Accountability Report Transmittal Form

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

Date of Submission: **September 15, 2009**

Agency Director: **Dr. John W. Kelly**

Agency Contact Person: **Dr. Neil J. Ogg**

Agency Contact's Telephone Number: **864-656-1234**

Clemson University
Public Service Activities
Budget and Control Board
Accountability Report for 2008-2009

CLEMSON®
PUBLIC SERVICE ACTIVITIES

Table of Contents

About the cover pictures (clockwise from top): Turfgrass research on campus and at the Pee Dee Research and Education Center near Florence develops best management practices to reduce environmental impact and costs for sod producers, landscape professionals, and golf courses. Remote sensors at the Baruch Institute track water quantity and quality as part of the Intelligent River ™ project that provides real-time data on watersheds across the state. Beef cattle research on campus and at the Edisto Research and Education Center near Blackville focuses on forage-fed beef as a healthful, profitable alternative for cattlemen. Precision agriculture research at the Edisto Research and Education Center uses remote-sensing, soil-sampling, and information management tools to improve crop yields and reduce costs by targeting water, fertilizer, and pesticide applications only where needed. Switchgrass research at the Pee Dee Research and Education Center has resulted in a contract for growers along I-95 to sell 350,000 tons, worth more than $20 million a year, to European power plants as a substitute for coal to generate electricity.

I-1 Mission

Science, Service, Solutions – Clemson University Public Service Activities (PSA)
Who are we?

We are 801 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.

Science, Service, Solutions – 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** serves the diverse needs of South Carolina citizens by delivering research-based information in agriculture, the environment, food safety & nutrition, economic & community development, and youth & families. South Carolina's citizens and PSA's stakeholders have direct input into decisions of the Extension System through statewide planning efforts and the needs identification process.
- **4-H Youth Development** programs provide leadership, citizenship and life skills training to prepare the state's workforce to compete in a knowledge-based economy.
- **Livestock-Poultry Health Programs** ensure the health and safety of livestock/poultry industries and companion animals, and protect the meat supply and public health of South Carolinians.
- **Regulatory Services** protect the environment and the crop-plant food supply by ensuring the safe, effective use of fertilizers and pesticides, and the quality of seeds and plants grown in the state.
- **Institutes** conduct research and outreach in economic and community development, family and neighborhood life, genomics, and governmental and public affairs.

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 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 and how do we do it?

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*

How good are we?

PSA research, extension and regulatory programs directly affect South Carolinians. A recent national survey confirms that people trust our unbiased science-based information to be the best information for their needs.

Powerful Impacts and Return on Investment
- o **$116 million** in return on agricultural research – based on 12 to 1 rate of return on investment in agricultural research (Evanson, 1993); S.C. ranks 4th in the nation on converting agricultural research dollars into revenue for the state
- o **$5.8 billion** in return on investment in agriculture – based on $10 billion direct output of agriculture in South Carolina (Miley, Gallo & Associates, 2008) and 58% internal rate of return of through cooperative extension programs (Gardner and Rausser, 2001)
- o **$6.2 billion** return on investment in forestry – based on $11 billion direct output of forestry in South Carolina (Miley, Gallo & Associates, 2008) and 58% internal rate of return of through cooperative extension programs (Gardner and Rausser, 2001)
- o **$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 undergraduate degree versus high school diploma only (Battelle, 2004)
- o **46 county extension** offices, deliver tens of thousands of programs each year to hundreds of thousands of commercial growers, livestock producers, forest and natural resource managers, institutional food services, homeowners and families across the state
- o **Animal and plant production** is protected by regulatory programs that mitigate disease and non-native species introductions that cost the U.S. over $138 billion in annual losses (Pimental 1999)

I-2 Major Achievements from 2008-09

Needed now more than ever

There is no debate about the tough times facing many South Carolinians and our state government. Indeed, one can readily argue that there are few times in recent history as daunting. Our state faces double digit unemployment, precipitous declines in state revenues, rising energy costs, the housing bubble, continuing drought, and environmental challenges – all in the midst of population growth and development. We strongly believe that there has also never been a more relevant time for the work of Clemson's Public Service Activities.

PSA research, education, and community development programs directly affect South Carolinians. We recognize the fact that PSA is an integral part of the state's history of service, with offices in all 46 counties and services that are uniquely provided by PSA.

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.

Clemson's Experiment Station is part of a nationwide system of scientists working to improve the quality of life for people in their home state, the nation, and the world. Clemson researchers have produced more than 100 new varieties of food and fiber crops, as well as 46 patents.

In 2008-09 the Experiment Station had more than 150 active research projects. Researchers issued 13 intellectual property disclosures, submitted six patent applications, and received one patent. Faculty also submitted 172 technical contributions for publication.

Major achievements for 2008-09 include:

- Researchers developed a kit to determine the **optimal treatment for brown rot fungus on peaches**. The work has helped South Carolina rank as the second largest producer of peaches in the nation, behind California. Peaches generate approximately $40 million for the state's economy.

- A Clemson scientist succeeded in manipulating oyster blood cells to deposit nacre, the material used to form shell and pearl, onto aluminum, titanium, and stainless-steel alloy surfaces. This research holds promise to **create super-tough coatings that will resist corrosion and reduce drag**. Airplane and shipbuilding industries and the military are interested in this research.

- Bioengineers are developing "**energy farms**," using technology to capture nitrogen and phosphorus from agricultural surface waters and process them into high value aquatic biofuels and biofertilizers. The system relies on growing micro-algae. Scientists estimate that micro-algae could produce 100 times more fuel than soybean oil, but it's difficult to harvest. Research trials have shown that brine shrimp, which feed on micro-algae, can **harvest as much as 500 gallons of biodiesel per acre per year with no environmental waste discharge**.

- Researchers discovered that nano-particles coated with lysozyme can be an effective way to **reduce listeria, a major cause of food-related illness**. Lysozyme is part of the immune system that can break down the outer wall of certain bacteria, including ones that cause food-related illnesses. The research presents new packaging methods to keep food safe. The CDC estimates foodborne diseases cause approximately 76 million illnesses, 325,000 hospitalizations, and 5,000 deaths in the United States each year.

- Environmental researchers have developed **new methods to minimize water pollution** and meet water quality improvement goals, with minimum impact on the agricultural community and taxpayers. Workshops to educate municipal officials, designers, developers, building contractors, and the public in storm water management and environmentally sound development practices have been attended by approximately 6,000 persons.

- A bacterium called lactobacilli, which is widely used as a starter in yogurt and cheese hope, has been used by biologists to **extend the shelf life of cottage cheese**. Experiments show that as the number of lactobacilli increase, the number of spoilage organisms decreases. The research also may lead to health benefits by unlocking the genetic code to discover DNA fragments that can be used to make proteins that attack bacterial infections. These proteins, called **bacteriocins, are**

potentially more effective than antibiotics. Disease-causing bacteria can become resistant to antibiotics but not to bacteriocins.

- Researchers have developed **variable rate irrigation technology** that enables an overhead irrigation system to match specific needs in different zones within a field and minimize water use. The technique can increase crop yields while reducing water and fertilizer use, saving as much as 40 percent in production costs.

- New conservation tillage techniques for cotton show promise for reducing the energy and labor requirement, equipment cost, soil erosion and plant damage from blowing sand. **Cost savings of approximately $20 per acre** could be achieved compared to conventional methods. Cotton production in SC generates sales of more than $46 million annually.

- Results of research and field demonstrations to determine the economic value of Integrated Pest Management (IPM) programs have been made available to farmers and policy makers in the Southeast and worldwide. Researchers have conducted **economic assessments of sustainable technologies such as IPM**, where economic, environmental and social sectors intersect. They have evaluated the sustainability of the technology and **provided guidance to policy makers** promoting adoption of sustainable practices. Independent research using secondary data provided insight into policy implications for environmental protection at the national and regional levels.

- Researchers are finding **alternatives to chemical pesticides** that reduce pesticides use and production costs. South Carolina leafy greens producers can reduce applications of insecticides from about 15 per season to 2 or 3 using microbial agents and advanced field scouting techniques. This increases **savings for the producer and reduces environmental impact**.

- Agricultural engineers are helping poultry producers lower their energy costs and improve operations. **Savings can be 40 percent or more** on heating, cooling, and lighting costs. The engineers are also studying the use of chicken and turkey house litter to fertilize pine trees that produce pine needles for landscaping. The outcome is a win-win, with poultry growers disposing of manure and pine-needle producers gaining a low-cost, natural fertilizer.

- Researchers are analyzing **sorghum to improve its ability to be converted to ethanol**. The research will provide data that will help producers of related crops, including corn, rice and turfgrass. South Carolina uses nearly 2.5 times more energy than it produces, according to U.S. Energy Information Administration. While the state does not have oil, natural gas or coal resources, biofuels from crops show promise as renewable energy sources that can be produced, processed, and sold here. This is a new project and additional outcomes will be reported in subsequent years.

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

New knowledge was personally delivered through 396,847 contacts made by Extension personnel. Working across all 46 South Carolina counties, more than 224,460 participants attended 11,813 Extension programs.

Major accomplishments for 2008-09 include:

- As a result of the **Animal Production** programs, 4,206 producers improved breeding by utilizing expected progeny differences (EPDs) in sire selection/proper breed complementation and/or by adopting improved health and reproduction methods. A total of 4,346 producers implemented recommended grazing management systems, and 2,742 producers planted improved forage cultivars.

- The **Confined Animal Manure Management** program conducted 56 educational sessions that resulted in 1,764 producers earning recertification credits. Over 98% reported knowledge gain from the training.

- Approximately 376 landowners participated in **Private Pesticide Applicator** recertification programs this year. Private Pesticide Applicators who obtained their license in 2004 or earlier must earn five continuing certification hours to be recertified by December 31, 2009. Department of Pesticide Regulation records show that, as of June 9, 2009, there were 7,302 Private Pesticide Applicator License holders in the state.

- **Integrated Pest Management** (IPM) strategies were applied on 17,000 peach production acres and 40,526 collard production acres. As a result 622 growers reported increased profitability.

- Over 24,756 individuals received **gardening information** by telephone or in person through the Urban Horticulture Center, PAWS Hort-line, and the Home and Garden Information Center (HGIC). In addition, the HGIC web site recorded more than 4.8 million visits.

