

Accountability Report Transmittal Form

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

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(Soybean Rust Spores)

Clemson University

Public Service Activities

Budget and Control Board

Accountability Report for 2005-2006

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About the Cover Picture – The image depicts soybean rust spores. It is but one of several plant diseases for which control recommendations are made by Clemson University. First detected in Japan in 1902, Asian soybean rust can cause premature defoliation, with yield losses of up to 70%. Asian soybean rust is caused by the *Phakopsora pachyrhizi* fungus, and it was discovered for the first time in the continental United States in nine southeastern/Midwestern states in November and December, 2004. It has for some years been active in South America, causing annual outbreaks.

Section I – Executive Summary

I-1 Mission

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. Clemson University is part of a national system of land-grant universities established by the U.S. Congress to improve the quality of life for the citizens in each state. Clemson University Public Service Activities (PSA) is responsible for research, outreach and regulatory services.

As our state's education, research and information needs have changed, the scope of Clemson's public service has also changed in keeping with our mission. Guided by the strategic initiatives (see page 2), PSA's services are conducted by a statewide network of faculty and staff dedicated to addressing the challenges facing South Carolina's

citizens, communities, businesses, and public agencies.

Working in conjunction with other state and federal agencies as well as municipal governments and private industries, our personnel provide needed research, training and information not

provided by any other agency. Because of this unique arrangement of talent and expertise gives PSA a significant leadership role in advancing the competitiveness of agriculture and forestry industries, enhancing the economic potential of rural communities, safeguarding the food supply, preserving natural

resources and preparing young people to become productive citizens.

Mission Statement

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

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

Core Values

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

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

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

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

PSA units develop a strategic plan (see page 32) at the beginning of each fiscal year containing objectives and performance measures. Each unit is required to describe its programs and activities, as well as explain the significance and benefits of its existence. At the end of each quarter, the units self-assess and report results to the PSA Office of Accountability. The following strategic initiatives drive PSA's planning process:

PSA Strategic Initiatives

Expand Public Service Activities' customer base in South Carolina and improve the quality of all program initiatives. Make information increasingly available to customers using the most effective and cost efficient mediums.

Continue to provide unbiased information to South Carolina citizens on plant and animal based agriculture, natural resource management, and sustainable and profitable agriculture.

Foster the development of youth through innovative educational programs delivered by the 4-H & Youth Development Program and the Youth Learning Institute.

Strengthen families and communities through research and service work.

Enhance community and economic growth, leadership and volunteer development through education and provide sound information to voters and decision-makers on public policy and social issues.

Become a recognized leader in providing information and assistance, in our areas of expertise, to citizens groups, businesses, special interest groups and governmental organizations at the local and regional level.

Become a national and international leader in bio-based technology development.

Continue major initiatives in ornamental horticulture, turf management, biotechnology and the environment.

Increase emphasis on food safety, nutrition and bio-security.

Conduct research on the management of the coastal plain land resources as an integrated unit through landscape ecology research.

Determine the impacts of an increasing population on water quality and quantity, wildlife habitat, and use of currently accepted land management practices.

Maintain exceptional regulatory and service programs by educationally enforcing legislative mandates in Agrichemicals, Plant Industry, Seed Certification and Livestock-Poultry Health.

I-2 Major achievements from past year

DISCOVERY

Disclosures Received (an official announcement of a potential invention):		
<u>Title</u>	<u>Inventor(s)</u>	<u>US Pat #</u>
Friendly Polymeric Composites Woven to Produce Textile Materials that can be Formed from the Composites	Danny Roberts	
Recombinant Follicle Stimulating Hormone for Cattle & Horses Produced in Novel Expression Vectors	John Gibbons, James Morris	
Liquid Pipette Extraction	William E. Brewer	
Secure Shipping Process for Seeds and Other Agricultural Products	David Howle, Lewis Whitlaw, Roy Dodd	
A Model to Prevent Plugging of Parallel Tube Flow Devices	Steven C. Brandon, Paul L. Dawson	
Extracting & Isolating the Antiviral and Antitumor Constituents of Nigella Sativa	David Gangemi	
Necropsy and Autopsy Sample Tray	William E. Brewer, Pamela G. Parnell	
Modified Feed Supplement Capsule for Ruminants	Tom Jenkins	
US Patent Applications Filed:		
<u>Title</u>	<u>Inventor(s)</u>	
Inhibition of Pathogenic Agents Including α 6B4 Integrin Receptor at a Surface	Thomas R. Scott, Heather P. Borick, Ginger A. Swire-Clark, William R. Marcotte, Ashby B. Bodine	
Feed Supplement Delivery System	Tom Jenkins, Karen Burg, Steve Ellis	
Municipal Solid Waste Treatment System	Annel Greene	
A Tumor and Mutation Suppressing Plant Extract	Sandra Gray, Dwight Camper	
Composite Polymeric Materials from Renewable Resources	Danny Roberts, David Gangemi	
US Patents Issued:		
<u>Title</u>	<u>Inventor(s)</u>	
Intermittent Immersion Vessel Apparatus and Process for Plant Propagation	Jeff Adelberg, Phil Simpson	7,015,032
Licenses Signed:		
	<u>Inventor(s)</u>	<u>Licensee</u>
	Dee Cross	Equi-tox, Inc

Note: above data represents efforts within Agriculture Experiment Station

INITIATIVES

External Support

- PSA secured \$17.7 million in grant funding to leverage, support and expand its programs and activities.
- PSA faculty and outreach staff seeks extramural funds to support unique programs. The following are two examples of PSA's many unique, grant-funded programs:
 - The Strom Thurmond Institute received a \$500,000 grant to conduct leadership development programming.
 - The Youth Learning Institute partnered with Clemson University's Department of Construction Science and Engineering, supported by a \$400,000 grant from the Department of Housing and

Urban Development (HUD), to help participants earn their General Education Degree (GED) while teaching them valuable life skills. Job placement is a program incentive.

Partnerships and Collaborations

- The Strom Thurmond Institute established a partnership with the Palmetto Institute to produce seven resource documents discussing tax reform. The comprehensive study, financially supported by the Palmetto Institute, of tax equity in South Carolina focused on current tax debates in the General Assembly, media and among interest groups. The study was praised by Darla Moore, the Palmetto Institute Chair. As a result, discussions are underway regarding a long-term relationship as the Partnership for Fiscal and Economic Policy.
- The Youth Learning Institute (YLI) joined forces with Columbia College to create an opportunity for graduate students enrolled in the College's Divergent Learning degree program to conduct weekend course sessions at YLI's Youth Development Center, an alternative placement facility for non-violent juvenile offenders operated in Aiken.
- PSA recruits individuals in South Carolina communities and businesses to contribute to its programming and activities. An example of successful partnerships with the citizens of South Carolina is the Strong Communities for Children, which mobilizes the upstate community for the prevention of child abuse and neglect. Over the past four years, outreach staff from the Institute on Family and Neighborhood Life have recruited nearly 4000 individual volunteers and hundreds of organizations to participate in Strong Communities for Children activities. More than 150 businesses have made in-kind contributions to the Strong Communities for Children project. The Strong Communities project is primarily supported by the Duke Endowment (approximately \$1.6 million annually).
- The Coastal Initiative project is collaboration between the Baruch Institute, the Department of Forest and Natural Resources, several SC natural resource agencies, National Oceanic and Atmospheric Administration (NOAA), Ducks Unlimited, and Mead-Westvaco. The Initiative is developing a clearinghouse for natural resource information that defines project areas and creates research projects to discover the missing information for a given region. A unified Geographic Information System (GIS)-based database will be created and linked to the Strom Thurmond Institute's growth projections for the area.
- The Youth Learning Institute partnered with the Governor's Office of Economic Opportunity to conduct training for the Youth Leadership Institute for youth from economic impoverished communities in South Carolina.
- The Program of Integrated Studies for Coastal Environmental Sustainability (PISCES) is a collaboration of more than 12 Clemson faculty members from several disciplines focusing on the evolution of a coastal forest as it becomes developed into a 3500 acre resort community utilizing many sustainable development techniques. A Geographic Information System (GIS) system was initiated for the property to track research projects and link them to specific parcels of land. Water level recorders were installed to track changes in water table elevation associated with the normal growing season cycle and the effects of rainfall and evapo-transpiration. A vegetation survey was also initiated this year.
- The Sandhill Research and Education Center (REC) continued to use novel chemistry in field trials designed for Red Imported Fire Ant (RIFA) pest management, including a variety of new turf pest management compounds. The REC has worked with companies such as DuPont, Tech Pac, Bayer Environmental Sciences, Bayer Home Products, and BASF testing new compounds. A RIFA Training Manual for land managers has been completed and is being published for national distribution. A six state regional IFA pest management manual is currently being revised for future publication.
- The economic crisis facing South Carolina's shrimp industry led to the creation of the South Carolina Shrimp Partnership, a collaborative effort by Clemson University and the state's commercial

shrimping industry to provide immediate economic assistance to shrimpers and to create a sustainable shrimp industry in the region.

