215
Total	567	478

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/

Morrill Act 1862 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

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

SEC. 1. ⁽¹⁾ In order to aid in diffusing among the people of the United States useful and practical information on subjects relating to agriculture, ⁽²⁾ home economics, and rural energy, ⁽³⁾ 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 manmade. 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 manmade. 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.

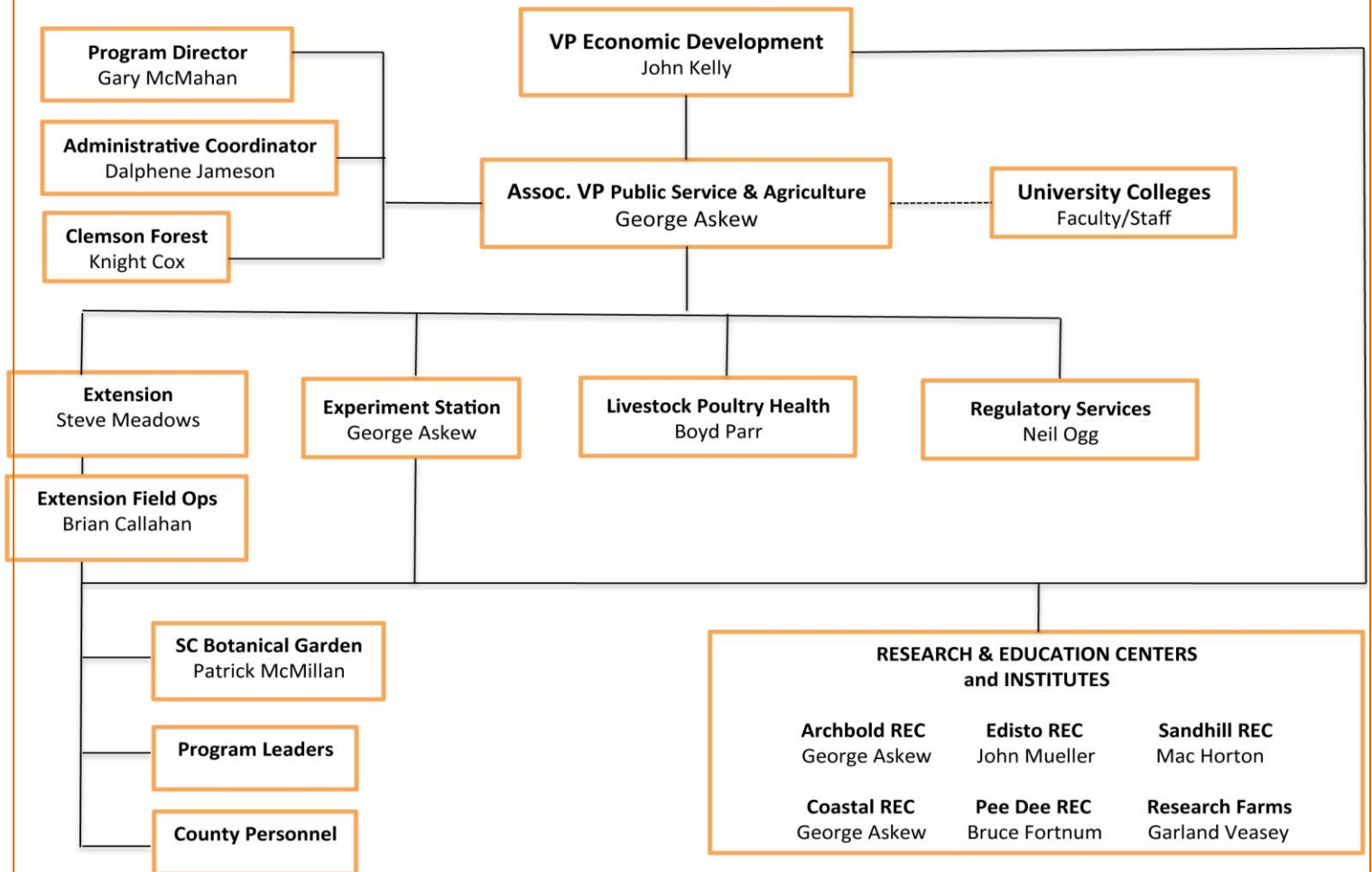
Employee Performance: Primary among these processes is the University's Employee Performance Management System (EPMS), which reviews the personal performance of classified employees. Similar to this process is the Faculty Activity System, which allows the faculty to report their plans for the coming 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



September 2012

II-10 Expenditure/Appropriations Chart

Accountability Report Appropriations/Expenditures Chart

Base Budget Expenditures and Appropriations

Major Budget Categories	FY 10-11 Actual Expenditures		FY 11-12 Actual Expenditures		FY 12-13 Appropriations Act	
	Total Funds	General Funds	Total Funds	General Funds	Total Funds	General Funds
Personal Service	\$ 37,084,252	\$ 16,261,216	\$ 33,655,961	\$ 15,471,093	\$ 35,920,981	\$ 19,847,952
Other Operating	\$ 16,732,175	\$ 5,379,727	\$ 18,576,632	\$ 7,220,473	\$ 17,667,324	\$ 203,706
Special Items						
Permanent Improvements						
Case Services						
Distributions to Subdivisions						
Fringe Benefits	\$ 12,910,362	\$ 6,830,013	\$ 10,645,725	\$ 5,304,261	\$ 13,081,298	\$ 7,944,169
Non-recurring						
Total	\$ 66,726,789	\$ 28,470,956	\$ 62,878,318	\$ 27,995,827	\$ 66,669,603	\$ 27,995,827