- **Integrated Crop Management** techniques were applied to 288,405 acres, including nematode and rust management for soybean, nutrient management for corn and soybean, foliar disease management for corn, and zone management for precision agriculture to reduce chemical and water inputs for row crops**.**

- **Peanut management programs** increased grower profitability by over $3 million through variety evaluation, disease management, and nutrition research.

- The **Wheat Variety Challenge** had an economic impact of $2.4 million in 2008 by identifying varieties that produce higher yields, as well as improved resistance to diseases and insect damage.

- **Expanded Food and Nutrition Education Programs** were conducted for 7,257 limited resource adults to improve nutrition practices, food safety, and food resource management practices such as planning meals, comparing prices, using grocery lists. More than 1,346 volunteer hours were contributed by peer educators who help participants improve the nutritional quality of the meals served to their families.

- **ServSafe® food safety training** programs to reduce food-borne illnesses certified 275 food handlers from 230 commercial and institutional food establishments. These food handlers have the potential of reaching 234,232 people.

- A partnership with AmeriCorps conducts **youth leadership and dropout prevention programs** in Colleton, Allendale, Dorchester, and Hampton counties. Over 91% of the participating students' grades improved according to year-end evaluations. Test scores in math and reading also improved, and teachers reported improved classroom behavior among the participants.

- Six locally facilitated meetings addressing **public issues** and 33 National Issues Forums (NIF) were convened or moderated; 223 people completed leadership projects collaborating with others to address an issue. **Leadership programs** include Palmetto Leadership, Youth in Action, and Junior Camp Counselor Training for Operation Military Kids.

- **4-H** conducted 3,712 programs that reached 46,357 youth and families. In addition, 1,489 adult volunteers were trained, who then trained 18,330 youths in leadership development; hunting safety; plant and animal projects; science, technology and engineering projects; day and overnight camping; financial/resource management; and nutrition, health and fitness.

- A total of 1,307 programs were conducted to promote **sustainable forestry and natural resources management**, and enhance environmental quality. These programs, including Master Tree Farmer, Master Naturalist, Master Wildlifer, and the Carolina Clear stormwater education program reached 33,244 participants.

- Program participants applied **forest management** practices on105,453 acres. Practices included prescribed fire, selective thinning, invasive species control, longleaf pine restoration, and bottomland hardwood management.

- Master Naturalist volunteers provided 7,945 hours of service **removing invasive species** such as beach vitex and monitoring water quality.

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 (3) areas of service; Animal Health Programs, SC Meat and Poultry Inspection, and the Veterinary Diagnostic Center. Daily functions of LPH include conducting constant surveillance for diseases that affect both man and animals, providing the diagnostic expertise that allows for treatment and eradication of disease of domestic animals, inspecting/testing the processing of foods of animal origin, and coordinating state agricultural/animal emergency response as lead agency of ESF-17. Veterinary diagnostic support for wildlife also is provided by the diagnostic laboratory.

- Direct sales of food animal products by South Carolina producers, valued at $1.09 billion, is protected in part by 575 inspections made by Animal Health Programs personnel at livestock auction markets, after-hours markets, dealers, and miscellaneous sales such as flea markets.

- These inspections are required as part of **maintaining the state's program "disease free"** status and are coordinated with USDA. "Disease free" status improves access to both interstate and international markets.

- **SC Ag-Watch** is a new program LPH is using to provide training and materials to livestock owners about improved biosecurity practices, foreign animal disease awareness, and notification procedures. This approach adds a new emphasis on prevention of disease to the traditional roles of disease surveillance, control, and eradication. As part of this effort LPH held 22 training sessions attended by 462 producers.

- The **Veterinary Diagnostic Center** completed 124,930 tests and procedures during FY08-09 in performing its animal and food safety diagnostic duties. Of these 118,419 were related to production animals; the remaining 6,511 were from companion animals and wildlife.

- LPH enhanced understanding of the importance of **food safety through outreach programs** presented to gatherings of the South Carolina Association of Meat Processors, Carolina Farm Stewardship Association, U.S. Army Veterinary Service Senior Warrant Officer Council, South Carolina Interagency Food Safety Council, Lancaster County Cattleman's Association, South Carolina Department of Agriculture and the South Carolina Department of Health and Environmental Control.

- Meat-Poultry Inspection completed its **triennial on-site review** by the U.S. Department of Agriculture, Food Safety Inspection Service. There were no deficiencies noted by the audit team, an unprecedented accomplishment by any state meat inspection program since the inception of the current audit format several years ago.

- A three-day **Hazard Analysis Critical Control Point (HACCP)** training session was conducted by Meat-Poultry Inspection. The session was successfully completed by 24 meat and poultry industry personnel from North and South Carolina.

- Protecting South Carolina's $758 million in direct poultry sales from an outbreak of High-Path Avian Influenza (HPAI) was the focus of a two-day exercise conducted by LPH. This seminar focused upon the **animal health and public health response to HPAI** detected in poultry. Response roles of the poultry industry, state and federal agencies were defined and exercised. Participating agencies in addition to Clemson University included SC DHEC, SC Emergency Management Division, County Emergency Managers, and USDA.

- South Carolina's **ability to respond to an animal emergency** that requires support from the National Veterinary Stockpile (NVS) was enhanced by a two-day tabletop and deployment exercise conducted by LPH. The exercise included activating the State's receiving, storage and staging (RSS) warehouse. As a result of the exercise, LPH improved its ability to respond to animal emergencies and formalized a support agreement with the South Carolina Air National Guard to assist in responding to animal emergencies.

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

- LPH published 29 publications and made 24 presentations related to animal disease/disaster prevention.

REGULATORY SERVICES
www.clemson.edu/public/regulatory/

Regulatory Services protects the environment and the food supply by ensuring the safe, effective use of fertilizers and pesticides, and the quality of seeds and plants grown in the state; analyzes soil samples and plant pest samples, making recommendations for optimum productivity; and conducts programs to prevent, respond to, and recover from, catastrophic events affecting agriculture, including agroterrorism.

- Outreach efforts by the Agricultural Service Lab resulted in a 12% increase in soil samples, a 24% increase in plant tissue samples, and a 19% increase in other samples while maintaining an **average turn-around time of 2.85 days**. These gains in efficiency and revenue generation move this program closer to its goal of self-sufficiency.

- **Implemented on-line pesticide license examinations**, providing greater flexibility and convenience in scheduling and test locations. Exam testing centers are available at nine technical colleges across the state: Charleston, Columbia, Conway, Florence, Graniteville, Greenville, Greenwood, Kingstree, and Spartanburg.

- Acquired legislative approval of **new regulations to protect against introduction** of the fungus that causes sudden oak death or ramorum blight, and the light brown apple moth. These regulations will help protect our nursery and landscape industry, our fruit and vegetable industry, and our native environment from these **potentially devastating pests**.

- Developed a **new, practical, quantitative assay for borate termiticides** used during building construction. This ability is essential for inspectors to properly inspect and enforce the borate termiticide labels and thereby **protect the public from termite damage** due to misapplications.

- Participated in an **intensive survey and eradication program for citrus greening** disease and its insect carrier, Asian citrus psyllid, in three counties. This cooperative effort with USDA-APHIS-PPQ **prevented a USDA quarantine of the entire state** which would have resulted in an unnecessary regulatory burden on growers outside the three-county area where citrus greening and Asian citrus psyllids were found.

- Collected 195,000 pounds of used pesticide containers for recycling. This was an **increase of 91% (over 93,000 pounds) from the previous year**. Since its inception in 1993, the program has collected over 2 million pounds of pesticide containers for recycling, helping to protect the environment from potential pesticide contamination.

PSA INSTITUTES

There are six institutes under the PSA umbrella and selected achievements for 2008-09 are presented below in reverse alphabetical order.

- Youth Learning Institute
- Strom Thurmond Institute of Government and Public Affairs
- Institute for Nutraceutical Research
- 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/

The Youth Learning Institute (YLI) is a vital component of Clemson University's youth outreach effort, using the research and knowledge of faculty and staff to develop programs that benefit S.C. youth. More than 21,000 young people participate annually in more than 70 programs held at our leadership centers, ranging from two-week residential programs to one-day in-school training.

Clemson University has been offering experiential education for South Carolina youth since 1934. Since that time, Clemson camping has touched the lives of more than 250,000 participants. Initially founded as summer 4-H camps, our mission has expanded to include other young people and adults in year-round programs.

- Affiliated with Zest Quest, an outreach program of the Cliffs Communities, to expand outreach and develop a nationally recognized curriculum for **teaching "healthy choice" lifestyles**. Currently, Zest Quest provides daily training to elementary school students throughout the school year in 14 schools in upstate South Carolina.

- Formed a partnership to develop **year-round environmental and outdoor adventure programs**. Partners are the Scott Hannon Memorial Foundation, which seeks to brighten the lives of children in need, and Pinnacle Partners, a nonprofit foundation created by The Cliffs Communities The programs will be conducted at Pinnacle Falls, an 80-acre tract near the Jocassee Gorges that was donated to Clemson University by Pinnacle Partners. The Hannon Foundation has donated over $500,000 to build housing facilities for students attending environmental and outdoor adventure programs, as well as summer campers.

- Completed **major renovations to the facilities at the W.W. Long Leadership Center**, near Aiken, SC. The upgrades include adding dormitory and administrative offices that house the Youth Challenge Academy. These renovations will provide over 220 additional beds, as well as offices, basketball courts and recreation fields.

- **Received a 21st Century Community Learning Center grant** from the S.C. Department of Education to provide after-school programs that will enrich both academic and life-skills. These programs will primarily benefit students at the W.W. Long Leadership Center near Aiken, SC.

- Expanded the C-CATS program to include an **international outreach component**. Clemson's Challenge for Academically Talented Students (C-CATS) recruits top 9th and 10th graders from the Carolinas and Georgia to participate in high-powered weekend retreats that include team-building and academic sessions. Students gain leadership skills, learn to foster positive relationships, and improve their ability to think clearly and perform under pressure. This summer, C-CATS students participated in a summer counselor intern program that included camp-based programming on the Caribbean island of Dominica.