National Initiatives

While committed to serving the citizens of South Carolina, PSA often has an opportunity to conduct research, provide services, and convey information on a national level. The following is a highlight of the services PSA provided nationally.

Hurricane Katrina Efforts:

- The Department of Plant Industry (DPI), a division of Regulatory Services, conducted hay inspections for Hurricane Katrina relief. While not a major duty of DPI, over 20 hay shipments were facilitated to Louisiana and Mississippi by inspecting for fire ants and certifying freedom from fire ants, TSA, witchweed, and other invasive species.
- Livestock-Poultry Health conducted Lessons Learned Training for 45 Veterinary Liaison Officers, Extension and USDA personnel, and County Agriculture Response Team (CART) members. The training was based on insights resulting from the Graniteville Incident and the Katrina Evacuees.
- A hurricane exercise was conducted involving extension agents. Six (6) agencies were represented at the Agroterrorism Awareness Training. Participants learned how to respond to a terrorist attack or natural disaster. Over 80 agencies collaborated in plant and animal projects to develop a system to alert state officials.
- The Strom Thurmond Institute conducted the following programs:
 - Managed Hurricane Relief from the Sea, a six-event program assessing the costs and feasibility of conducting hurricane relief from the sea using the marine reserve fleet. The results are currently before Federal Emergency Management Agency (FEMA).
 - Hosted Greta Gladney and Jim Randels' projects, which brought together neighborhood development groups from New Orleans and conducted a public program on the future of New Orleans community schools. A policy studies Ph.D. Intern with Greta's project developed and conducted a workshop on micro-business development for 9th ward residents as part of the recovery program. The work was supported by the New Orleans Renaissance project.

Other Initiatives:

- The Strom Thurmond Institute presented the results of a hyperspectral analysis of fuel loads in National Forests to the US Forest Service Fire Science group in San Diego. The results may be used for future Forest Service inventories.
- Clemson University's Veterinary Diagnostic Center satisfied the United States Department of Agriculture's requirements to serve as a member of the National Animal Health Laboratory Network (NAHLN).
- Livestock-Poultry Health composed *The Hitchhiker's Guide to NAHLN Messaging* under a cooperative agreement with the United States Department of Agriculture (USDA). The guide was originally intended as an informal introduction to the messaging system; however, USDA adopted the manual as the official documentation for the project.
- The national media campaign to "Stop Bullying Now," conducted by the Institute on Family and Neighborhood Life, was augmented with 20 website fact sheets and several national news accounts featuring Clemson researchers (e.g., Time magazine).

State Recognition:

- Paulette Grate, a community outreach provider with the Institute on Family and Neighborhood Life, received the South Carolina Professional Society on Abuse of Children Award for Community Services.

- Clemson Extension Community Health Specialist, Marian Robinson, was part of a team invited to the Governor's Mansion to receive the Healthy S.C. Challenge Community Award, which is presented to groups and organizations that have worked to improve the health of their communities. This is part of Governor Mark Sanford and First Lady Jenny Sanford's Healthy S.C. Challenge program in an effort to encourage South Carolinians to place more emphasis on improving their health. Robinson was honored because of her work with The Black Men's Health Initiative's B.A.P. (Brothers Against Prostate Cancer) Caps program.
- PSA Service Learning earned the InnoVision Technology Award for Community Service for cross-campus Alliance for Small Businesses and Non-Profit Organizations that matches Clemson students and faculty with more than 25 Upstate organizations.
- Clemson's 4-H Extension program 4-H₂O won the 2005 Youth Environmental Award.

National Recognition:

- Gary B. Melton, Director of the Institute on Family and Neighborhood Life, received the American Psychological Association's Award for Distinguished Contributions to the International Advancement of Psychology.
- Robin Kimbrough-Melton, Director of the National Center on Rural Justice and Crime Prevention Center, received the American Psychological Association Division of Child, Youth, and Family Services Award for Distinguished Contributions to Child Advocacy.
- The South Carolina Water Resources Center, a division of the Strom Thurmond Institute, was selected as a nationwide exemplary program for the Saluda-Reedy Consortium project.
- Susan Limber is lead consultant for federally a funded national campaign to prevent bullying among "tweens" and received the Distinguished Contributions to Psychology in the Public Interest – Early Career Award from American Psychological Association.
- Katherine Cason received the 2005 Joann Heppes Excellence in Nutrition Education Memorial Award from American Diabetic Association.
- Consultation by Institute on Family and Neighborhood Life helped win the prestigious National Telly Award and Award of Excellence from the National Association of Government Communicators for bullying-prevention programs.
- Debra Clowney Parnell, Latosia Gibson, Kellye Rembert, Lisa Cannon and Karissa Ulmer were recognized for outstanding accomplishments by the National Association of Extension 4-H Agents.
- Mark Small received an award for community development in Czech Republic from Czech Donors Forum.

General Media Contributions:

- The Experiment Station contributed 111 technical articles to various scientific and technical journals.
- Research activities conducted by Experiment Station faculty were included in 16 national publications.

National Media Awards:

- Publications:
 - *Life at the Water's Edge*, designed and published for the Horticulture and Forestry & Natural Resources departments, won the Outstanding Achievement Award from the Renewable Natural Resources Foundation.
 - "Clemson Impacts," the PSA newsletter, won an Award of Excellence from the Council for Advancement and Support of Education.

- Video Productions:
 - "Packaging Science. . .What's That?" (International Film Festival's Silver Screen Award; Videographer Award's Editing Award of Distinction; Videographer Award's Video Production Award of Distinction; and Communicator Awards' Crystal Award of Excellence)
 - "Touch the Earth. . .Herb Parker's *Crucible*" (ACE Bronze Award; Communicator Awards' Honorable Mention)
 - "Welcome Co-Eds" (Communicator Awards Crystal Award of Excellence)
 - "Ideas Changing the World" (Communicator Awards' Award of Distinction)
- Radio Productions:
 - *Your Day* Live Call-In Programs (ACE Gold Award)
 - *Your Day* Gardening Segments (Garden Writers Association's Silver Award)
- Individual Media Awards:
 - Tom Lollis received the Gold Award in the 2006 Association for Communication Excellence Competition for his newspaper article, entitled "If Cyranose Knows" (release on Ahmad Khalilian's sensor to detect cotton insect pests).
 - Debbie Dalhouse received the Bronze Award in the 2006 Association for Communication Excellence Competition for Publishing and Newsletters for "Clemson IMPACTS." She was also honored with the Award of Excellence for "Clemson IMPACTS."
 - Peter Kent received the Bronze Award in the 2006 Association for Communication Excellence Competition in Electronic Media, Audio for his Public Service Radio Segments (*Your Day* interviews with scientists).

State Awards:

- "Life at the Water's Edge," authored by Bruce Pinkerton, co-authored by Barbara Speziale and Bob Polomski, and edited by Lin Roth, was selected for one of ten Notable State Document Awards for 2005 by the S.C. State Library for outstanding merit and usefulness to the state's citizens.

Education and Outreach

PSA Institutes by Goal Area:

Economic and Community Development

- Clemson Institute for Economic and Community Development agents and the Commerce Department:
 - Implemented short and long-term strategic plans in more than 20 South Carolina communities.
 - Conducted leadership programs at the county and state level for more than 250 community leaders.It should be noted that all of these programs were self-funded and self-sustaining.
- The Baruch Institute is engaged in research and education surrounding Beach Vitex, an invasive species that may engulf sand dunes and stifle the growth of beneficial plants, such as sea oats. Institute scientists are studying the growth and control of this species as part of a Beach Vitex Task Force. The Task Force is identifying all coastal locations that presently have Vitex and is working with local governments to develop ordinances to control its spread.

Youth Development and Families

- The Youth Learning Institute developed and implemented the following self-sustaining programs:
 - *Eco-Village* - utilizes an outdoor living environment to teach socialization and outdoor living skills.
 - Implemented arts program - uses various art forms to develop creativity skills and positive forms of self-expression.
 - *Thinkshops* – profession development for adult, youth-development professionals

- *Building Dreams* - a collaborative mentoring program with the Institute on Family and Neighborhood Life designed to support children of incarcerated parents in five South Carolina counties.

Regulatory Services:

Pesticide Regulation

- Contacted 75 South Carolina schools to promote the Integrated Pest Management in Schools Initiative for protecting children from exposure to pesticide use.