Other Expenditures

Sources of Funds	FY 10-11 Actual Expenditures	FY 11-12 Actual Expenditures
Supplemental Bills		\$ 250,000
Capital Reserve Funds		
Bonds		

II-11 Major Program Areas Chart

Major Program Areas

Program Number and Title	Major Program Area Purpose (Brief)	FY 10-11 Budget Expenditures	FY 11-12 Budget Expenditures	Key Cross References for Financial Results*
I.	Regulatory Services	State: 656,550.00 Federal: 809,956.00 Other: 3,819,201.00 Total: 5,285,707.00 % of Total Budget: 8%	State: 664,232.00 Federal: 1,243,509.00 Other: 3,135,840.00 Total: 5,043,581.00 % of Total Budget: 8%	
II.	Livestock-Poultry Health	State: 2,490,250.00 Federal: 2,810,467.00 Other: 1,091,435.00 Total: 6,392,152.00 % of Total Budget: 10%	State: 2,519,966.00 Federal: 2,431,651.00 Other: 39,732.25 Total: 4,991,349.25 % of Total Budget: 8%	
III.	Agriculture	State: 12,352,362.00 Federal: 5,032,682.00 Other: 5,418,216.00 Total: 22,803,260.00 % of Total Budget: 34%	State: 12,079,789.00 Federal: 4,447,789.00 Other: 5,146,669.00 Total: 21,674,247.00 % of Total Budget: 34%	
IV	Cooperative Extension	State: 12,971,794.00 Federal: 9,286,996.00 Other: 9,986,880.00 Total: 32,245,670.00 % of Total Budget: 48%	State: 12,731,840.00 Federal: 7,058,815.00 Other: 11,378,486.00 Total: 31,169,141.00 % of Total Budget: 50%	
		State: Federal: Other: Total: % of Total Budget:	State: Federal: Other: Total: % of Total Budget:	
Below: List any programs not included above and show the remainder of expenditures by source of funds.				
	Remainder of Expenditures:	State: Federal: Other: Total: % of Total Budget:	State: Federal: Other: Total: % of Total Budget:	

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

Section III – Elements of Malcolm Baldrige Award Criteria

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. Dr. Askew also provides an opportunity for unit leaders to conduct strategic planning for the ensuing year's budget request.

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, including speed of analysis
 - Percentage of Certified Seed Lots meeting standards
 - Organic Certification Metrics
- 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.

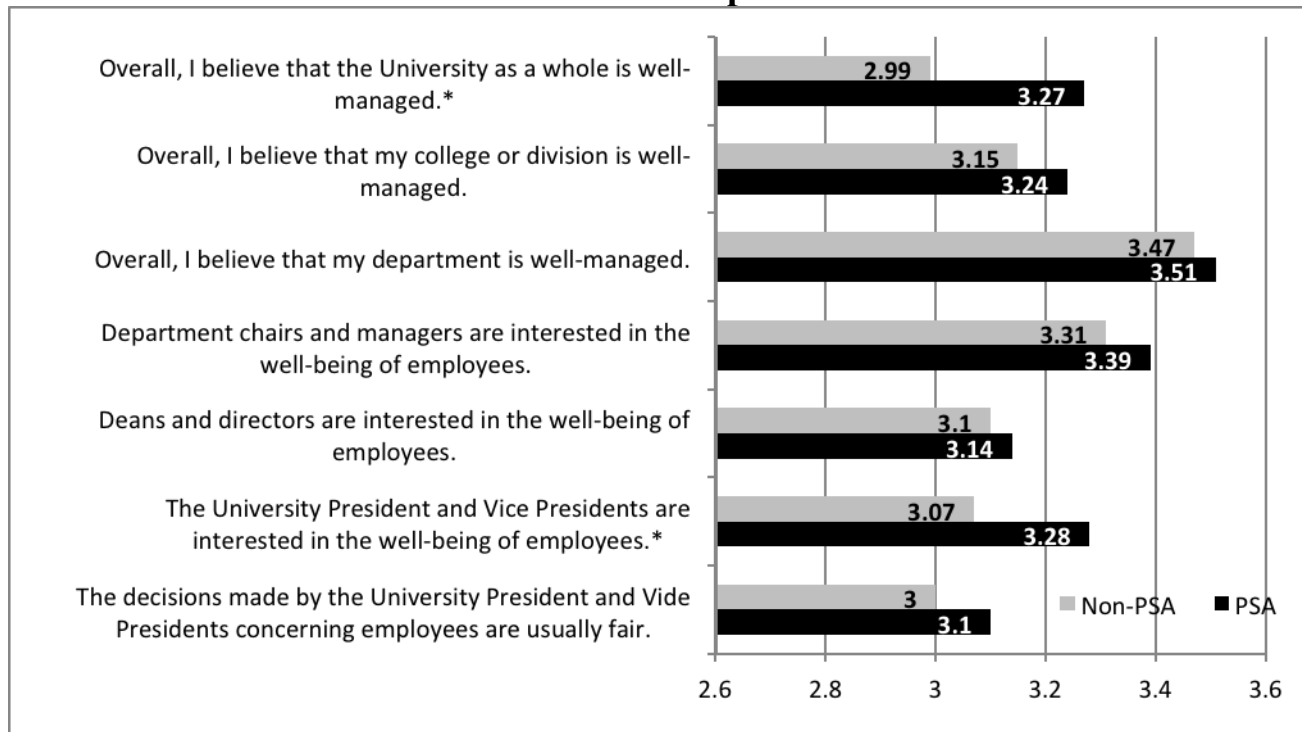
Faculty and staff have always exercised their privilege to have an open dialogue with the administration. The most powerful use of the policy has been their collective strength through the Faculty and Staff Senate organizations. These organizations represent their respective area in all concerns ranging 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/) 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/).
- **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 early 2013.