- Assumed primary responsibility for hosting the **2008 Empowering Girls Symposium**, held in Columbia. With more than 200 attendees from across the state, this conference featured nationally recognized experts in the area of gender responsive training for at-risk girls.

STROM THURMOND INSTITUTE OF GOVERNMENT AND PUBLIC AFFAIRS
www.strom.clemson.edu/

The Thurmond Institute (STI) conducts applied research and service in public policy areas at the local, regional, state, and national levels. With an established record of collaborative partnerships with academic, governmental, and private sector scholars throughout the world, the Institute also enhances awareness of current public policy issues on the Clemson campus and throughout the state and region through formal and informal educational programs.

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

Accomplishments in 2008-09 include:

- Completed the state's **Shoreline Advisory report** for S.C. DHEC, which analyzed shoreline data for all coastal states and the corresponding state guidelines that govern these vital resources.

- Initiate the **Lake Hartwell Economic Impact** project, working with Army Corps of Engineers and six surrounding counties. Duke Energy has requested a similar project for Lake Keowee.

- Developed the **Pickens County Water Supply Plan** for the Water Authority. This plan is intended to inform the Authority of ways they can better manage resources among the water purveyors in the county and improve forecasting.

- Established **economic development partnerships** along the I-95 corridor to build a competitive advantage in the area, through funding from the General Assembly. New products and commercial opportunities are expected to emerge in this fiscal year.

- Published **Understanding Education Finance, A Citizen's Guide** through the Self Center for the Future to inform South Carolinians about the legislative processes that govern how dollars are awarded to K-12 and higher education.

- Won a S.C. Notable Document award for "**Planning for College: A Comprehensive Guide for SC Families**," a resource available at no cost to state citizens (www.strom.clemson.edu/familyguide).

- Conducted first of its kind research for **University Center of Greenville** on the cost effectiveness and governance of similar multi-institutional higher education centers across the country.

- STI faculty and staff were named to the following state or national committees and task forces:
    - S.C. Information Technology Solutions Committee
    - State Recycling Task Force
    - S.C. Revenue Committee to Evaluate School Funding
    - Southern Growth Policy Board
    - Piedmont-Atlantic Mega-Region Task Force
    - State Mapping Advisory Committee through S.C. DNR

- Contracted by the S.C. **Department of Commerce** to assess and define the sustainability sectors in the state's economy, and to determine possible job creation and research outcomes.

- Transformed the **MPA degree** into a live-online program to serve working professionals across the state and region. Growth is anticipated to be at least 50 percent for this fiscal year.

INSTITUTE FOR NUTRACEUTICAL RESEARCH
www.clemson.edu/INR/

Nutraceuticals are foods or parts of foods, including dietary supplements, that help prevent or treat diseases such as cancer and heart disease. With the establishment of manufacturing facilities and corporate offices of companies such as GNC/Nutra Manufacturing, Pfizer Capsugel, and Perrigo, South Carolina has become a recognized center for the nutraceutical industry. The Institute for Nutraceutical Research (INR) has been in existence since January 2002 and during this time has established funding through DOD, NIH, USDA, private foundations, and industry. A Science Advisory Board is composed of representatives from 21 companies, universities, and government agencies.

For 2008-09, INR achievements include:

- Continued **development of curcumin, muscadine, quercetin and caffeine as natural food additives**, funded by grants.

- **Formed a start-up company**, ERT, to commercialize patent-pending technology on composite polymeric material from renewable resources.

- Signed an expanded license agreement for **injection blowmolding of nutraceutical/pharmaceutical vessels**.

- Added two new member companies to the INR Corporate Membership list.

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.

- Through the end of FY 008-09, **more than 5,100 volunteers, who have contributed more than 70,000 hours of service,** have been recruited to serve in Strong Communities, a multi-year community-wide initiative to prevent child abuse and neglect.

- The **Building Dreams** project has served slightly more than 700 children of incarcerated parents in first-time and sustained mentoring relationships over the last five years. One of the Building Dreams mentees—now a college sophomore—was chosen last year as the **spokesperson for the federal initiative** at the annual conference.

- Through a federal Health and Human Services grant, the **"S.C. Rural Communities Compassion Project"** distributed $240,000 to 14 rural faith and community-based organizations to build their capacity for providing services to children and families. The program was **showcased at a White House Conference on Community and Faith-based Initiatives**.

- In continuing partnership with the Lowcountry Food Bank, 18 faith-based and community nonprofits , 755 volunteers, and 10 small-scale produce farmers, the **Growing Foods Locally Initiative has distributed 85,877 pounds of fresh produce to low-resourced individuals** over a three-year period.

Clemson Institute for Economic and Community Development
http://www.clemson.edu/sandhill/

The Clemson Institute for Economic and Community Development (CIECD) brings the resources of the University and our partners to bear on problems and issues at the local level, and through collaboration with community stakeholders, helps them achieve a more livable, prosperous, and sustainable future. Many key programs are supported by grants from public and private organizations.

- **Leadership training** is one of the major initiatives of CIECD and is illustrated in the following programs:
    o Leadership South Carolina (statewide)
    o Beaufort County Senior Leadership Program (completed its 15th year with 23 individuals graduating)
    o SC LEADS program for agriculture, forestry and natural resources
    o Southern Carolina Leadership program on regional economic and community development for participants from Barnwell, Allendale, Bamberg and Orangeburg counties
    o SC Women's Connection conducted seminars in Georgetown, Greenville, Florence and Columbia (statewide)

- **Community Development** programs
  - Laboratory for Deliberative Dialogue conducted statewide National Issues Forums on "Coping with the Cost of Health Care: How Do We Pay for What We Need?"
  - Grant Writing Workshops were given in over 35 communities in the state and to three national organizations and six statewide groups

- **Economic Development** programs
  - Clemson University Center for Economic Development fosters economic development by providing research and technical assistance to organizations and areas concerned with job and income creation
  - The Innovation Center encourages the growth of enterprises in targeted communities and supports enterprise development
  - MarketMakerSC© is an e-commerce business tool to help facilitate the direct buying and selling of South Carolina agricultural and seafood products – and has had over 17,500 users since March, 2009
  - FastTrac© sessions held in the communities of Bluffton, Walterboro and Westminster assisted in the development of 24 business plans and helped participants to refine their business skills
  - Research included a feasibility study of muscadine production and processing in South Carolina, a feasibility studies for the peach industry, and an ongoing study of the feasibility, market, and economic impact of a peanut shelling operation, and a study of the agribusiness cluster in South Carolina for the Palmetto Institute, which included several economic impact studies.

BARUCH INSTITUTE FOR COASTAL ECOLOGY AND FOREST SCIENCE
www.clemson.edu/baruch/

The Belle W. Baruch Institute for Coastal Ecology and Forest Science conducts research and education programs focused on the ecology and management of the natural resources of the coastal region of South Carolina for the betterment of the state's citizens.

- PISCES™ (Program of Integrated Studies on Coastal Environmental Sustainability) was successfully trademarked and became an element of the Intelligent River™ Project. When fully developed, this program will consist of **environmental monitoring that utilizes wireless technology** for remote data acquisition. Ecological data will be transmitted to a central database and uploaded to the Internet to provide graphic displays in real time. PISCES™ will be a self-contained method of long-term monitoring of environmental quality to comply with local zoning ordinances, state environmental codes, federal water protection regulations, and as a measure of the effectiveness of best management practices.

- A **stormwater demonstration facility** is being developed as a component of the new LEED-certified office and conference facility, and as a pilot for the Intelligent River™ project.

- The **Environmental Quality Laboratory** added state-of-the-art instrumentation for carbon, nutrient, and bacterial analyses, as well as field and lab equipment to characterize various water, soil, and plant resources.

- **Collaborative efforts** include research projects with the U.S. Geological Survey, the U.S. Forest Service, S.C. Sea Grant, the College of Charleston, the University of South Carolina, and Coastal Carolina University.

- **National and international recognition** increased as faculty were elected to offices in the National Shellfisheries Association, the Coastal Plains Chapter of the Society for Ecological Restoration, the American Ecological Engineering Society, and the Society of Wetland Scientists, and as they served as manuscript and proposal reviewers for a number of scientific journals and agencies.

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	**Campus life**
Student performance	**Educational resources**
Clemson's national reputation	

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

Last year PSA units developed an update at Year Three to the PSA five-year plan. PSA is in Year Four of this plan with the following central strategy.

1. To continue our core programs **discovering and delivering relevant new knowledge** in our five focus areas: agriculture, community, environment, food, and youth.

2. To continue to follow our five-year plan to: 1) make the needed structural changes to PSA, 2) utilize web and mass media to more efficiently serve clients, 3) upgrade video conferencing and internet capability of off-campus sites and increase efficiency of computer and telephone use, 4) make personnel adjustments and develop extension program teams, and 5) reduce expenses and leverage funds to increase external support.

The revised five-year plan has specific program goals for each subunit of PSA, e.g., the Cooperative Extension Service has seven program teams. The Livestock and Forages Program Team will "improve the production, efficiency, environmental sensitivity and profitability of animal production systems and reduce the environmental impact of animal waste in South Carolina."

I-4 Key Strategic Challenges

Challenges Overview

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 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.

This challenge must be accomplished within the current economic climate, which includes the present situation of a 27% reduction in state funding, while minimizing the effect on services to our clients.

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.

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 organizations.