Plant Problem Clinic

- Refined and improved the web-based database and reporting system by analyzing the problems clients had with accessing reports and implementing quality control procedures to improve the accuracy and timeliness of services.

Livestock Poultry Health:

- Provided veterinary expertise and diagnostic testing service support to pet owners and veterinarians with animals affected by aflatoxin-contaminated Diamond® dog food. Over 50 dogs were determined to have been affected.

Cooperative Extension:

- Approximately 538,823 contacts were made by Extension personnel in the delivery of educational information. In addition to programs, this total reflects repeated interactions with clientele via telephone, office walk-ins, farm and home visits, and newsletter and periodical distribution.
- Clemson Extension Service conducted 16,897 educational programs throughout the 46 counties of South Carolina. The total number of participants in these programs was 243,811. This number includes duplicated counts of persons who have had participated in various Extension programs throughout the year. Approximately 103,300 represent an unduplicated count. Of the 243,811 individuals participating, 81% reported gaining knowledge.
- Over 785 people participated in programs conducted to reduce the impact of animal agriculture on the environment. Almost 90% of those participating reported a gain in knowledge. Over 300 producers participated in the SC Pride/Quest and other managed marketing programs. Over 735 producers improved their breeding program by using Expected Progeny Differences (EPD) in sire selection/proper breed complementation and/or adopting improved health and reproduction programs. Over 482 producers reported that they had implemented recommended grazing management systems.

Food Safety and Nutrition

- Over 300 food and nutrition programs were conducted for the general public, with over 6,000 people participating.
- Over 19,200 people were reached through the Expanded Food and Nutrition Education Program (EFNEP), a federally funded nutrition education program for children, youth and families with limited resources. Program topics focused on preventing chronic diseases by eating according to the My Pyramid and the Dietary Guidelines for Americans. During FY 05, when the adult participants entered the program, only 11% reported diets that contained foods from all five food groups. This percentage increased to almost 30% by the time participants graduated from the program. A positive change in at least one food group was noted in 92% of participants graduating from the program. EFNEP participants also show behavior changes that translate into significant improvements in daily living skills.

4-H, Youth and Families

- Over 55,000 youth participated in South Carolina 4-H programs.

Environmental Horticulture Education

- Master Gardeners contributed 38,575 hours of service. Using an \$18 per hour figure, their volunteer time was equivalent to about \$694,350.
- There were over 5,047,000 visitor sessions to the Home and Garden Information Center website to receive horticulture and food safety information.

Agriculture and the Environment

- The Confined Animal Manure Management Program team at Clemson University developed a swine, poultry, and dairy version of the program. Each program includes a 350 page training manual, 7.5 hours of instruction, and a certification exam. All three training manuals can be obtained on-line at www.clemson.edu/camm.
- The Master Wildlifer course was broadcast live over satellite and delivered to over 140 downlink sites in 12 states across the South in seven, three hour sessions (21 hours total). The Master Wildlifer satellite course is an excellent example of partnerships between businesses, federal and state agencies, and conservation organizations. Evaluation surveys were given to all participants of the first course in 12 states to measure impact. Evaluations from the second course are in progress. With over a 30% response rate of course participants from, the following results and impacts were achieved from the first course:
 - Over 4,800 private non-industrial forest landowners, farmers and natural resource professionals across the South attended the course. From a conservation standpoint this is significant, since over 72% of the land base for natural resources and wildlife are owned by private landowners.
 - Course participants owned an average of 1489 acres (8.8 million total acres), managed an average of 13,032 acres (3.3 million total acres), and leased for recreational use an average of 3383 acres (9.9 million total acres).
 - Participants (77%) reported that the course helped save an average of \$5432.00 and earn (54%) an average of \$17,186.00.
 - Over 92% of the course participants plan to implement and/or make changes and improvements for wildlife habitat and/or sustainable forestry practices on their land.

Homeland Security and Public Safety

Regulatory Services:

Plant Industry

- Detected and handled the only known occurrence of Benghal Dayflower in South Carolina, which resulted in controlling the potential spread of a highly prolific and detrimental species throughout the environs in South Carolina and other states susceptible to the disease.
- Completed an extensive Security Vulnerability Assessment for all Restricted Fertilizer Permit holders, who are permitted to sell ammonium nitrate, in the state as well as most of the General Fertilizer dealers and pesticide distributors. Assessment revealed very low levels of risk and vulnerability at these facilities, reflecting well on the industry's self-enforcement of security measures. Permitting of dealers that sell this potentially explosive substance was the first such program in the United States.
- Staff participated in a full-scale, terrorist-induced plant disease to major food crop exercise in cooperation with USDA-APHIS-PPQ. Weaknesses in the areas of communications and GPS/GIS compatibilities were identified and will be addressed.

Environmental Conservation and Natural Resources

- A collaborative effort to gain an understanding of the ecology and function of coastal natural resource systems was begun at Baruch Institute. The body of basic information will be used to identify potential problem areas as the coastal region continues its increasing urbanization and seek methods of development that minimize the environmental impacts of that urbanization. The result will be a coastal region that continues to have a productive natural resource system for forestry, watersheds, wildlife habitat, wetlands, and still provide economically viable opportunities for community development.
- Completed an urban forestry project, which has determined the extent of forested lands along the I-85 corridor and linked that data to an air quality model.
- The Regulatory Services' Department of Pesticide Regulation recycled over 92,000 pounds of pesticide containers (funded by EPA grant).

RESEARCH IMPACTS

Sustainable Agricultural Production Systems

Animal Production Systems:

- Proteomic and Genomic Approaches
 - *Objective/Results:* Investigated the mammary development in dairy cattle. Manipulating bovine mammary stem cells will improve profitability for dairy and beef producers and identify possible corollaries for human medicine.
- Modification of Milk Fat Composition
 - *Objective/Results:* Achieved improved nutritional content and market value.
- Integrated Resource Management for Beef Production Systems for the South Carolina Coastal Plains
 - *Objective/Result:* Determined that grazing stockpiled MaxQ fescue eliminated feeding hay and cottonseed to dry, pregnant cows before the start of the calving season, and saved 66 days of hay and cottonseed feeding to 70 Angus cattle in the experiment. This will have direct applications for beef producers in the coastal plains with implications for other regions of the state.
- Effects of fumonisin B-1 on Chicken Immunity Using Tissues and Cells from Chickens
 - *Objective/Results:* Evaluated the responsiveness of certain genes under various treatment conditions. The emphasis of the project has shifted to examining indicators of inflammation in chickens. Continued evaluation will provide for more effective development of efficacious vaccines, benefiting poultry growers.

Horticultural Crops:

- Genomics Research on Peaches
 - *Objective /Results:* Address the issue of disappearing pesticides and chemical control methods for fruit tree breeding programs by providing the tools to identify and mark genetically important traits in fruit trees. Breeders will be in a position to develop varieties with optimized genetic compositions and the necessity of constant damage control will be eliminated, thereby enhancing the sustainability of the fruit tree industry globally. The genomics resources generated by this project will also become part of the international genome databases for many plant species.
- Develop the Capacity to Conduct Rapid Screening of Pesticide Residues in Fruits and Vegetables
 - *Objective /Results:* Resulted in the ability to analyze fruits and vegetables by disposable pipette extraction (DPX), a rapid method permitting high throughput testing for high-volume samples, improving the quality of food tests, and preventing toxic exposures of pesticides. DPX analysis is automatable, which will increase efficiency and quality control.