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) we continued our review of every program in PSA, making appropriate changes in light of 1) the 50% 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/ 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"> Sustainable Animal Production Systems – Conduct research to improve the health & productivity of livestock & poultry in SC. Increase the number of technical papers & presentations. Focus on transferring technology in emerging areas such as forage-fed beef. Sustainable Horticultural Crop Systems – Improve the productivity & profitability in the horticultural crops, fruits, vegetables, turfgrass & ornamentals. Increase the number of technical papers & presentations. Focus on transferring technology in emerging areas such as pest management & genetically modified crops. Sustainable Agronomic Crop Systems – Improve the productivity & profitability in all the major agronomic crops, soybeans, grains, & cotton. Increase the number of technical papers & presentations. Focus on transferring technology in emerging areas such as peanut production, pest management, & genetically modified crops. Agricultural Biotechnology – Utilize molecular technology to address issues of practical importance to agriculture. Increase the number of technical papers & presentations. Focus on transferring technology in emerging areas such as animal & plant production systems. Community, Leadership, and Economic Development – Conduct research to enhance economic opportunities & improve the quality of life for South Carolinians. Assess local labor markets and quantify spatial dynamics. Evaluate opportunities & threats to rural markets. Forestry and Natural Resources – 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 & their relationship to urban land-use properties on lawns & golf courses. Food Safety, Nutrition and Human Health -- Develop nanotechnology applications for food safety & 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 & presentations. 	7.0, 7.1

		<p>8. Water Quality and Quantity - Conduct research programs focused on developing strategies for economically viable land-use to coexist with good water quality, & identifying wetland and watershed management practices to improve water quality & wetland and aquatic wildlife habitat. Increase the number of technical papers & presentations.</p>	
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>1. Sustainable Management of Forest Resources and Forest Systems - At least 80% of the foresters & landowners will report a gain in knowledge as a result of participating in sustainable forest & natural resource programs by the end of the fiscal year.</p> <p>2. Sustainable Horticultural Crop Production – At least 80% of the persons completing sustainable horticultural programs will report a gain in knowledge & skills by the end of the fiscal year.</p> <p>3. Sustainable Agronomic Crop Production – At least 80% of the persons completing sustainable agronomic programs will report a gain in knowledge & skills by the end of the fiscal year.</p> <p>4. Livestock and Forages – At least 80% of the persons completing livestock & forages programs will report a gain in knowledge and skills by the end of the fiscal year.</p> <p>5. 4-H, Youth Development and Families – 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>6. Volunteer Development - At least 500 volunteers will be trained & will conduct programs, serve on boards, committees, county organizations, & in cooperative relationships to establish, revitalize, improve, and/or expand the scope of youth & families programming efforts by the end of the fiscal year.</p> <p>7. Food Safety and Nutrition – At least 70% of the people completing food safety & nutrition programs will report a gain in knowledge by the end of the fiscal year.</p> <p>8. Economic and Community Development – At least 80% of the participants who complete Community, Leadership & 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"> 1. Animal Health Programs – Protect animal & public health through control of endemic, foreign, & emerging diseases; enforce state and federal animal health laws & regulations by monitoring interstate movement of animals & inspecting livestock auction markets; expand traceability system designed to enhance animal disease control, surveillance, & eradication programs. 2. Meat/Poultry Inspection Program - Regulate state meat/poultry plants; protect the health of consumers by providing a comprehensive inspection service to ensure that meat & poultry products are safe, wholesome & accurately labeled. 3. Veterinary Laboratory - Provide accurate & timely veterinary diagnostic & surveillance testing for early detection of disease, thus improving the response activities & mitigating economic losses; maintain AAVLD accreditation; meet NVSL accreditation standards & criteria for technicians to be proficiency certified. 	<p>7.0, 7.3</p>
<p>IV. Regulatory Services</p>	<p>Advance the competitiveness of the agriculture & 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"> 1. Regulation of Structural and Ornamental Pesticide Applications – Ensure the safe & legal use of pesticides by the structural & turf/ornamental pest control industries. 2. Pesticide Regulation - Monitor the use of pesticides in South Carolina to ensure their safe & effective use & prevent harm to humans, plants, animals, & the environment. 3. Fertilizer Regulation – Ensure the quality of fertilizer, lime, & soil amendments distributed to end users in SC by verifying that they meet label guarantees & are free of contaminants. 4. Plant Pest Regulation - Prevent & control introduced plant pests/invasive species & pests of honeybees & certify freedom from plant pests for the nursery, greenhouse, & transplant industries. 5. Plant Diagnostics –Analyze samples for plant pests & diseases & provide results & recommendations to clients. 6. Seed and Organic Certification – Apply official quality & purity standards in the certification of eligible seeds & plants produced in SC Provide USDA –NOP accredited certification services for organic producers, processors, & handlers who seek certification through our agency. 7. Emergency Preparedness and Response – Collaborate with other state agencies to develop alert systems & response plans for exotic plant pests & diseases. Conduct training exercises for state & local responders to ensure readiness. Conduct targeted surveys for potential threats to plant agriculture. 	<p>7.0, 7.4</p>

III-3 Customer Focus

♦1. *Key customers and stakeholders*

More than 367,000 personal contacts were made by PSA units in 2011-12 and over 150,000 animal and plant disease diagnostic, soil, pesticide, and fertilizer samples were obtained, analyzed and reported to our clients. This level of service 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.