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

PSA units actively strive to solicit ideas and issues from S.C. 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**
- **Agricultural producers and growers**
- **State, local, and county agencies**
- **Communities**
- **Local and county governments**
- **Pesticide and fertilizer sellers and users**
- **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**
- **Agricultural community, 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**
- **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 can best be used to solve those specific problems 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
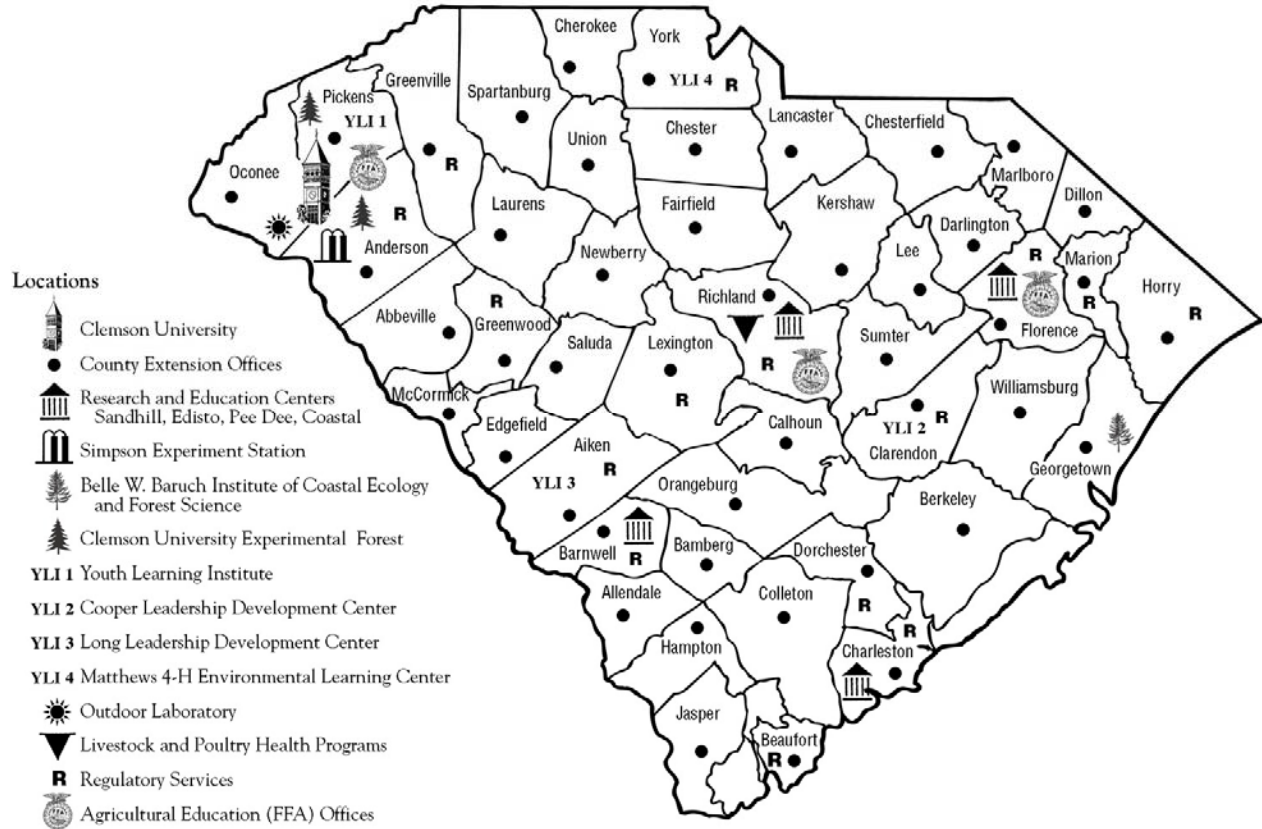
Figure II-1

II-6 Number of Employees

As of July 1, 2009, PSA had 801 employees in 613 FTE's. Of these, 90 positions are funded solely from external funds.

Type	Headcount	FTE
Classified	438	349
Unclassified	363	264
Total	**801**	**613**

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.

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

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 to 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.

Regulatory and Public Service Programs - Agricultural Service Laboratory (ASL) and Plant Problem Clinic (PPC):
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. PPC analyses and reports plant pest identification to growers, homeowners, and other interested persons to determine appropriate control measures. Authority to provide these services is derived from Section 46-7 of the South Carolina Code of Laws.

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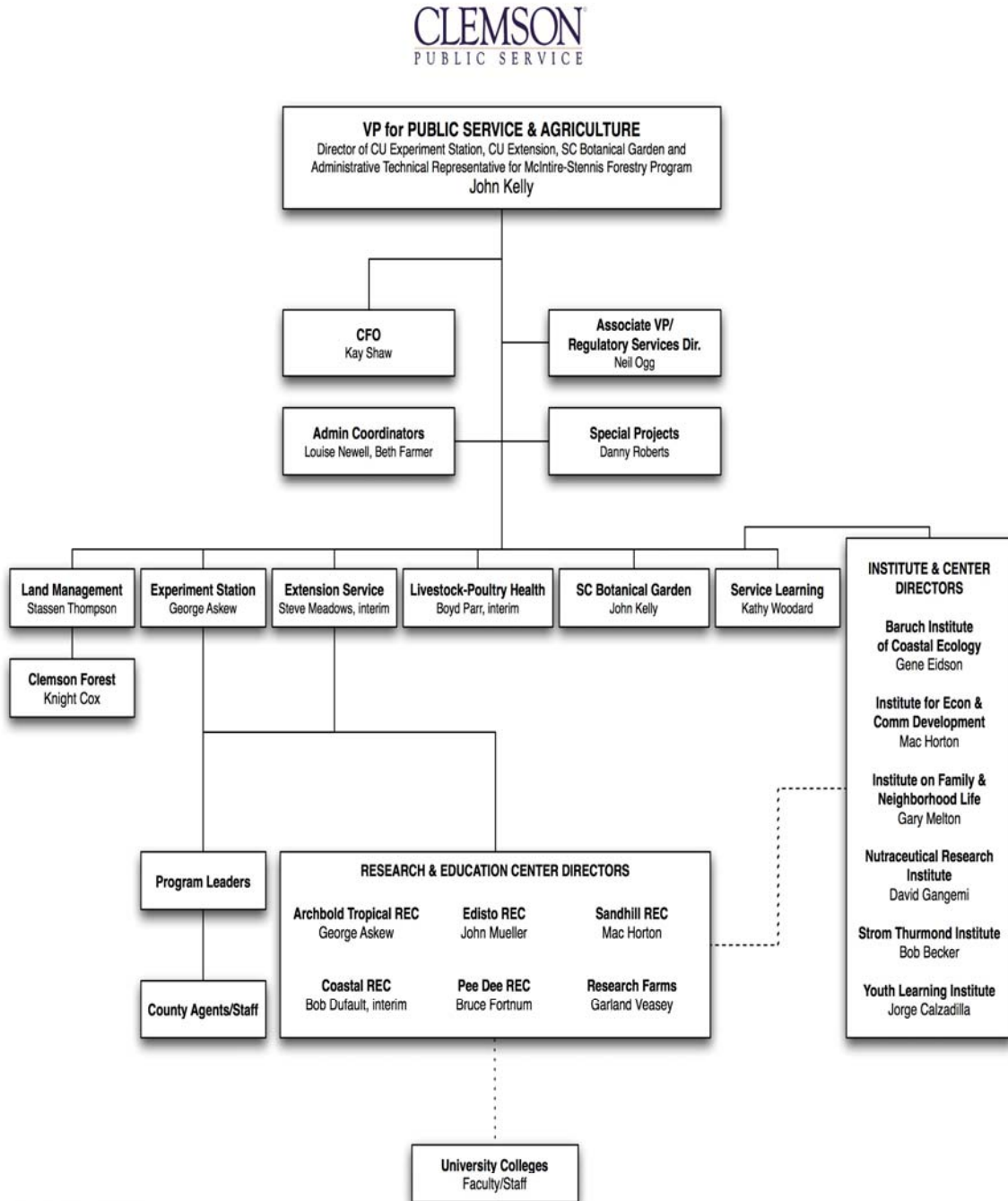
Employee Performance: Primary among these processes is the University's Employee Performance Management System (EPMS), which reviews the personal performance of classified employees. Similar to this process is the Faculty Activity System, which allows the faculty to report their plans for the coming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

Unit Performance: This year the new WEAVEonline® university-wide assessment database was 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 U.S. 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

CLEMSON
PUBLIC SERVICE

VP for PUBLIC SERVICE & AGRICULTURE
Director of CU Experiment Station, CU Extension, SC Botanical Garden and Administrative Technical Representative for McIntire-Stennis Forestry Program
John Kelly

CFO
Kay Shaw

Associate VP/ Regulatory Services Dir.
Neil Ogg

Admin Coordinators
Louise Newell, Beth Farmer

Special Projects
Danny Roberts

Land Management
Stassen Thompson

Experiment Station
George Askew

Extension Service
Steve Meadows, interim

Livestock-Poultry Health
Boyd Parr, interim

SC Botanical Garden
John Kelly

Service Learning
Kathy Woodard

Clemson Forest
Knight Cox

INSTITUTE & CENTER DIRECTORS

Baruch Institute of Coastal Ecology
Gene Eidson

Institute for Econ & Comm Development
Mac Horton

Institute on Family & Neighborhood Life
Gary Melton

Nutraceutical Research Institute
David Gangemi

Strom Thurmond Institute
Bob Becker

Youth Learning Institute
Jorge Calzadilla

Program Leaders

RESEARCH & EDUCATION CENTER DIRECTORS

Archbold Tropical REC
George Askew

Edisto REC
John Mueller

Sandhill REC
Mac Horton

Coastal REC
Bob Dufault, interim

Pee Dee REC
Bruce Fortnum

Research Farms
Garland Veasey

County Agents/Staff

University Colleges
Faculty/Staff

Last Modified: 07/28/2009

22

II-10 Expenditure/Appropriations Chart

Base Budget Expenditures and Appropriations

Major Budget Categories	FY 07-08 Actual Expenditures		FY 08-09 Actual Expenditures		FY 09-10 Appropriations Act	
	Total Funds	General Funds	Total Funds	General Funds	Total Funds	General Funds
Personal Service	$ 44,272,492	$ 28,194,359	$ 44,263,384	$ 24,576,138	$ 40,261,158	$ 28,246,424
Other Operating	$ 33,703,606	$ 14,839,297	$ 22,712,524	$ 6,423,230	$ 15,883,216	$ 641,354
Special Items	$ 134,974	$ 134,974				
Permanent Improvements						
Case Services						
Distributions to Subdivisions	$ (243,123)	$ (243,123)				
Fringe Benefits	$ 13,049,045	$ 8,958,403	$ 15,426,972	$ 9,677,752	$ 13,610,683	$ 9,355,931
Non-recurring						
Total	$ 90,916,994	$ 51,883,910	$ 82,402,880	$ 40,677,120	$ 69,755,057	$ 38,243,709