- Evaluation of New Fruit Tree Rootstocks
 - *Objective /Results:* Rootstock and interstem effects on pome and stone fruit trees will eliminate non-adapted rootstocks for South Carolina fruit growers and provide recommendations for adapted and productive rootstocks.
- Eradication, Containment, and/or Management of Crop Viral Diseases
 - *Objective /Results:* Over 4,000 samples of peach budwood were tested for the presence of Prunus necrotic ringspot virus (PNRSV), Prune dwarf virus (PDV), and Plum Pox Disease (PPD). Approximately 1,795 samples came from the seed block of Guardian rootstock located at Musser Fruit Farm. The budwood screening program continues to provide a source of virus-tested budwood to nurseries in Tennessee and hence to growers in South Carolina.
- Drought Stress Tolerance and Water Management Research
 - *Objective /Results:* Develop a cost savings model for the horticulture industry to assess plant water use and advance resource management capabilities, such as inventory control and disease management. A decision support system is needed as a result of increasing scarcity of water resources, escalating costs of production resources, the possibility of high nutrient discharge rates to watersheds, the close proximity of managed nurseries and landscapes to encroaching urban areas, and increasing legislative and regulatory requirements.
- Identify the Primary Sources of Inoculum for Phytophthora Species Associated with Ornamental Crops in the Southeast
 - *Objective /Results:* Identify effective management strategies to prevent or limit primary infection of ornamental crops, thereby reducing the amount of fungicides needed to manage these diseases and increase nursery profitability.
- Efficacy of an Established Vegetated Surface-Flow Constructed Wetland Nutrient Remediation System
 - *Objective /Results:* The surface-flow constructed wetland was highly efficient at removing nitrogen from nursery runoff but failed to consistently lower orthophosphate levels in runoff. Depending on size, it is capable of handling the large volumes of runoff generated by medium to large nursery and greenhouse growers. These passive, economical remediation systems will be adopted by the nursery/greenhouse industry in South Carolina to remove nitrates, phosphates and pesticides from runoff water, thereby helping to alleviate water pollution.
- High Irradiance in Lettuce
 - *Objective /Results:* High light exposure in lettuce increases total phenolic content, anthocyanin content, red coloration and overall antioxidant capacity. Phytochemical enriched produce increases antioxidant uptake by humans and promotes a healthy life style. Small farmers can have a niche market, increasing profitability and economic status.
- The "B" size Potato Project
 - *Objective /Results:* The market for the B size potato is developing. There is interest from growers as well as the restaurant industry. Test marketing is continuing, not only in the Charleston area but as far west as Nevada. Developing a market for those potatoes will increase sales for South Carolina growers.
- Management of Insect Pests of Vegetables and Medicinal Plants to Reduce Chemical Pesticides
 - *Objective /Results:* The use of chemical pesticides on test plots, focused on Brassica (collards, cabbage, etc), has decreased from 14 applications of synthetic chemical insecticides to five or six applications of biological control materials. This model of alternative pest control is being refined and extended to other vegetable and specialty crops.
 - *Objective /Results:* Although spinosad and emamectin benzoate were significantly more efficacious than the Bt materials, the efficacy of all Bt materials was statistically equivalent to the other chemical pesticides and there were significantly fewer larvae in the Bt plots than in the untreated controls. In spite of the greater efficacy of some of the chemical pesticides, crop quality was

sufficient for market in the Bt-treated plots. This model of alternative pest control is being refined and extended to other vegetable and specialty crops. Organic farmers likely will be early adopters of research results from this project.

- Turfgrass Quality
 - *Objective /Results:* Turfgrass evaluation is very subjective and has many other disadvantages. A prototype of a portable, remote sensing, multi spectral, reflectance-based optical sensor has been designed. It was fabricated and tested using infrared spectroscopy and aerial photography to predict the quality ratings of turfgrass (Bermudagrass and bluegrass) research plots from spectral reflectance. Quality areas included disease stress in turfgrass with different nitrogen content and drought stress. The prototype sensor accurately predicted the visual quality ratings. A turfgrass quality sensor will be a valuable asset for turfgrass professionals.
- Rapid Blight
 - *Objective /Results:* Rapid blight continues to be a threat in salt-affected sites. Species of turf susceptible to salinity are damaged more when rapid blight is present. Even salt-tolerant grasses are damaged more by rapid blight when exposed to high salinity, but the level of damage is correlated with salinity tolerance.
- Examining Various Methods of Managing Turf Installations to Minimize Inputs Such as Water, Fertilizer, and Pesticides
 - *Objective /Results:* The turfgrass industry in South Carolina contributes almost two billion dollars annually to the economy. It has been noted that plants fed strictly with foliar fertilizers often lack recuperative ability during periods of stress. Research continues in the area of drainage characteristics of various commercial products. Many new and unproven drain tile and drainage techniques have been introduced to help reduce costs compared to traditional techniques. The possibility of painting dormant bermudagrass instead of overseeding during winter to retain desirable green color is being considered. This research can help golf course managers in decision-making for using the most effective and safe products for turfgrasses.

Agronomic Crops:

- Pest Management for Peanuts and Small Grains
 - *Objective /Results:* Developed and implemented a comprehensive production program to support the peanut industry in SC Peanut acreage increased from 10,000 in 2002 to 59,000 acres in 2005. This represents an annual increase in the SC peanut crop value of \$29 million. The 2005 total crop value was \$33 million. Peanut improves the profitability of non-legume crops because peanut is an excellent rotational crop for weed, nematode, and fertility management. The opening of buying points in the past three years represents an infrastructure investment of millions of private sector dollars and jobs in some of South Carolina's poorest rural counties. The first significant contract production of triticale is planned for the 2006-2007 season. Current projections are that growers will be offered 107 % of the market value of corn.
- Germplasm Enhancement and Variety Development of Wheat, Oats and Barley Adapted to South Carolina
 - *Objective /Results:* Led to the development of varieties with improved disease and insect resistance levels that could lead to the release of wheat varieties or germplasm adapted to the southeastern United States. In addition to supporting a healthy diet, the project will benefit the environment because farmers will not need to use as many pesticides to protect against yield losses from diseases and insects.
- Bacterial Wilt
 - *Objective /Results:* In 1998, 7.2% of South Carolina's tobacco crop was lost to Bacterial Wilt. Research in the area of best management practices for soilborn diseases of tobacco suggests that the

bacterial wilt organism is being spread more rapidly than would be expected solely by the movement of soil on equipment. Field trials conducted at the Pee Dee Research and Education Center and confirmed in large-scale on-farm trials have shown that *R. solanacearum* can be easily spread during mechanical flower and leaf removal. A re-engineered topper blade was developed in 2005 using a standard topping blade and a liquid transfer system where a solution can be applied to the underside of the steel blade as the blade is rotating. Using the modified wet blade system, Clorox and several other materials were applied to the stalk during the cutting operation. Mechanical flower and leaf removal was compared to hand removal of flowers and leaves. Hand topping and leaf removal reduced the transmission and severity of the bacterium causing the disease.

- Impacts of New Crop Production Technologies and Practices on Crop Productivity and Sustainability
 - *Objective /Results:* Developed new production practices centered on conservation tillage and precision farming, which are more environmentally friendly, globally competitive, and economically sustainable. These new technologies generally result in higher yields than traditional practices, in addition to reducing sediment and nutrient runoff from agricultural fields.
- Management of Insect Pests on Tobacco
 - *Objective /Results:* Identified one experimental neonicotinoid, which looks promising as a potential new insecticide for tobacco insect control. It provided good control of aphids as tray drench and transplant water treatments.
 - *Objective /Results:* Approximately 424 Clemson tobacco breeding lines were evaluated for resistance to tobacco budworms, aphids, Black Shank, Granville Wilt, and tomato spotted wilt (TSWV).
- Comprehensive cellular and molecular Analysis of Responses to the Soybean Cyst Nematode During Development
 - *Objective /Results:* The ongoing research is fundamental to establishing new efficient strategies to improve soybean cultivars. Early resistance response to soybean cyst nematode invasion minimizes losses of plant resources for South Carolina growers.
- Management and Site-Specific Detection of Nematodes Affecting Cotton and Soybeans
 - *Objective /Results:* Developed a cost effective system to predict where plant-parasitic nematodes will be present in a field and deliver the appropriate nematicide rate to manage those nematodes. The economic impact is a savings of over \$650,000 not spent on nematicides and a yield increase of at least 15% for more than 50% of the total cotton acreage or an additional \$6,000,000 in lint produced in South Carolina.

Organic Crops:

- Survey of SC Cotton Growers to Determine the Economic Benefits of Clemson IPM Research and Extension Programs.
 - *Objective /Results:* Farmers in the state are strongly influenced by the IPM programs. Cotton yields of growers who have often or always followed Clemson IPM recommendations are greater than yields of growers who never or rarely follow recommendations. The economic benefit to growers who adopted Clemson cotton IPM recommendations was calculated to be \$57 per acre.

Nutraceutical Crops:

- Secondary Metabolite Production in Novel Plant Bioreactor Systems
 - *Objective /Results:* Bioreactor systems increase efficiency in a laboratory environment, including the rate at which the worker is transferring plants, a function that accounts for over half the cost of lab plants. Plants grow more quickly in the bioreactor and have greater dry weight due to more rapid uptake of sugar than agar gel culture. Findings indicate that laboratory produced clones

should be a preferred method to obtain quality assured biomass for pre-clinical trials on a repeated basis.

- Microbial Contaminants on Herbal Plant Preparations
 - *Objective /Results:* Contributes to the growing base knowledge of important medicinal/herbal plants as well as confirming some of the traditional and historical uses. In the most recent findings it was noted that most of the microbial contaminants detected on herbal plant preparations would not pose significant problems for consumers, and this information will assist the herbal industry in establishing standard techniques for preparation of these products. Research is also continuing to determine if the medicinal quality of herbal products is impacted by sanitizing treatments.