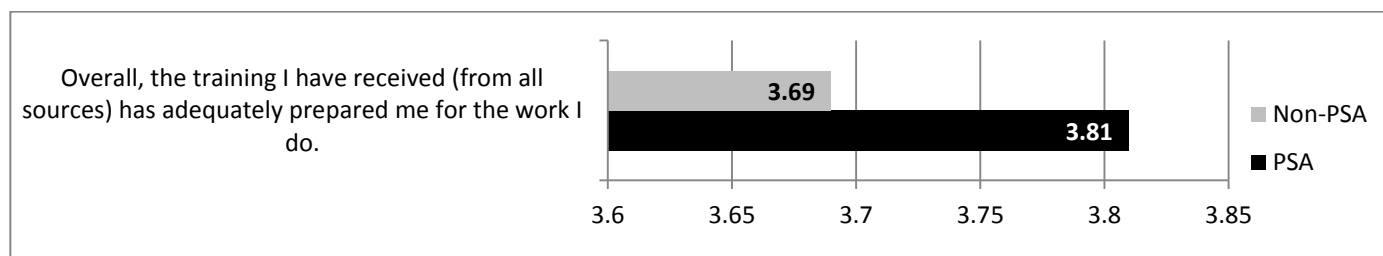
♦4. *Assessing workforce capability and capacity needs*

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) 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*

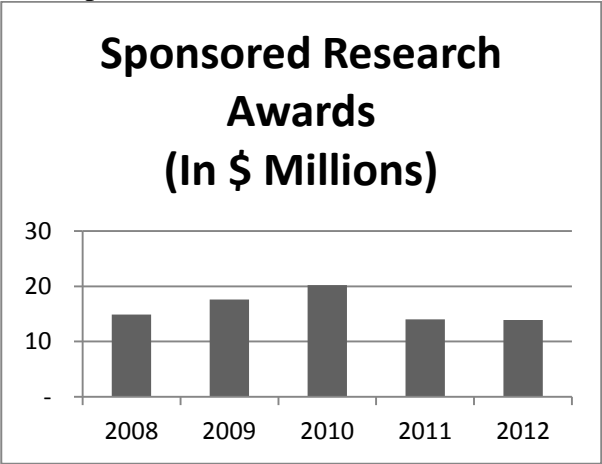
During the annual planning process, unit directors collaborate with their staff members to create and determine which initiatives will be prioritized for the coming year. Most units require that initiatives be proposed in conjunction with funding amounts and sources. As much as possible, external sources 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

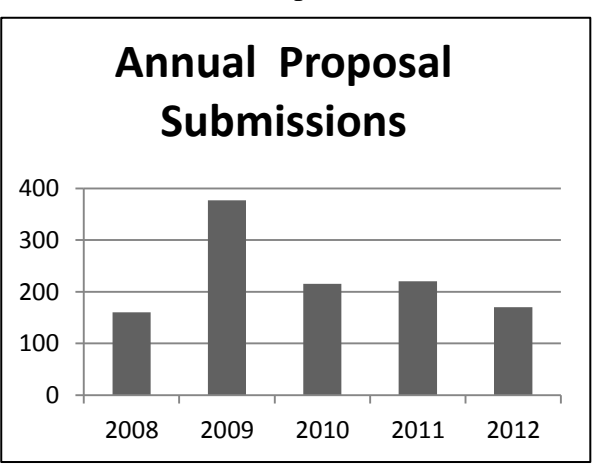
7.0 PSA Faculty Productivity Measures

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



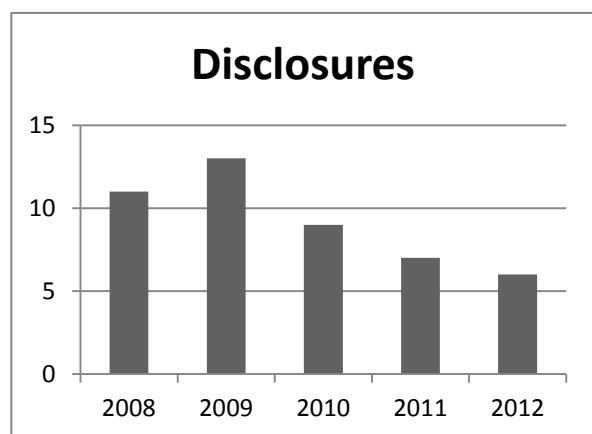
7.0-2 Annual Grant Proposal Submissions



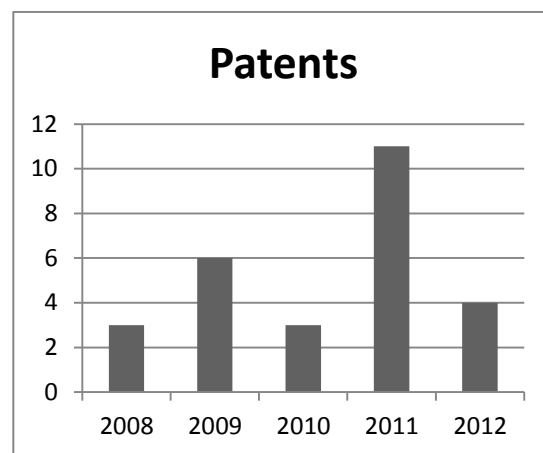
7.1 Agricultural Research (Experiment Station)

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.