Other Expenditures

Sources of Funds	FY 07-08 Actual Expenditures	FY 08-09 Actual Expenditures
Supplemental Bills	$ 3,900,000	$ 275,000
Capital Reserve Funds		
Bonds		

II-11 Major Program Areas Chart

Program Number & Title	Major Program Area & Purpose	FY 07-08 Budget Expenditures		FY 08-09 Budget Expenditures	
I	Agricultural Research	**State:** 23,489,849.00 **Federal:** 5,038,739.00 **Other:** 6,151,363.00 **Total:** 34,679,951.00		**State:** 18,089,493.00 **Federal:** 4,060,728.71 **Other:** 6,624,884.79 **Total:** 28,775,106.50	
		% of Total Budget:	38%	**% of Total Budget:**	35%
II	Cooperative Extension	**State:** 22,780,559.00 **Federal:** 7,116,697.00 **Other:** 13,735,591.00 **Total:** 43,632,847.00		**State:** 18,434,742.00 **Federal:** 8,436,410.88 **Other:** 14,826,573.99 **Total:** 41,697,726.87	
		% of Total Budget:	48%	**% of Total Budget:**	50%
III	Livestock Poultry Health	**State:** 3,535,669.00 **Federal:** 2,466,017.00 **Other:** 556,434.00 **Total:** 6,558,120.00		**State:** 2,788,041.00 **Federal:** 2,438,824.22 **Other:** 1,586,066.29 **Total:** 6,812,931.51	
		% of Total Budget:	7%	**% of Total Budget:**	8%
IV	Regulatory Services	**State:** 1,868,313.00 **Federal:** 940,994.00 **Other:** 3,027,250.00 **Total:** 5,836,557.00		**State:** 1,364,844.00 **Federal:** 899,923.08 **Other:** 3,076,609.41 **Total:** 5,341,376.49	
		% of Total Budget:	6%	**% of Total Budget:**	6%
V	State Energy	**State:** 92,159.00 **Federal:** **Other:** **Total:** 92,159.00		**State:** **Federal:** **Other:** 50,738.94 **Total:**	
		% of Total Budget:	0%	**% of Total Budget:**	0%
VI	BioEngineering	**State:** 117,360.00 **Federal:** **Other:** **Total:** 117,360.00		**State:** 0.00 **Federal:** **Other:** **Total:**	
		% of Total Budget:	0%	**% of Total Budget:**	0%

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

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, our organization is focused to provide research and outreach in PSA's five areas of service.

♦ *1. Leader communication*
Vice President John Kelly has established a reputation for encouraging open communication within and across PSA units. The PSA Cabinet is only one formal communication mechanism, meeting at least once a month to share initiatives and results of projects. The Cabinet is responsible for implementing programs and initiatives aligned with the PSA focus areas. The Cabinet consists of the following key leaders:

· VP for PSA	· Assist. Director Ext. Field Operations
· Associate VP for PSA	· Associate Deans
· Directors of Research and Education Centers	· Director of Information Technology
· Directors of Institutes	· Ext. Program Team Leaders
· Chief Operating Officer, Exp.Station	· Assistants to VP for PSA
· Chief Operating Officer, Ext. Service	· PSA Chief Financial Officer
· Director, Livestock-Poultry Health	· Dean ,CAFLS (also Associate VP PSA)
· Director, Public Relations, PSA	

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 page 15), 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. For example, in 2008, Clemson's Center for Watershed Excellence hosted a statewide Water Resources Conference that brought together 350 participants to discuss current water policies, research projects, and water management issues. Participants included public policy decision makers, municipal water authorities, environmental engineering and consulting firms, colleges and universities, state and federal agencies, nonprofits, economic development organizations, utility companies, land trusts, and land managers.

♦ *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. Periodically, the University's Internal Auditing Office undertakes spot audits of 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 may be 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
  - Acres of S.C. 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
  - S.C. livestock premises registered

- o Maintenance of National Veterinary Services Laboratory and American Association of Veterinary Laboratory Diagnostians laboratory accreditation
- o Maintenance of equivalency with USDA-Food Safety and Inspection Service standards

- Regulatory Services
  - o Number of samples analyzed and timeliness of results by Agricultural Service Lab
  - o Number of phytosanitary certificates issued and accepted without problem
  - o Pesticide inspections for safe use
  - o Number of Pesticide Applicator Licenses issued
  - o Nutrient deficiency rate of fertilizer samples
  - o Percentage of Certified Seed Lots meeting standards

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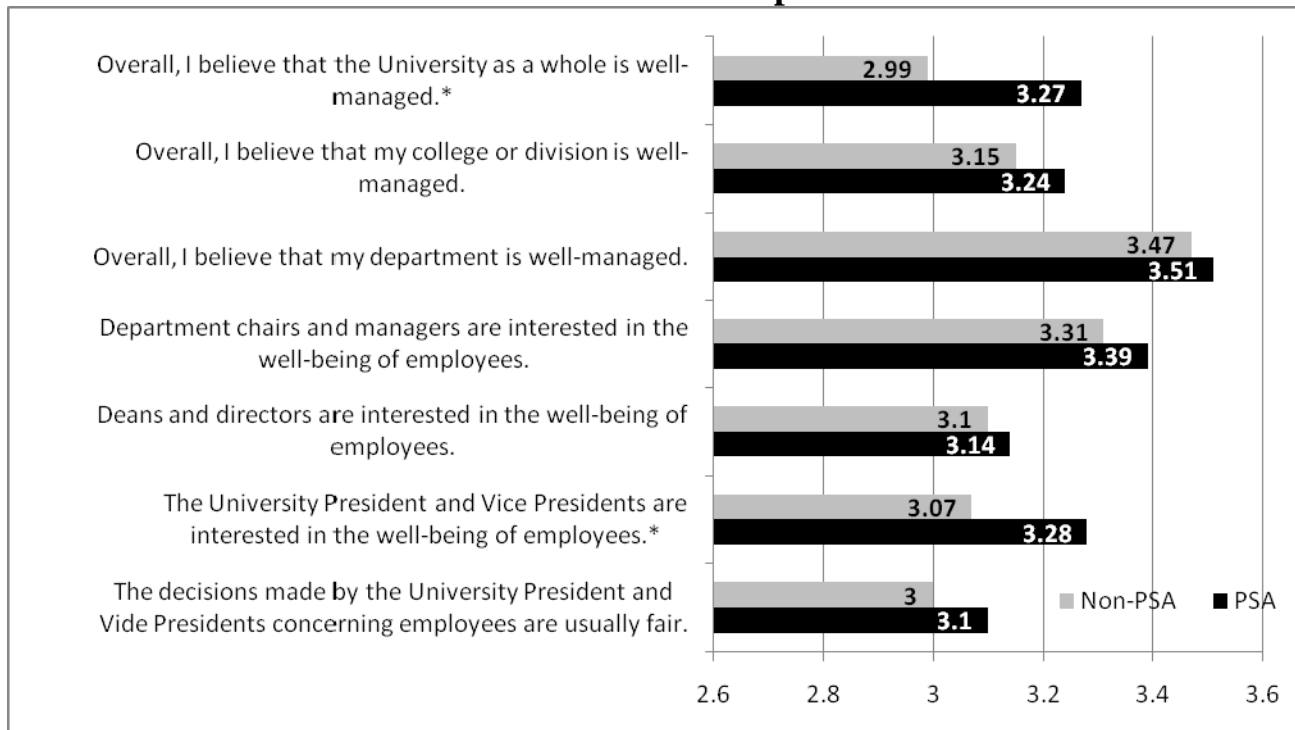
Faculty and staff have always exercised their privilege to have an open dialogue with the administration. The most powerful use of the policy has been their collective strength through the Faculty and Staff Senate organizations. These organizations represent their respective area in all concerns ranging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

This year 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 were not separately identified.

Performance Management

	Non-PSA	PSA
My last performance review helped me improve my job performance.	3.25	3.19
My last performance review helped me identify my strengths and weaknesses.	3.42	3.4
I think my performance on the job is evaluated fairly.	3.69	3.68

Leadership

Statement	Non-PSA	PSA
Overall, I believe that the University as a whole is well-managed.*	2.99	3.27
Overall, I believe that my college or division is well-managed.	3.15	3.24
Overall, I believe that my department is well-managed.	3.47	3.51
Department chairs and managers are interested in the well-being of employees.	3.31	3.39
Deans and directors are interested in the well-being of employees.	3.1	3.14
The University President and Vice Presidents are interested in the well-being of employees.*	3.07	3.28
The decisions made by the University President and Vide Presidents concerning employees are usually fair.	3	3.1

♦ *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 2007.

♦ *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 Vice President for PSA and his leadership staff (see page 18) 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 three times per year and contains communication from the Vice President 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 nine 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 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 was cancelled for 2008-09.

Due to budgetary constraints PSA directors and supervisors currently have limited flexibility in rewarding employees with merit salary increases. 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 Vice 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	United Way of the Midlands Early Childhood Council
State Extension Advisory Committee	
Education and Economic Development Act	Southern Association of Agricultural Scientists
S.C. Association of Counties	S.C. Forestry Association
S.C. Farm Bureau Federation	S.C. Biotechnology Alliance
Shoreline Policies Advisory Committee	S.C. Commodity Boards (crops & livestock)
Ocean Planning Task Force	Palmetto Partners
S.C. Department of Education Task Force on Revenue and Funding	

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 retreats and administrative council 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 Cabinet. 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 27% reduction ($13.9 million) 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.

The strategy to deal with this unprecedented budget reduction was to reduce PSA by 165 positions through:

- o Not filling vacant positions
- o Eliminating temporary positions
- o Offering voluntary early retirement

Because PSA now has fewer Extension and Regulatory agents across the state, territories will be expanded to include multiple counties. Also, PSA consolidated administration of 4-H and Youth Learning Institute (YLI). This move will honor traditional 4-H programs and add academic programs through YLI. In this collaboration, 4-H agents will continue delivering statewide 4-H programs and state 4-H staff will join the YLI team. A transition team has been formed to develop the plan for what we believe will be the premier youth development program in the nation.

♦ *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 U.S. 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.

- **Public Service Cabinet** – Section III-1.1 details the members of the Cabinet who are assigned portions of the annual plan appropriate to their units.
- **Presentations** – To increase efficiency, presentations are made across the PSA locations via video conference; additional presentations are made in person as schedules 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 Cabinet members then report to the senior leadership on the achievement of unit-specific assignments and, as with individuals, evaluation of progress is made on each objective.