Natural Resources and Environmental Research and Education

- Preferential Flow to Soil Physical and Chemical Characteristics
 - *Objective /Results:* Researchers developed a soil classification system based on surface and subsurface texture, mineralogy and soil structure to incorporate macropore flow. This has brought a degree of order to the complexity of understanding material transport in field soils. This system will increase our knowledge about differences in natural soils, and thus, allow us to better manage these soils to reduce the potential ground and surface water contamination.

Water Quality and Water Quantity

- Development and Evaluation of Total Maximum Daily Load (TMDL) Planning and Assessment Tools and Processes
 - *Objective /Results:* To predict effluent loads and concentrations as impacted by vegetative filter strips, dry detention ponds and wet detention ponds. Developed a spreadsheet model, Integrated Design and Evaluation Assessment of Loadings (IDEAL), for use in assessing the impact of Best Management Practices (BMPs) on discharge of water, sediment, nutrients and bacteria into streams draining into urban areas. The local engineering community has adopted IDEAL, and regulators in some areas recommend its use to meet anti-degradation rules.
- Chemical and Physical Nature of Particulate Matter Affecting Air, Water and Soil Quality
 - *Objective /Results:* Researchers incorporated recent advances in synchrotron facilities that clearly demonstrate the rich chemical and physical information that can be acquired from micrometer and nanometer-sized particles. It is anticipated that a detailed picture of the particulate matter from agricultural emissions will be developed.

Recreation and Tourism:

- Role of Tourism as a Diversification Strategy to Sustain South Carolina's Wild-Caught Shrimp Industry.
 - *Objective /Results:* Marketing materials developed utilizing the research findings have spurred greater collaboration between the South Carolina shrimp industry and the State's coastal tourism industry.

Urban Wildlife:

- Biotic Responses in South Carolina Streams to Natural and Anthropogenic Nonpoint Source Stressors
 - *Objective /Results:* Findings from the statewide stream assessment will make it possible to evaluate the impact of land use on macroinvertebrate and fish communities and channel geomorphology.

Sustainable Forestry Management and Environmental Enhancement

- Investigation of Toxins Affecting the Bald Eagle, a Native Bird to South Carolina
 - *Objective /Results:* By identifying the toxic agent responsible for causing Avian vacuolar myelinopathy (AVM), a fatal disease to bald eagles and waterfowl, it has been determined that the disease toxin can be extracted from aquatic nuisance plants.
- Forest Fuel Reduction by Prescribed Burning, Chemical, and Mechanical Treatments
 - *Objective /Results:* Researchers are maximizing these tools in forest management with emphasis on soil and vegetation, as well as examining the role of fire at the wildland-urban interface, a major forest management concern.
- Effects of White Tailed Deer Herbivory on Forest Plant Composition and Structure
 - *Objective /Results:* The results of this study will be used to compare deer herbivory impacts to hardwood regeneration across three levels of stand harvest intensity: 20, 40, and 80 year rotations.
- Environmental Responses to Fire and Forest Management in the South Carolina Coastal Plain
 - *Objective /Results:* Researchers developed a decision-support tool that balances economic and ecological constraints in forest resources management, assesses the implications of alternative management strategies on net profits from timber production under various economic and environmental constraints, calculates opportunity costs associated with environmental protection alternatives, and evaluates the environmental and economic tradeoffs of forest management options.

Integrated Pest Management for Agriculture and Forestry

- Identifying Minor Crop Pest Control Needs
 - *Objective /Results:* Researchers are working with growers, scientists and commodity organizations to provide crop protection tools for South Carolina's specialty crops, especially blueberries, stone fruits, and strawberries, which are worth more than \$422 million. Without this effort, it is estimated that blueberries, stone fruits, and strawberries alone could suffer \$50 million a year in crop losses, which includes loss of yield and loss of quality grade.
- Behavior and Management of Structure Infesting Ants and Subterranean Termites
 - *Objective /Results:* Focuses on field sites established near Clemson to evaluate and develop more effective monitoring/baiting products and strategies for native subterranean termites. These sites are being selected based on termite activity and number of subterranean termite species present. Understanding the nesting behavior of black carpenter ants and developing improved control strategies for native subterranean termites will help with the control of these pest groups.

Risk Management Systems for Agricultural Firms

- A Market Study of the South Carolina Shrimp Industry
 - *Objective /Results:* Examined the technical efficiency of SC shrimpers, the pricing behavior of shrimp exporters to the U.S., and the extent of integration of the global shrimp market. Results indicate the existence of considerable production inefficiencies in the SC wild-caught shrimp fishery. Most shrimp exporters to the U.S. exhibit pricing behavior consistent with competitive markets. However, two top exporters exploit their position by amplifying currency values by price markups. Results of tests on product level price from wholesale markets in the U.S., Japan, and Europe reveal strong market integration and support for the "law of one price." This study demonstrates the challenges facing SC shrimpers as they compete for market share with aggressive competition from imports.

Agricultural Biotechnology

- Biochemical and Molecular Characterization of Plant Genes Responding to Abiotic Stress
 - *Objective /Results:* Researchers developed knowledge of the molecular mechanisms underlying the response to stresses produced by drought and high salinity, which is critical to understanding stress tolerance and germplasm improvement. Understanding the structure and regulation of such genes will provide insight into the mechanisms of abiotic stress response and tolerance.
- Enzymes Acetate Kinase
 - *Objective /Results:* Preliminary results indicate that the enzymes acetate kinase is essential in *Cryptococcus neoformans*, an opportunistic pathogen of the central nervous system of AIDS patients and the most frequent cause of fungal meningitis. The presence of these enzymes in pathogenic eukaryotic fungi may provide novel targets for anti-fungal agents.
- Physical Frameworks to sequence the genomics of agriculturally important plants
 - *Objective /Results:* Significant progress was made in mapping and characterizing the genes that control senescence. The impact of these important genomic tools will be the agronomic improvement of crops for many types of important traits. On a regional basis, these activities provide incentive to agricultural biotechnology companies to invest in the State of South Carolina, thus directly influencing the state's economy in the agricultural technology sector. It is hoped that new biotech companies will add highly technical job opportunities to the economy, increase skill levels in the state work force, and produce cutting-edge agricultural crop improvements that will benefit farmers.

Reducing the Impact of Animal Agriculture on the Environment

- Animal Manure and Waste Utilization, Treatment and Nuisance Avoidance
 - *Objective /Results:* Bench-top anaerobic digesters with gas storage tanks were fabricated in an effort to evaluate the potential for utilizing the end products as a fertilizer source thereby reducing the fossil fuel usage to produce fertilizer for farmers.
- Enumeration and Identification of Heat Resistant Bacteria in Raw Rendered Animal Products
 - *Objective /Results:* Focuses on keeping animal feeds safe by providing information on how to destroy bacterial populations inherent within rendered animal co-products. Raw rendering materials were collected from six facilities within a 200 mile radius of Clemson University. Data is continuing to be collected and analyzed.

Agricultural Biosecurity

- Enhancement of Veterinary Laboratory Information for Use With Geographical Information Systems in Disease Surveillance and Reporting
 - *Objective /Results:* Software was developed in-house, in conjunction with the USDA Standardized Premises Registration System, which is becoming the central hub for coordination of all relevant sources and users of animal-health geo-data. With the help of the USDA Regional Geographer, comparative analysis of such issues as market-test area coverage relative to commercial poultry at-risk has initiated. Market and slaughter data have been synchronized with the USDA Generic Database (GDB). Use of GIS mapping enables the economic assessment of a disaster or animal disease on the livestock/poultry industry in the affected area of the state.

Food Safety and Nutrition

- Enhancing Food Safety Through Control of Foodborne Disease Agents
 - *Objective /Results:* The antibiotic resistant commensal bacteria in the farm environment were further characterized, and ceftriaxone-resistant microorganisms from dairy and poultry farms was studied. The determination of antibiotic resistant bacteria in the food chain by tracking the presence of these bacteria will allow producers to reduce the use of antibiotics in food production and the

resulting resistant bacterial strains. The safe handling of animal co-products will minimize the risk of human and animal health problems from this material and also prevent potential negative environmental impacts.

- Application of Nanotechnology, Antimicrobial and Polymer Films to Food Safety and Quality
 - *Objective /Results:* By testing the effectiveness of a variety of approaches, the development of antimicrobial films for meat products will add a possible tool for the meat industry to use to reduce the presence and risk from Listeria contamination, which will significantly impact the meat industry by reducing the number of recalls due to Listeria.
- Production of Antimicrobial and Antioxidant Films from Acid Whey
 - *Objective /Results:* The shelf life of whole milk powder (WMP) is approximately 6 to 9 months at 21C, considerably shorter than that of skim milk powder. By examining ways to extend shelf life of WMP, an ingredient in many food products, the research reduces the limitations of using WMP in food production due to its brief shelf life.
- Soy Protein Films from Membrane Processed Soy Protein Concentrate
 - *Objective /Results:* Results indicate that a wider range of use of soy protein films is possible. Protein solubility is not limited to just alkaline conditions as now required for films made from soy protein isolates. This has the potential to lead to new products in food packaging and other areas.