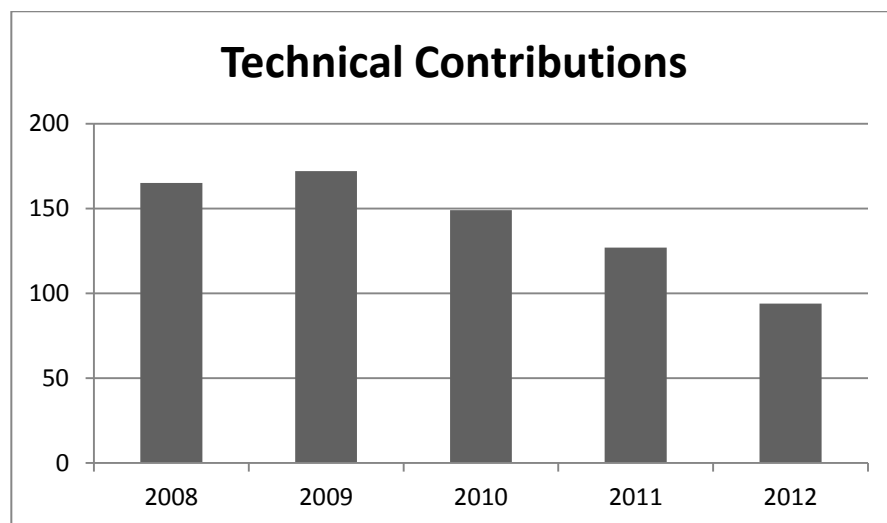
7.1-1 Patent Disclosures



7.1-2 Patent Applications Submitted



7.1-3 Technical Contributions by Experiment Station Faculty

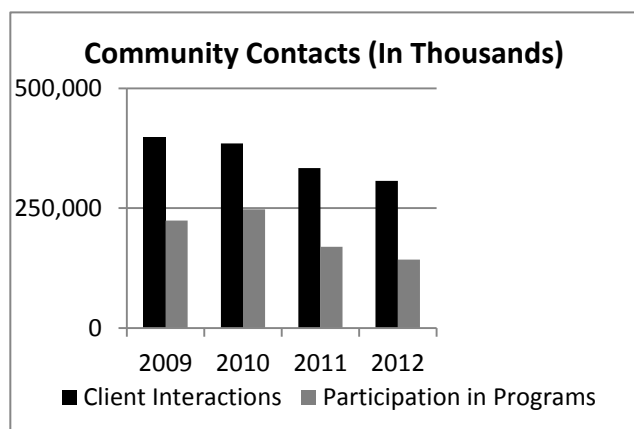


7.2 Cooperative Extension

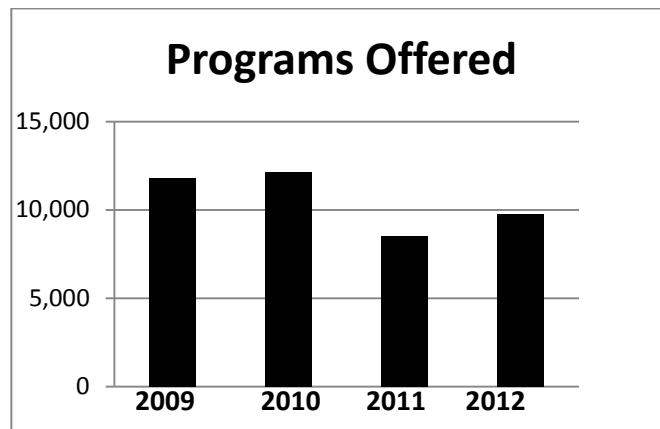
General

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

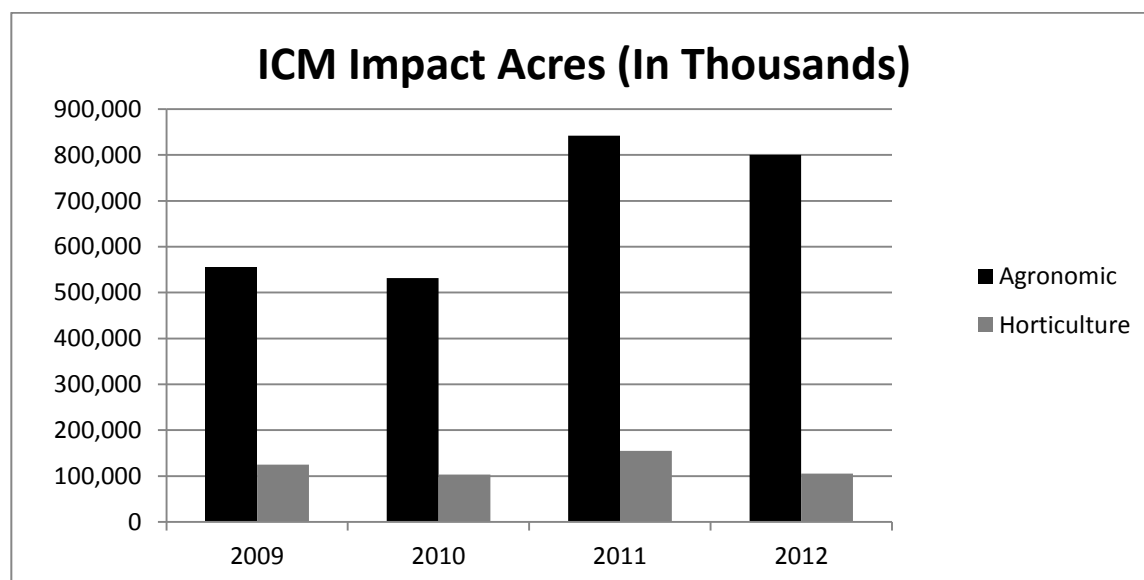


7.2-2 Number of Programs Offered



Sustainable Resource Training

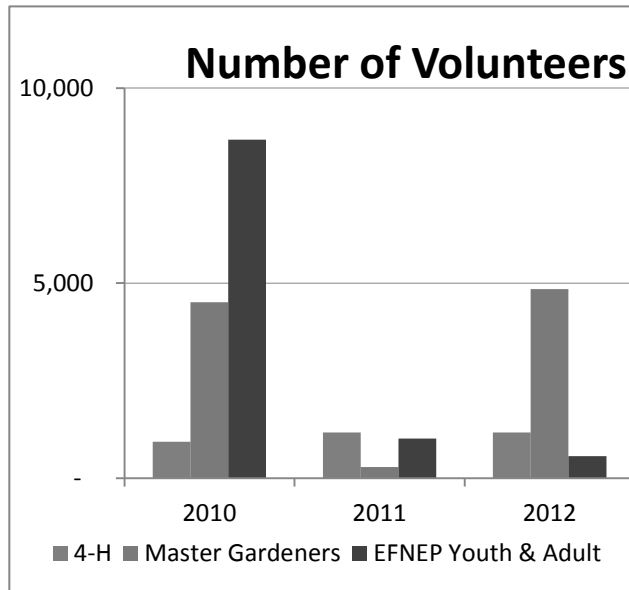
Integrated Crop Management (ICM) programs and activities improve profitability for growers and reduce negative impacts on the environment. Agronomic and Horticultural Crops