Finally, the Vice President's office reports on PSA's achievements to the University Administrative Council.

♦ **6.** *Evaluating and improving the strategic planning process*
The 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 Vice President John Kelly's letters in *Impacts* newsletter.

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

Program Number and Title	Supported Agency Strategic Planning Goal/Objective	Related FY 08-09 Key Agency Action Plan/Initiative and Timeline	Key Cross References for Performance Measures*
I. Agricultural Research (Experiment Station)	Advance the competitiveness of the agriculture and forestry industry Enhance the economic potential of rural communities Safeguard the food supply Preserve natural resources Prepare young people to become productive citizens.	1. **Sustainable Animal Production Systems** – Conduct research to improve the health and productivity of livestock and poultry in S.C. Increase the number of technical papers and presentations. Focus on transferring technology in emerging areas such as forage-fed beef. 2. **Sustainable Horticultural Crop Systems** – Improve the productivity and profitability in the horticultural crops, fruits, vegetables, turfgrass and ornamentals. Increase the number of technical papers and presentations. Focus on transferring technology in emerging areas such as pest management and genetically modified crops. 3. **Sustainable Agronomic Crop Systems** – Improve the productivity and profitability in all the major agronomic crops, soybeans, grains, and cotton. Increase the number of technical papers and presentations. Focus on transferring technology in emerging areas such as peanut production, pest management, and genetically modified crops. 4. **Agricultural Biotechnology** – Utilize molecular technology to address issues of practical importance to agriculture. Increase the number of technical papers and presentations. Focus on transferring technology in emerging areas such as animal and plant production systems. 5. **Community, Leadership, and Economic Development** – Conduct research to enhance economic opportunities and improve the quality of life for South Carolinians. Assess local labor markets and quantify spatial dynamics. Evaluate opportunities and threats to rural markets. 6. **Forestry and Natural Resources** – Develop models to understand the hydrology of S.C.'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 and their relationship to urban land use properties on lawns and golf courses.	7.0, 7.1

		7. **Food Safety, Nutrition and Human Health** -- Develop nanotechnology applications for food safety and 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 and presentations. 8. **Water Quality and Quantity -** Conduct research programs focused on developing strategies for economically viable land use to coexist with good water quality, and identifying wetland and watershed management practices to improve water quality and wetland and aquatic wildlife habitat. Increase the number of technical papers and presentations.	
II Cooperative Extension	Advance the competitiveness of the agriculture and forestry industry Enhance the economic potential of rural communities Safeguard the food supply Preserve natural resources Prepare young people to become productive citizens.	1. **Sustainable Management of Forest Resources and Forest Systems -** At least 80% of the foresters and landowners will report a gain in knowledge as a result of participating in sustainable forest and natural resource programs by the end of the fiscal year. 2. **Sustainable Horticultural Crop Production –** At least 80% of the persons completing sustainable horticultural programs will report a gain in knowledge and skills by the end of the fiscal year. 3. **Sustainable Agronomic Crop Production –** At least 80% of the persons completing sustainable agronomic programs will report a gain in knowledge and skills by the end of the fiscal year. 4. **Livestock and Forages** – At least 80% of the persons completing livestock and forages programs will report a gain in knowledge and skills by the end of the fiscal year. 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. 6. **Volunteer Development** - At least 500 volunteers will be trained and will conduct programs, serve on boards, committees, county organizations, and in cooperative relationships to establish, revitalize, improve, and/or expand the scope of youth and families programming efforts by the end of the fiscal year. 7. **Food Safety and Nutrition –** At least 70% of the people completing food safety and nutrition programs will report a gain in knowledge by the end of the fiscal year. 8. **Economic and Community Development –** At least 80% of the participants who complete Community, Leadership and Economic Development (CLED) programs will report knowledge gained by the end of the fiscal year.	7.0, 7.2
III. Livestock-Poultry Health		1. **Animal Health Programs –** Protect animal and public health through control of endemic, foreign, and emerging diseases; enforce state and federal animal health laws and regulations by monitoring interstate movement of animals and inspecting livestock auction markets; expand traceability system designed to enhance	7.0, 7.3

	Advance the competitiveness of the agriculture and forestry industry Enhance the economic potential of rural communities Safeguard the food supply Preserve natural resources	animal disease control, surveillance, and eradication programs. 2. **Meat/Poultry Inspection Program** - Regulate 100 small meat/poultry plants; protect the health of consumers by providing a comprehensive inspection service to ensure that meat and poultry products are safe, wholesome and accurately labeled. 3. **Veterinary Laboratory -** Provide accurate and timely veterinary diagnostic and surveillance testing for early detection of disease, thus improving the response activities and mitigating economic losses; maintain AAVLD full accreditation for 2008-2009; meet NVSL accreditation standards and criteria for technicians to be proficiency certified.	
IV. Regulatory Services	Advance the competitiveness of the agriculture and forestry industry Enhance the economic potential of rural communities Preserve natural resources	1. **Regulation of Structural and Ornamental Pesticide Applications** – Ensure the safe and legal use of pesticides by the structural and turf/ornamental pest control industries. 2. **Pesticide Regulation** - Monitor the use of pesticides in South Carolina to ensure their safe and effective use and prevent harm to humans, plants, animals, and the environment. 3. **Fertilizer Regulation** – Protect the quality of fertilizer, lime, and soil amendments distributed to end users in S.C. by ensuring that they meet label guarantees and are free of contaminants. 4. **Plant Pest Regulation** - Prevent and control introduced plant pests/invasive species and pests of honeybees and certify freedom from plant pests for the nursery, greenhouse, and transplant industries. 5. **Soil Analysis and Plant Diagnostics** – Analyze soil samples, providing clients with effective soil fertility recommendations. Analyze and provide results for feed and forage, animal waste, plant tissue, irrigation water, and compost samples. Analyze plant samples for plant pests and diseases and provide results and recommendations to clients. 6. **Seed and Organic Certification** – Apply official quality and purity standards in the certification of eligible seeds and plants produced in S.C. Provide USDA –NOP accredited certification services to organic producers, processors, and handlers who seek certification through our agency.	7.0, 7.4

III-3 Customer Focus

♦1. *Key customers and stakeholders*
More than 528,000 contacts were made by PSA units in 2008-09, which reinforces our core belief that our customers are the citizens – young and old, rich and poor, rural and urban – of South Carolina. According to program participation, assessment efforts, Internet traffic, and personal contacts, the key requirements are identified across our units.

- **Timeliness** – PSA customers expect assistance quickly, whether that response is a phone call, email, website, radio, training workshop or demonstration site.

- **Accuracy** – PSA must strive to provide only the most current and accurate information, keeping citizens in touch with the latest research, products, or safety requirements.
- **Practicality** – Customers expect information and services from PSA to be relevant to their needs and interests as South Carolinians.

♦2. Keeping current with changing needs

PSA was one of the first agencies to utilize the strength of the Internet for communicating with constituent groups. In addition, current efforts have utilized distance technologies such as video conferencing to make programs more accessible across the state.

Agents, faculty members, and staff are constantly working to ensure communication remains open in all the traditional methods and new technologies.

♦3. Customer access mechanisms

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

♦4. Measuring satisfaction

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

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

♦5. Building positive relationships

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

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

III-4 Measurement, Analysis, and Knowledge Management

♦1. *Determining measures*

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

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

The PSA Office of Accountability works in coordination with the 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 Cabinet.
- Financial reports are merged with the assessment data upon request by the Chief Financial Officer for the directors and the PSA Cabinet.

♦3. *Key measures*

Key measures have been identified in Section III-1 and on the Strategic Planning Chart. The PSA Cabinet 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.

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

Training

Overall, the training I have received (from all sources) has adequately prepared me for the work I do.
- Non-PSA: 3.69
- PSA: 3.81
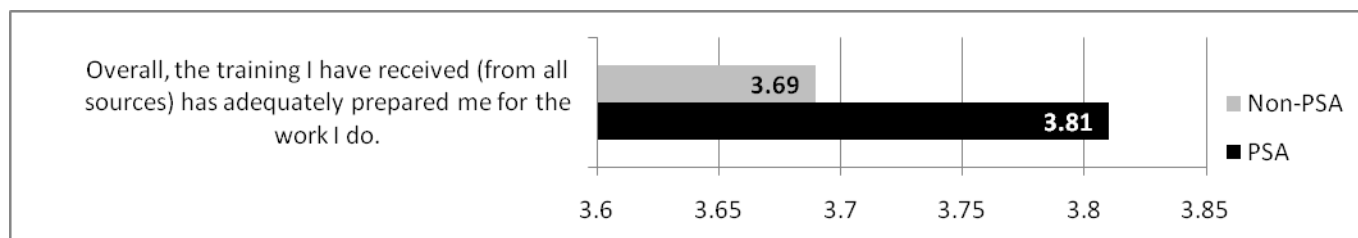
♦5. *Supporting high performance*

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, regularly 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.

♦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 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*

Surveys have been the most reliable process to evaluate how well we are meeting the needs of our customers. Our Extension Service uses exit surveys 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 these 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
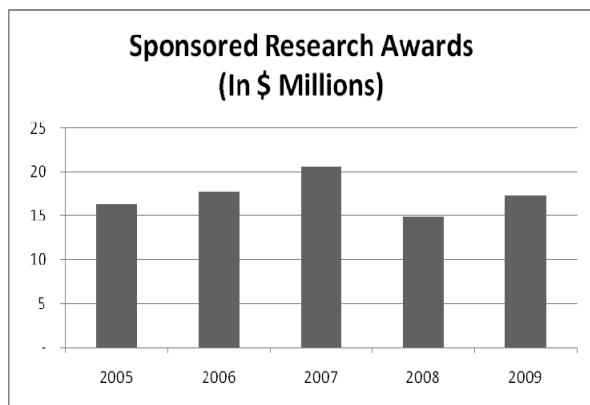
of funds are sought for research and development projects. Finally, PSA is fortunate to have a strong base of volunteers who offer their time for multiple projects across the state, thus saving the state thousands of dollars each year.