Rural Community Economic Development

- Identifying Clusters of Innovation or Regional Innovation Systems (RIS) in the 13 Southern States
 - *Objective /Results:* Innovative capacity and activity in metro areas was measured using 18 indicators. Results reveal that innovative activity has limited spatial spillovers; therefore, non-metro counties cannot rely on innovation in nearby metro areas to stimulate their growth.
- Migration and Community Vitality in South Carolina's Hispanic Populations
 - *Objective /Results:* South Carolina is seeing a steady increase in Latino residents. However, the rate of change in Latinos as part of the population is increasing at much faster rates in South Carolina than in the country as a whole. And, unlike the nation as whole, the rate of increase in Latinos in the South Carolina state population was greater during 2002-2004 than during 2000-2002. The demographic information on South Carolina's Hispanic population is being used by Chambers of Commerce and other agencies and organizations to help determine needs of residents, businesses, and service providers.

I-3 Key strategic goals for present and future years

PSA's goal areas are derived from the goals designated by United States Department of Agriculture (USDA) and the national system of land-grant colleges and universities. Our administration reviewed the goal areas used by USDA and consulted our key stakeholders to concentrate our agency's priorities. Although the USDA's goal areas are similar to those used by PSA, there are slight differences. The following strategic goal areas are the result of this comparative analysis and reflect our mission to support our state's needs:

- | | |
|--|----------------------------------|
| • AgriSystems Productivity & Profitability | • Food Safety & Nutrition |
| • Economic & Community Development | • Youth Development and Families |
| • Environmental Conservation | |

Because agriculture, like most industries, requires our scientists and practitioners to be exceptional in many areas, these goals are interrelated. For example, changes in food safety and nutrition needs will have an impact on economic and community development.

Furthermore, the PSA goal areas complement the University's ten-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 goal areas which are then aligned with the following goals of Clemson University:

- **Academics, research and service**
- **Student performance**
- **Clemson's national reputation**
- **Campus life**
- **Educational resources**

Clemson University follows a strategic plan, known as the academic plan, which focuses on eight broad emphasis areas. The emphasis areas foster collaboration and promote the integration of teaching, research, and service. The academic plan focuses on 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 as follows:

- **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**

I-4 Opportunities and barriers that may affect the agency's success in fulfilling its mission and achieving its strategic goals.

Opportunities

- County extension agents and Research and Education Centers' specialists develop programs, trainings, and educational materials to serve PSA's customers and stakeholders.
- Maintaining national laboratory accreditation, qualified and certified disease free status and "equal to" status with the USDA/Food Safety Inspection Service (FSIS).
- Minimizing the impact of disease on the export markets.
- Utilizing strategic recruiting practices to fill PSA's mission-critical positions.
- Enhancing the concept of "One Clemson" by participating in research and teaching at the graduate and undergraduate level.
- Expanding curriculum by collaborating with the Research and Education Centers to include masters and doctoral courses. Increasing the number of doctoral graduates to assist faculty to achieve Top-20 Status.
- Utilizing computer-based video/audio communication to expand student participation.
- Opportunities exist to lead and partner with public, private and non-profit organizations to improve and strengthen communities.

Barriers

- The primary barrier that continues to inhibit the Extension Service and all of PSA from carrying out its mission and achieving its goals to reach greater numbers of customers is the previous decrease in staffing, resulting from state budget reductions (from July 2001 to July 2005). Budgetary constraints prohibit the organization from replacing all of the staffing losses.
- The ability to respond to staffing needs resulting from successful grant contract efforts is often limited and delayed by restrictive state personnel policies. A reassessment of options for

bringing talented people in for short term assignments in all areas of PSA would enhance the ability to leverage funds.

- Rigidity in staffing policies is affecting quick response to opportunities and policies concerning incentives, bonuses, etc. even when no state funds are used.
- The inability to compensate trained professional and technical staff at a rate competitive with the private sector is a significant constraint.

I-5 How the accountability report is used to improve organizational performance

This report is used to explain PSA programs and results in various venues. An in-depth scrutiny of the report and the processes it describes takes place long before completion. During each step toward completion, the various units supplying information are asked to check their sources and data and review their processes for improvement. This year's review of the processes has been even more intense due to the implementation of the PSA Unit Quarterly Reporting and Program Assessment Report (see page 32).

In addition, the performance excellence criteria in the accountability report are reviewed in relation to the plans and reports submitted both to USDA (South Carolina Plan of Work for Research and Extension) and to the Clemson University Office of Assessment.

PSA has established a means of assessment and criteria for the success of its programs. These are reported to the University on a timeline, which parallels the reporting timeline of the Budget and Control Board Accountability Report. While the two plans are formatted differently, the means of assessment are essentially the same.

Beginning this year, the Unit Assessment and Performance Measurement reports will be the basis for the annual "Use of Results" and "Unit Planning Stage" report to the Office of Institutional Effectiveness and University Assessment.

The annual report to the USDA is submitted each year to accommodate research and extension activities that are planned and reported in the Plan of Work Report based on the federal fiscal year (October 1-September 30). Reporting is more heavily focused on long range outcomes/impacts than on the shorter term outcomes. PSA is moving toward the development of a sophisticated accountability system that will accommodate all data and reporting requirements for each of the above mentioned entities.

Section II – Organizational Profile

II-1 Your Organization's main products and services and the primary methods by which these are delivered.

PSA's is a service organization that strives to improve the quality of life for South Carolinians by transferring to them applicable, science-based knowledge developed from basic and applied research conducted at Clemson University.

PSA utilizes the following primary units to disperse knowledge to the public:

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

The Clemson Experiment Station, Regulatory Units and PSA Institutes communicate with customers, advisory boards, and the Cooperative Extension Service (CES) to identify issues for the State's citizens. Faculty and specialists in these units apply their field expertise to develop solutions by conducting research projects and analyses.

Traditionally, the CES has been our messenger of scientifically-based information. PSA is strengthening its services through technology and greater utilization of its staff in all of the units listed above. Each unit develops programs, trainings and educational materials for PSA's customers and stakeholders.

II-2 Key customers segments and their key requirements/expectations

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

- **Citizens of South Carolina**
- **Agricultural Producers and Growers**
- **State, Local, and County Agencies**
- **Communities**
- **Local Municipalities**
- **County Governments**
- **Pesticide and Fertilizer Sellers and Users**
- **Practicing Veterinarians**

The icon of the agriculture industry is no longer solely a farmer in rural areas of our state. Agriculture has had to change as the needs of our stakeholders have changed. Agriculture must reach out into new areas that were never a part of the industry 10 to 20 years ago. Genetics, bioterrorism, environmental threats, new nutritional requirements, changing economic needs in rural areas, energy shortages, new agricultural-based energy sources, and new crop development are but a few of the new "focus areas" required by our industry. The rural economies of South Carolina are still of major importance to the economic well-being of our state and will continue to be important for years to come. Public Service

Activities at Clemson University believe we can not dismiss or overlook this important segment of our state's economy.

The programs conducted by PSA are accessible to all people. 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 managers of natural resources, families and youth, limited resource families and rural and community leaders.

Customers also include pesticide and fertilizer sellers and users, those who produce certified and enhanced seeds and plants, practicing veterinarians, county and local governments, business and industry, agencies who work in the areas of economic development, health, conservation, the environment, wildlife, water resources, technical education and youth and families.