are the primary focus of ICM programs. The number of acres across all programs in SC planted with agronomic crops using ICM practices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



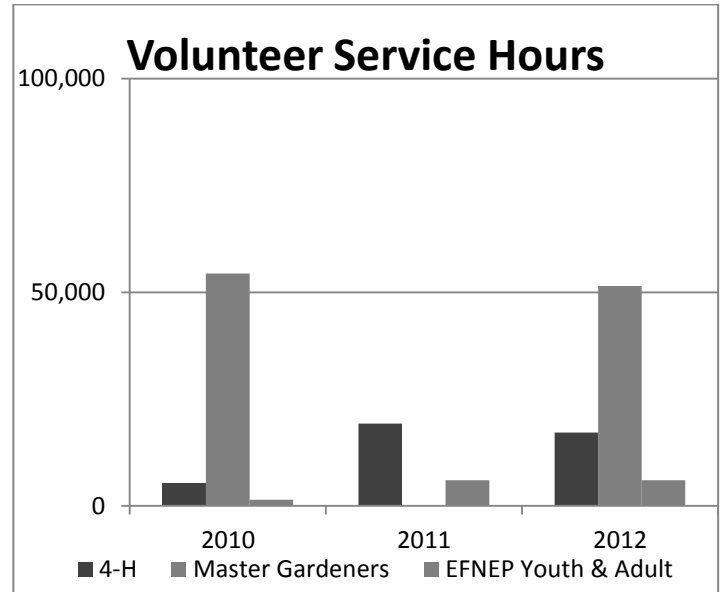
Volunteer Programs

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 2011-12 is estimated at more than \$2,713,176.

7.2-4 Number of Volunteers



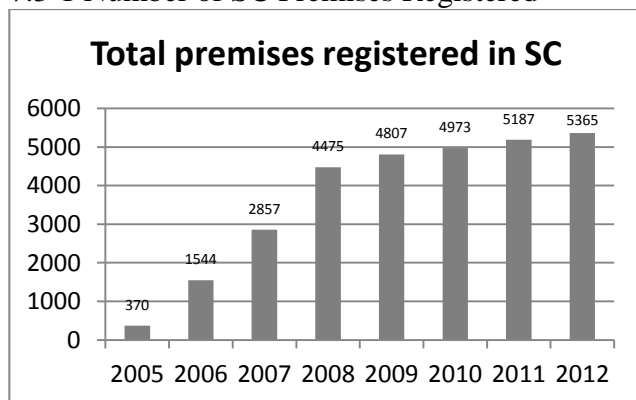
7.2-5 Total Volunteer Service Hours



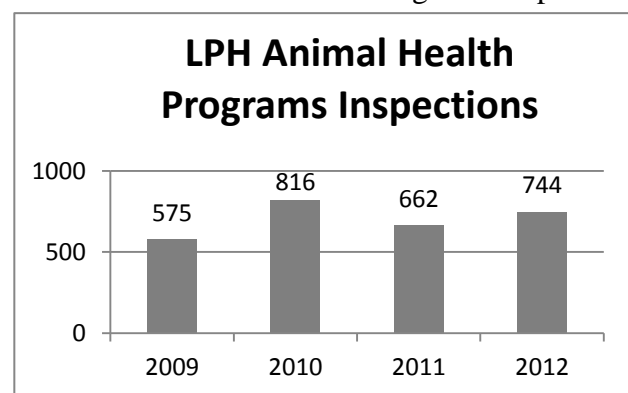
7.3 Livestock-Poultry Health

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 2011-12 the total number of registered sites in South Carolina was 5,365.