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
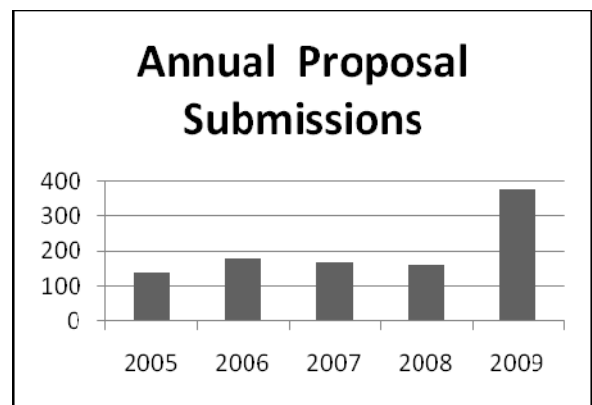
7.1 Agricultural Research (Experiment Station)

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 are successful in inventing products as shown in the following graphs.

7.1-1 Patent Disclosures 7.1-2 Patent Applications Submitted
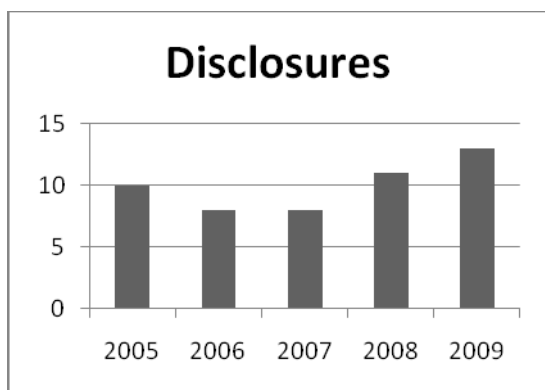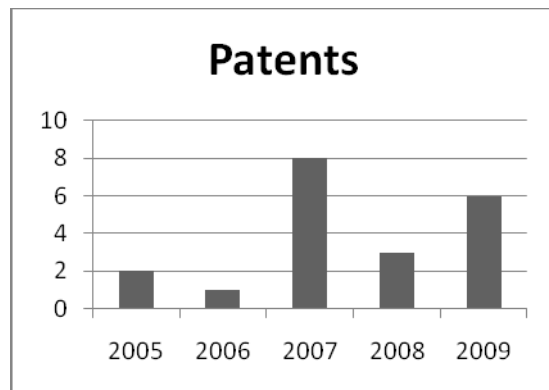
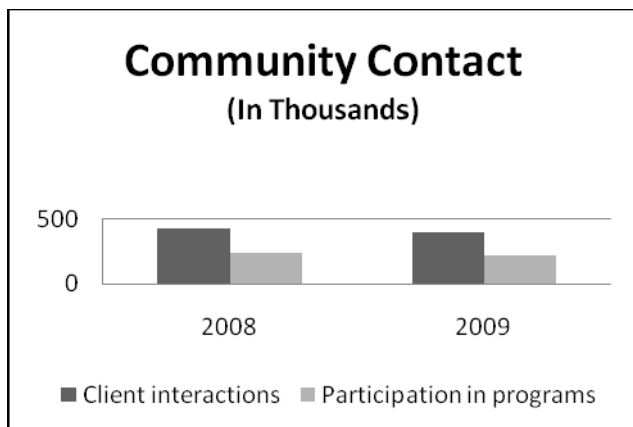7.1-3 Technical Contributions by Experiment Station Faculty
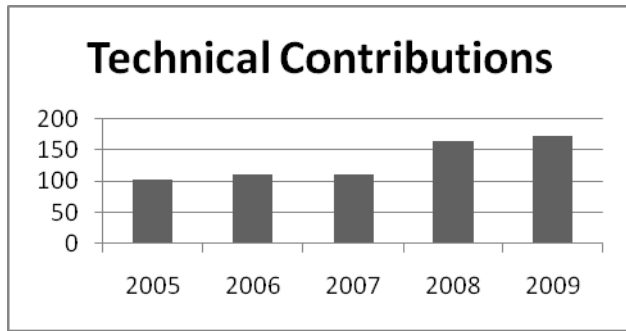

7.2 Cooperative Extension

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
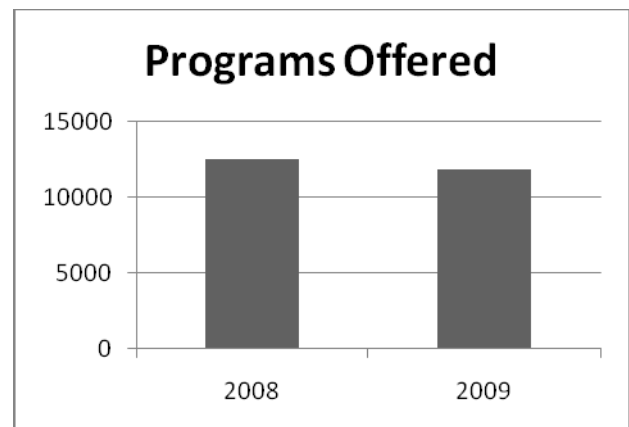
Sustainable Resource Training

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.
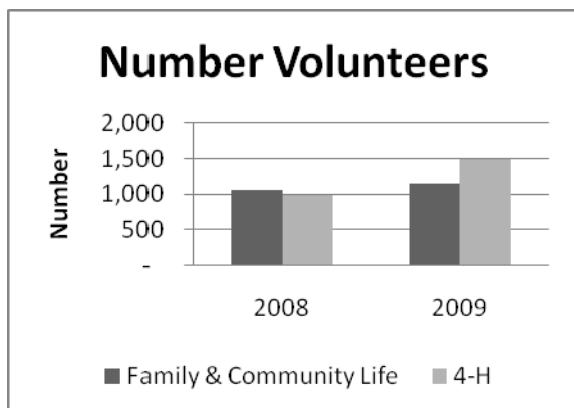
7.2-3 Acres of Impacted by ICM

ICM Impact Acres (In Thousands)
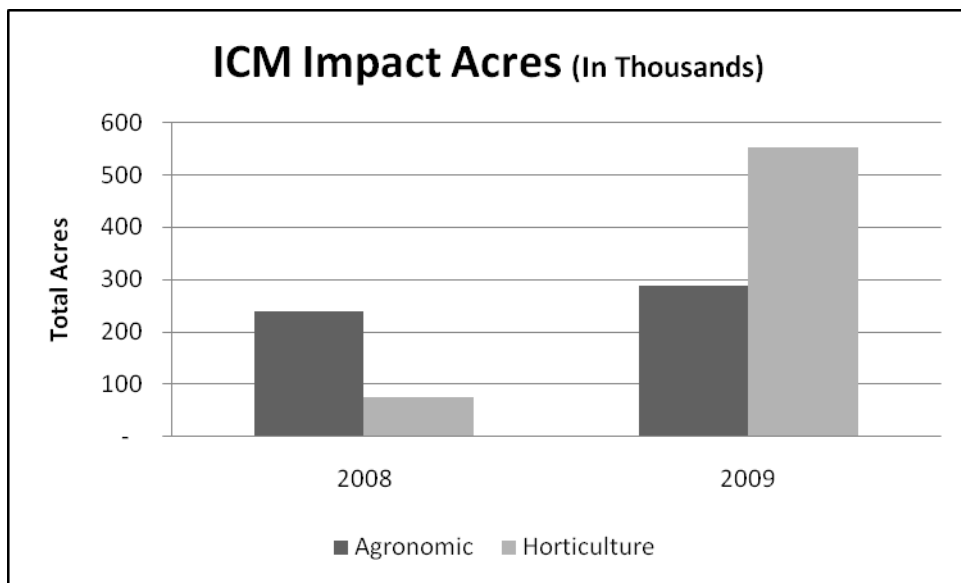
Volunteer Programs
Clemson Extension programs educate and train community members for a variety of programs and services. The trained volunteers donate a substantial number of hours to their communities through service hours in Extension programs such as Master Gardeners, 4-H, EFNEP and Family and Community Life. The total value of these service hours in 2008-09 is estimated at more than $1,075,000.

7.2-4 Number of Volunteers   7.2-5 Total Volunteer Service Hours
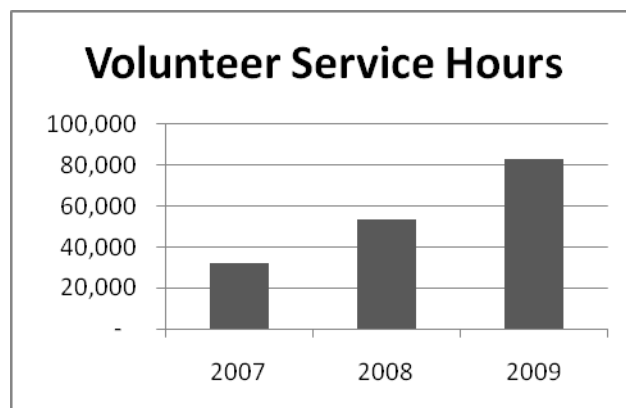
7.3 Livestock-Poultry Health

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 S.C. 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 2008-2009 the total number of registered sites in South Carolina was 4,808.

7.3-1 Number of S.C. Premises Registered
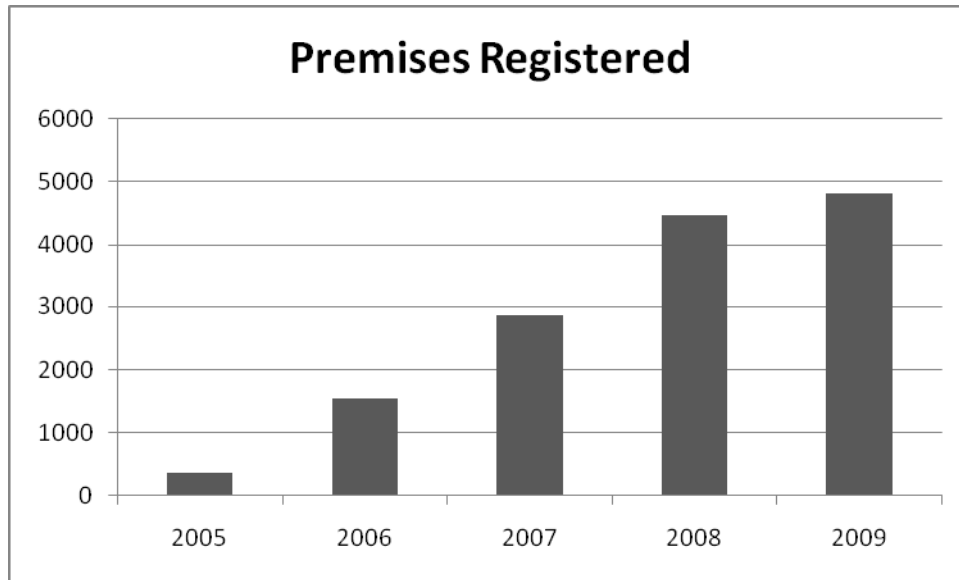
The State of South Carolina continues to strive to maintain a disease-free status to facilitate interstate and international movement of animals. Additionally, certification and licensing of the facilities and individuals ensures quality resources to carry out the mandates of health and safety. Maintenance 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 potential acts of agroterrorism.