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**
- **Agricultural Community**
- **PSA Employees**
- **PSA Suppliers**
- **Private Donors**
- **Commodity Boards and Associations**
- **Agricultural Industry and Related Associations**
- **Advisory Boards**

II-4 Key suppliers and partners

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

- **Vendors maintained in the Clemson University Accounting Information System**
- **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 Agricultural Industry**

II-5 Operation Locations

Although Public Service Activities continues to reorganize and consolidate its services to better serve our citizens, we are still able to serve every county in the state, in Extension offices, which are provided by the respective county government through a cooperative agreement. Research activities are primarily carried out at the Clemson University campus but much is done at various locations throughout the state. These Research 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.....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.....Belle W. Baruch Institute of Coastal Ecology and Forest Science
Pickens County.....Clemson Experimental Forest
 Youth Learning Institute
Richland County.....Sandhill Research and Education Center

Clemson University Public Service Activities Accountability Report 2005-2006

Institute for Community and Economic Development
Livestock and Poultry Health
York County.....Matthews Environmental Center
Dominica, West Indies.....Archbold Tropical Research and Education Center

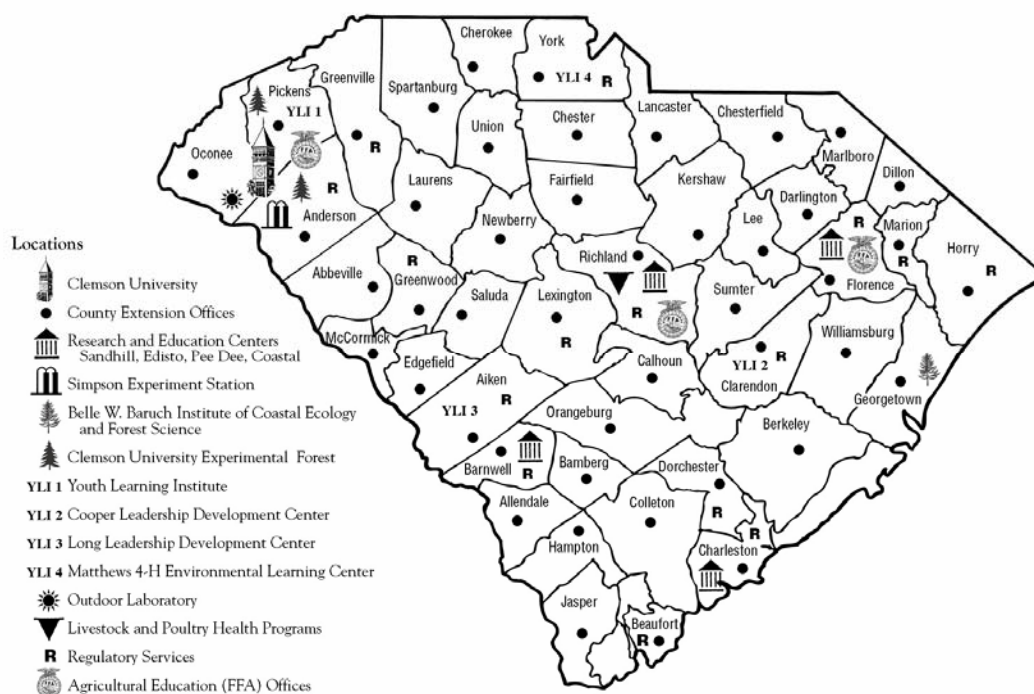


Figure II-1

II-6 Number of Employees

As of this writing PSA has 796 employees in 648.55 FTE's - 113 of these employees are paid in part or totally on grant funds. In addition, there are 70 positions funded solely by grant funds.

Type	Headcount	FTE
Classified	456	394.22
Unclassified	340	254.33
Total	796	648.55

II-7 Regulatory environment under which your organization operates

This agency operates under several mandates both federal and state. Below is a list of those mandates along 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 regulations and compliance. Although not listed below, PSA is subject to the University's reporting requirements. For instance, PSA is required to meet specific 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 <http://www.reeusda.gov/>

Morrill Act 1862 <http://www.reeusda.gov/1700/legis/morrill1.htm>

Provided, That the moneys 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 http://www.nasulgc.org/publications/land_grant/Hatch.htm

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 <http://www.reeusda.gov/1700/legis/s-1.htm>

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 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 animals, and provides the diagnostic expertise for treatment and eradication of disease of domestic animals. Provides veterinary diagnostic laboratory facilities and expertise to assist state veterinarians in diagnosing diseases found in companion and food animals, as well as in wildlife. Serves as the primary agency for ESF-17 in the State Emergency Operations Plan; provide multi-agency coordination of statewide animal emergency response plans to protect livestock and wildlife, and to support public health and safety. Sections 47-4-10 et seq. of the SC Code of Laws authorizes Clemson-PSA to perform these duties as assigned by law.

Regulatory and Public Service Programs: Plant Industry

Carries out statewide mandated programs for plant and seed certification to ensure the quality of fertilizer and lime; the prevention and control of introduced plant pests and pests of honey bees; certification of seed purity/germination; certification for organically produced plants; and certification of freedom from plant pests in nursery, greenhouse and transplants. These mandated services also administer quality assurance/identity preservation for transgenic crops. Since September 11th, the mandate also includes Homeland Security. Our mission is to prevent, mitigate, and respond to agroterrorism. Section 46-7-90 of the SC Code of Laws authorizes Clemson-PSA to receive and expend federal funds provided to the state's land-grant colleges.

Regulatory and Public Service Programs: Pesticide Regulation

Carries out statewide mandated programs for pesticide regulation ensure safe and legal use of pesticides and administer pesticide container recycling programs. Since September 11th, the mandate also includes Homeland Security. Our mission is to prevent, mitigate, and respond to agroterrorism. Section 46-7-90 of the SC Code of Laws authorizes Clemson-PSA to receive and expend federal funds provided to the state's land-grant colleges.

Regulatory and Public Service Programs: Agriculture Service Laboratory and Plant Problem Clinic (PPC)

Provides information and analytical testing for soil, plant tissue, forage, animal waste, irrigation water, and compost samples. This ensures needed understanding and interpretation of these samples and their proper application to land and resource management by providing unbiased, scientifically sound information. The PPC receives, analyses, and reports plant pest identification to growers, gardeners, homeowners, and other interested persons to determine what control measures are appropriate. Section 46-7-90 of the SC Code of Laws authorizes Clemson-PSA to receive and expend federal funds provided to the state's land-grant colleges.

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, and mitigation for livestock and other animals, whether those disasters are natural or manmade. Sections 46-7-30 et seq. of the SC Code of Laws authorizes Clemson-PSA to conduct agricultural research and to carry out extension work as assigned by law.

II-8 Key strategic challenges

The key strategic challenges by PSA are ones faced by most agencies, with this difference. We are moving toward becoming a Top-20 University. No other university has ever experienced the dramatic movement from being ranked 74th in 1997 in *US News and World Report* moving 44 places up in the rankings to number 30 in nine years. We have done a number of improvements to implement our President's vision but one of these has been to hire Top-20 faculty. These individuals are the best in their field and are not inexpensive. By hiring Top-20 teachers and researchers South Carolina's children benefit from their expertise and receive an education from a Top-20 institution. The research generated from Top-20 researchers will be exceptional.

Some of our financial challenges linger from previous lean years, where we experienced a decline in budgets from July 2001-July 2005. There is the need to rebuild PSA and capital improvements are needed, such as, the \$16 million for the Clemson on-campus farms which are outdated. We need to upgrade and centralize those animal farms that are 30 years or older; ensure state-of-the-art facilities for teaching, research, and extension; and meet all accreditation standards.

Constraints in Human Resources' policies make initial employment, competitive salaries with industry, and appropriate discipline slow and sometimes impossible.

II-9 Performance improvement systems(s)

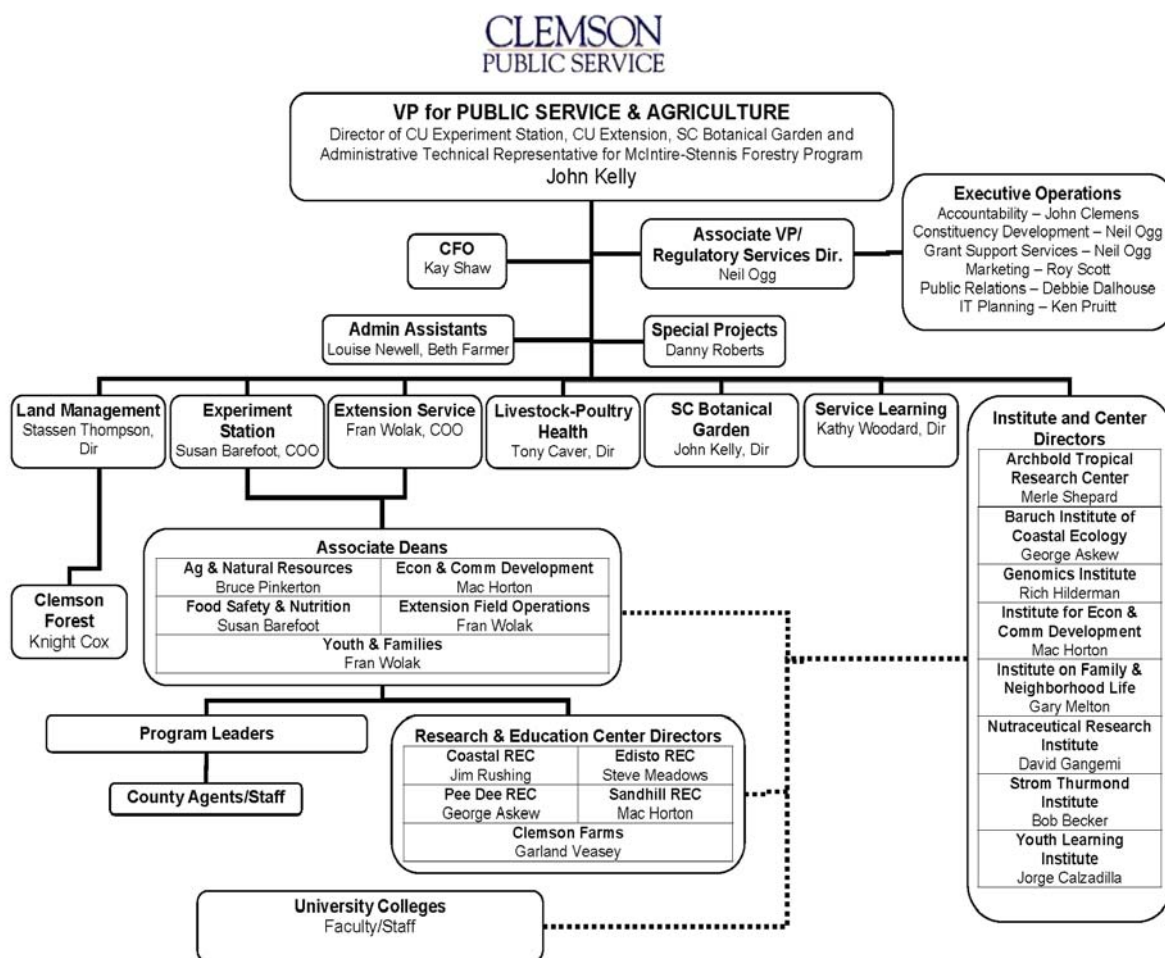
Public Service Activities operates under an umbrella of several processes designed to improve performance. Primary among these processes would be the University's Employee Performance Management System (EPMS) which reviews the personal performance of classified employees. Similar to this process would be 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.