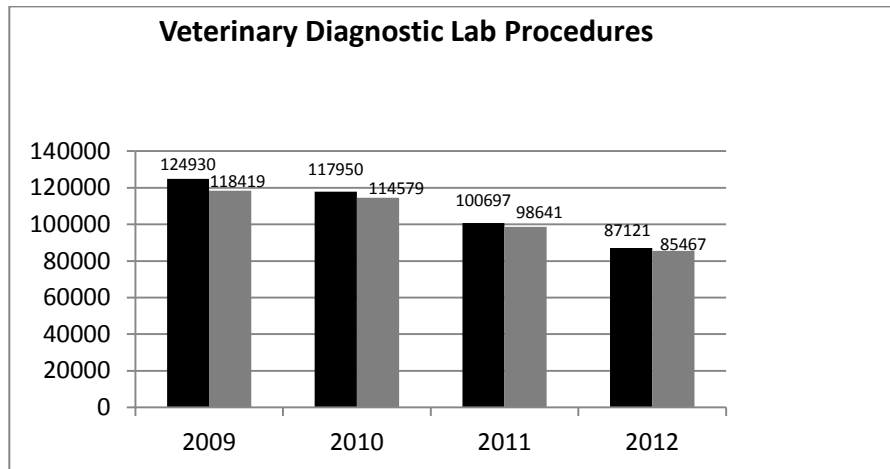
7.3-1 Number of SC Premises Registered



7.3-2 Animal Health Programs Inspections



7.3-3 Diagnostic Lab Procedures



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

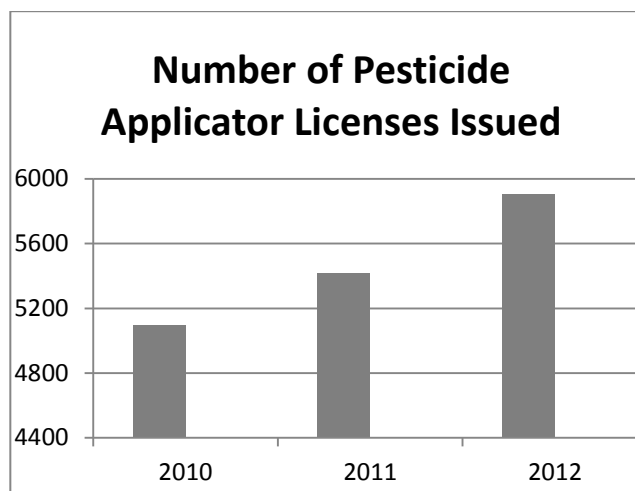
The Department of Pesticide Regulation is the enforcement and investigative authority in South Carolina for pesticide use, and works to protect health, property, and our environment by promoting the safe and proper use of pesticides. The department is significantly increasing the number of newly licensed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

The Department of Pesticide Regulation conducted 2,579 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 76% exceeding the benchmark of 60%.

7.4-1 Structural Pest Control Operators in Full Compliance with Regulations



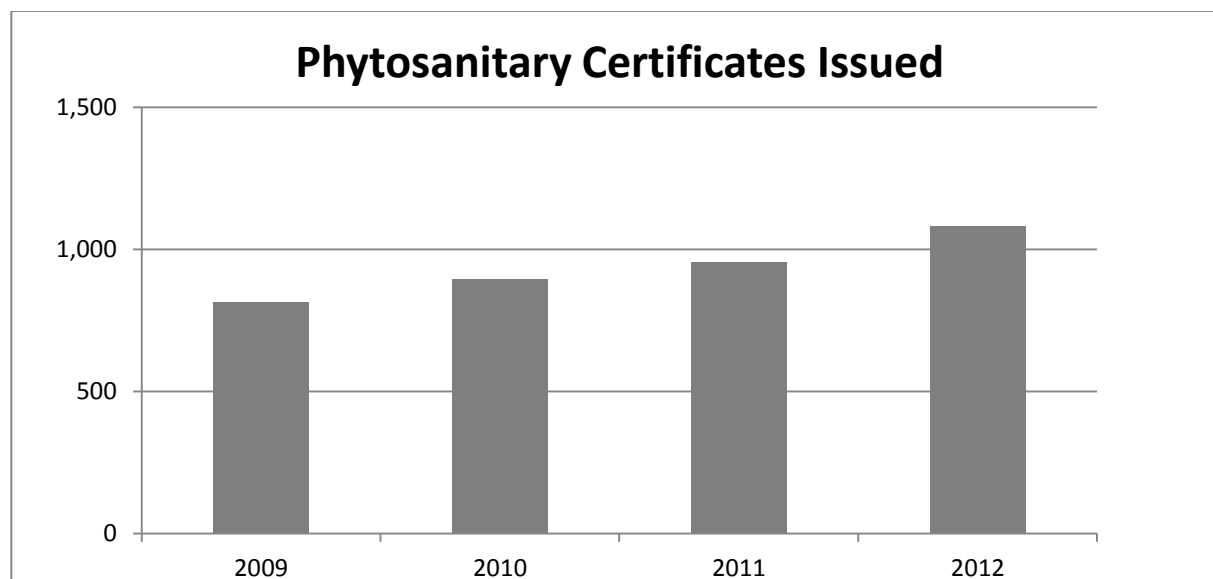
7.4-2 Pesticide Regulation Inspections



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 679 nurseries with a 100% rate of compliance with National Plant Board Standards. The department has also maintained a 100% acceptance rate for the 1,082 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. 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.