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 3,817 inspections this year to ensure the safe and effective use of pesticides and to prevent harm to the communities and the environment.

7.4-1 New Turf and Ornamental Pesticide
   Licenses Issued
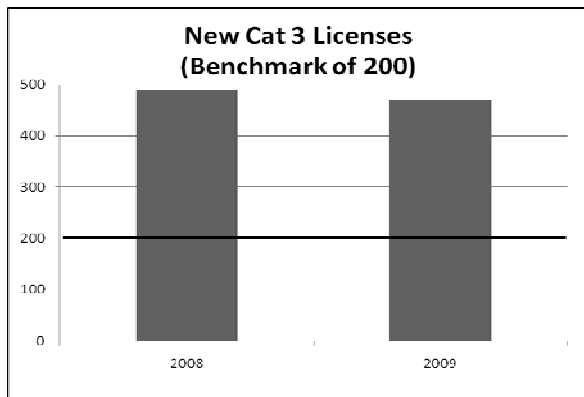
7.4-2 Pesticide Regulation Inspections
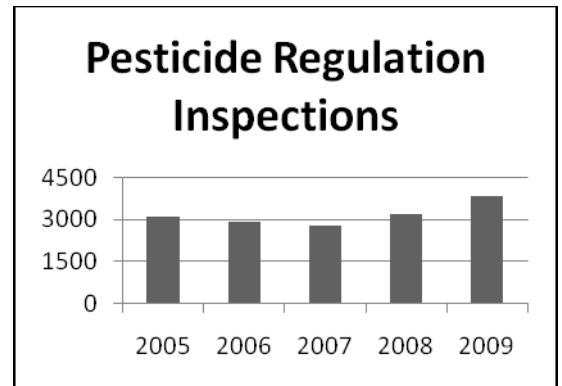
Plant Pest Regulation

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. The department has maintained a 100% acceptance rate for all shipments for which phytosanitary certificates were issued, reflecting the accuracy and effectiveness of inspections. The following graph shows the number of phytosanitary certificates awarded. These certifications facilitate the movement of plant products from SC to other states and countries for the benefit of S.C. producers.
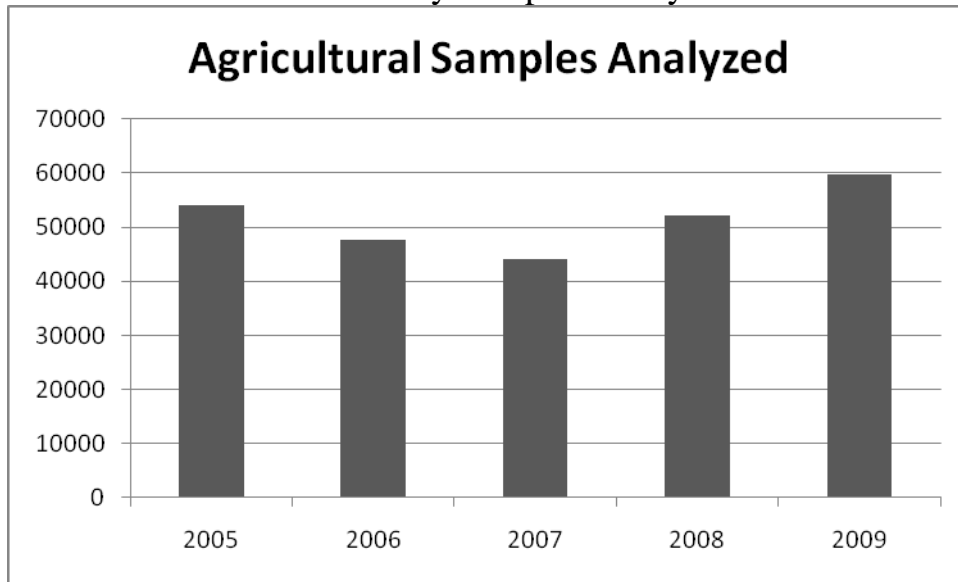
7.4-3 Phytosanitary Certificates Awarded
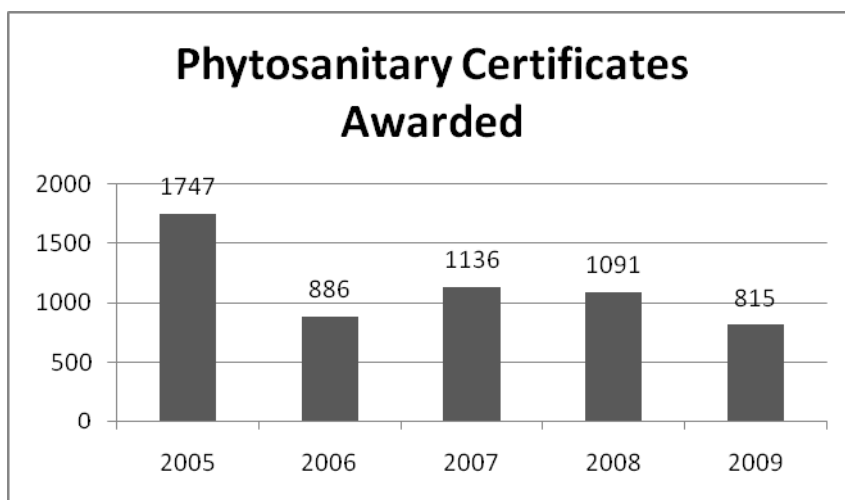
Soil and Plant Analysis

Reports and recommendations from analysis of soil, animal waste, feed, forage, plant tissue, irrigation water, and compost samples are provided in a timely manner. The analyses provide support for scientifically sound recommendations with the goal of maximizing economic crop production while minimizing impacts to the environment. Average turnaround time for sample analysis was 2.85 days, indicating a high level of proficiency and dedication to providing efficient service.

7.4-4 Number of Laboratory Samples Analyzed

Agricultural Samples Analyzed

A bar chart titled "Agricultural Samples Analyzed" with a vertical axis from 0 to 70000 and years 2005 through 2009 on the horizontal axis. Approximate values: 2005 ≈ 54000, 2006 ≈ 47500, 2007 ≈ 44000, 2008 ≈ 52000, 2009 ≈ 59500.
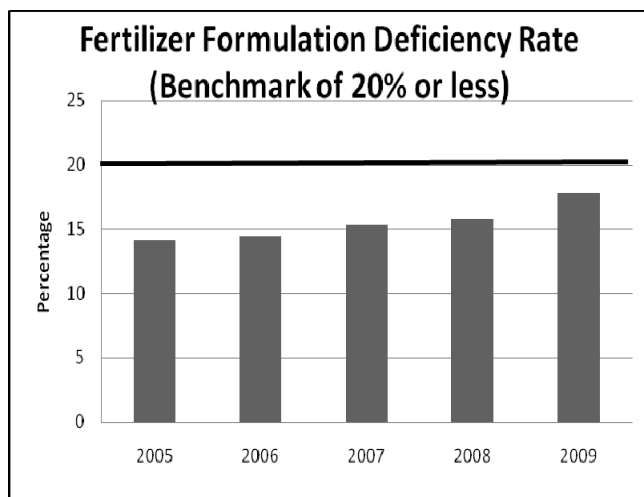
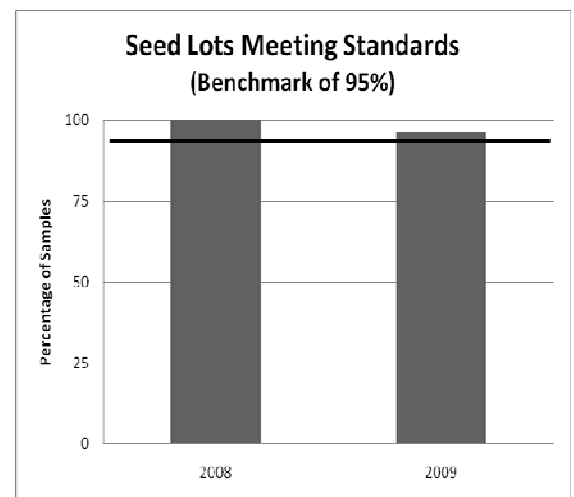*Fertilizer Inspection and Seed Certification*
One of the primary inputs for production agriculture is essential plant nutrients or fertilizer. Growers who buy fertilizers that are deficient in nutrients pay for product they do not receive and crop production is reduced as a consequence. This program ensures that fertilizers meet labeled guarantees.

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 provide a measure of seed quality and program effectiveness. Seed certification ensures that producers receive the quality of seed that they expect.

7.4-5 Fertilizer Formulation Deficiency Rate   7.4-6 Percentage of Seed Lots Meeting Standards

Fertilizer Formulation Deficiency Rate
(Benchmark of 20% or less)

A bar chart with a vertical "Percentage" axis from 0 to 25 with a benchmark line at 20. Years 2005 through 2009. Approximate values: 2005 ≈ 14, 2006 ≈ 14.5, 2007 ≈ 15.3, 2008 ≈ 15.7, 2009 ≈ 17.7.

Seed Lots Meeting Standards
(Benchmark of 95%)

A bar chart with a vertical "Percentage of Samples" axis from 0 to 100 and a benchmark line near 93. Years 2008 and 2009. Approximate values: 2008 ≈ 100, 2009 ≈ 95.

48