7.4-3 Phytosanitary Certificates Issued

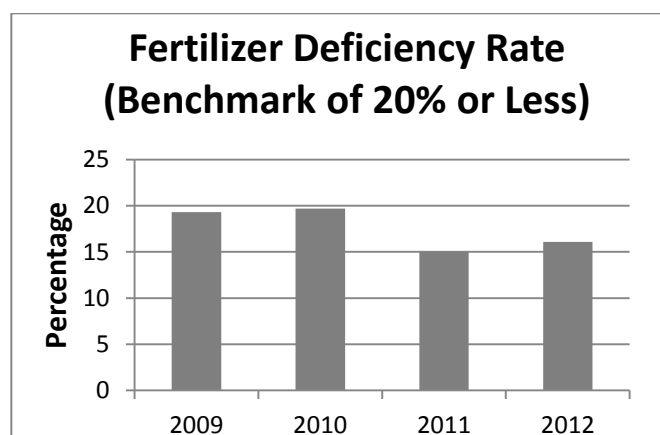


The DPI Plant Problem Clinic provides accurate and timely diagnosis of plant pest and disease samples and viable control recommendations based on this information. During the reporting period, in-house identifications were made for 1,307 plants diseases, 157 insects, 92 weeds/mushrooms and 2,412 nematode assays.

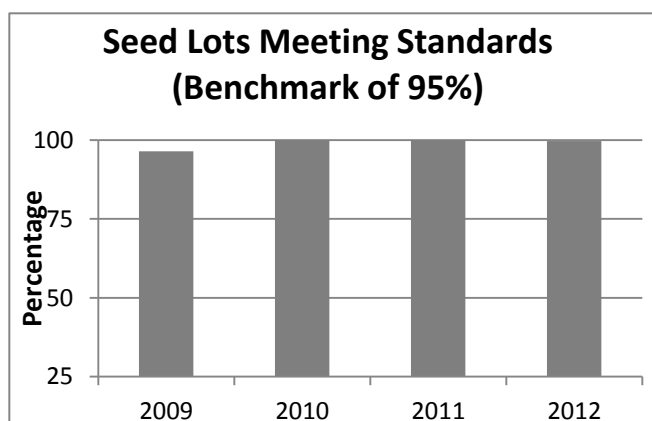
One of the primary inputs for production agriculture is essential plant nutrients or fertilizer. Growers who buy fertilizers that are deficient in nutrients pay for product they do not receive and crop production is reduced as a consequence. This program ensures that fertilizers meet labeled guarantees. During the reporting period, the department procured and analyzed 1,759 fertilizer samples, of which 284 were found to be deficient, for an overall deficiency rate of 16%, well below the target of 20%. Also, laboratory enhancements and the addition of another chemist have greatly improved efficiency in the lab resulting in a reduction in sample analysis turnaround time from 60 days in 2010 to 20 days in 2012.

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 (99.65% in 2012). The Organic Certification program has experienced tremendous growth in the past three years with 78 new operations certified. This growth represents more than half of the total number of certified operations (123).

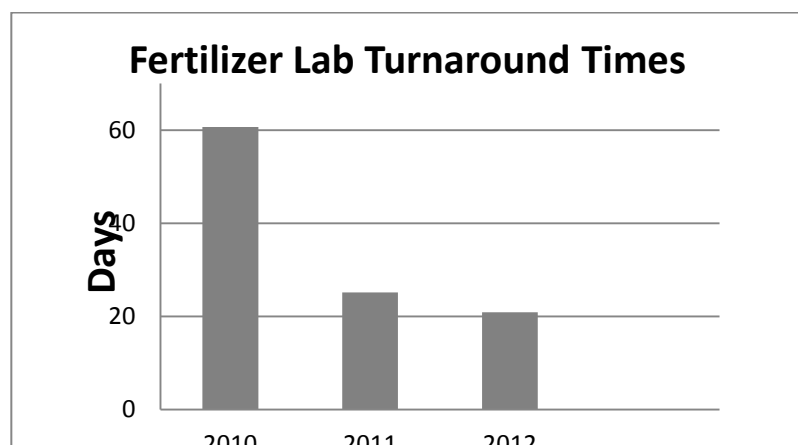
7.4-5 Fertilizer Formulation Deficiency Rate



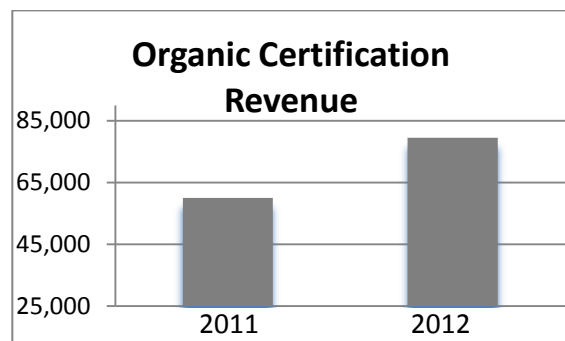
7.4-6 Percentage of Seed Lots Meeting Standards



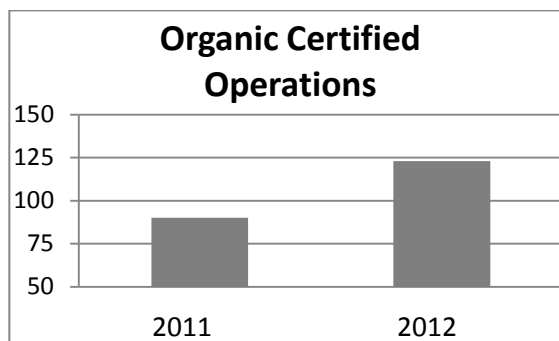
7.4-7 Fertilizer Lab Turnaround Time



7.4-8 Organic Certification Revenue



7.4-9 Organic Certified Operations



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