A new evaluation system has been implemented this year called the PSA Unit Assessment and Quarterly Performance Report. This new report requires each unit to complete three sections: Unit Relevance, Planning and Results, and Accomplishments. As part of this process, each unit must explain their contributions to PSA and to the state of South Carolina. They also must list their unit's activities/programs and justify why those activities/programs exist, why they should be funded and what benefit those activities/programs have to PSA's mission and to the state of South Carolina. It also requires each unit to state specific objectives for the coming year and give a progress report when they meet those objectives. Each quarter the units are required to submit progress on key performance measures related to their program and what significant accomplishments their unit has had during the quarter.

At the end of the fiscal year, each unit completes a "Use of Results" section that explains what they have learned from their efforts, why they have met or not met their specific objectives and state what actions they will take to improve their performance for the coming year.

All this information is collected for a quarterly report that is sent to the Vice President, unit heads and key members of administration. This information will then become a part of the strategic planning stage for PSA.

II-10 Organizational Structure



July 31, 2006

Figure II-2

II-11 Expenditure/Appropriations Chart

Base Budget Expenditures and Appropriations

Major Budget Categories	FY 04-05 Actual Expenditures		FY 05-06 Actual Expenditures		FY 06-07 Appropriations Act	
	Total Funds	General Funds	Total Funds	General Funds	Total Funds	General Funds
Personal Service	\$33,284,793	\$ 21,129,935	\$ 37,706,251	\$ 24,774,561	\$40,845,225	\$32,090,566
Other Operating	\$20,235,845	\$ 8,964,395	\$ 23,068,417	\$ 9,414,534	\$14,113,316	\$ 2,635,857
Special Items	\$ 134,974	\$ 134,974	\$ 134,974	\$ 134,974	\$ 134,974	\$ 134,974
Permanent Improvements						
Case Services						
Distributions to Subdivisions	\$ (209,614)	\$ (209,614)	\$ (219,393)	\$ (219,393)	\$ (228,591)	\$ (228,591)
Fringe Benefits	\$ 9,110,533	\$ 6,090,410	\$ 10,064,731	\$ 6,927,318	\$12,276,545	\$ 8,900,278
Non-recurring	\$ 2,753,047					
Total	\$65,309,578	\$ 36,110,100	\$ 70,754,980	\$ 41,031,994	\$67,141,469	\$43,533,084

Other Expenditures

Sources of Funds	FY 04-05 Actual Expenditures	FY 05-06 Actual Expenditures
Supplemental Bills		
Capital Reserve Funds		
Bonds		

II-12 Major Program Areas Chart

Major Program Areas

Program Number and Title	Major Program Area Purpose (Brief)	FY 04-05 Budget Expenditures	FY 05-06 Budget Expenditures	Key Cross References for Financial Results
I.	Regulatory Services	State: 1,619,647.00 Federal: 1,028,161.00 Other: 2,168,453.00 Total: 4,816,261.00 % of Total Budget: 7%	State: 2,012,466.00 Federal: 1,298,226.00 Other: 2,456,082.00 Total: 5,766,774.00 % of Total Budget: 8%	Indicators 7.1 – 7.5
II.	Livestock Poultry Health	State: 2,438,260.00 Federal: 2,398,372.00 Other: 688,389.00 Total: 5,525,021.00 % of Total Budget: 8%	State: 2,926,627.00 Federal: 2,626,455.00 Other: 629,288.00 Total: 6,182,370.00 % of Total Budget: 9%	Indicators 7.15 – 7.17
III.	Agricultural Research	State: 15,128,804.00 Federal: 3,782,011.00 Other: 2,730,955.00 Total: 21,641,770.00 % of Total Budget: 33%	State: 16,254,544.00 Federal: 3,751,167.00 Other: 2,759,137.00 Total: 22,764,848.00 % of Total Budget: 32%	Indicators 7.11 – 7.14
IV.	Cooperative Extension	State: 16,758,948.00 Federal: 6,813,094.00 Other: 9,566,770.00 Total: 33,138,812.00 % of Total Budget: 51%	State: 19,691,869.00 Federal: 7,386,101.00 Other: 8,816,531.00 Total: 35,894,501.00 % of Total Budget: 51%	Indicators 7.6 – 7.10
V.	State Energy	State: 63,941.00 Federal: Other: 10,960.00 Total: 74,901.00 % of Total Budget: 0%	State: 36,831.00 Federal: Other: Total: 36,831.00 % of Total Budget: 0%	n/a
VI.	BioEngineering	State: 100,500.00 Federal: Other: 12,313.00 Total: 112,813.00 % of Total Budget: 0%	State: 109,656.00 Federal: Other: Total: 109,656.00 % of Total Budget: 0%	n/a

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

Remainder of Expenditures:	State: Federal: Other: Total: % of Total Budget:	State: Federal: Other: Total: % of Total Budget:
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* Key Cross-References are a link to the Category 7 - Business Results. These References provide a Chart number that is included in the 7th section of this document.

Section III – Elements of Malcolm Baldrige Award Criteria

III-1 Leadership

Under the leadership of President James Barker, Clemson University established a vision, mission, and a set of goals to lead the University to become a nationally ranked Top-20 Public University. PSA embraced this initiative and has been a key player in the progress this University has made toward that goal. All University employees are evaluated for their personal contribution toward this goal.

The underlying philosophy of Public Service Activities has and will always be assisting the people of South Carolina primarily with agricultural issues and but also with any issue under our purview that better their life. Because of that unique linkage with the people of the state our leadership is built on the relationship between our organization's leadership and our state's citizenry. Great leaders know themselves, their people, the people they serve, and their profession. Under the overall leadership of Vice President John Kelly, our organization is focused to provide research and outreach in PSA's five goal areas.

◆How do senior leaders set, deploy and ensure two-way communication ...?

Senior leaders empower employees in a university setting and through feedback mechanisms in staff meetings and reverse evaluations of supervisors. Professional development is offered formally in retreats, structured learning programs, and professional meetings. Meetings and trainings are often conducted with the advantage of distance communications systems which allow two-way video and audio and avoid travel expenses and travel time. Ethical behavior for all Clemson employees is identified in the University's Fiscal Policies - Procedures and Personnel Policies and Procedures Manual.

The Vice President encourages open communication with unit heads and directors in the organization. The PSA Cabinet was formed to promote communication between the unit heads and directors. The Public Service Cabinet is responsible for implementing programs, initiatives and activities aligned with the PSA goal areas. The Cabinet consists of the following key leaders:

- | | |
|---|--------------------------------------|
| • VP for PSA | • Director of Public Relations, PSA |
| • Associate VP for PSA | • Senior Extension Agent, CUCES |
| • Directors of Research & Education Centers | • Associate Deans |
| • Directors of Institutes | • Director of Information Technology |
| • Chief Operating Officer, Experiment Station | • Regional Directors |
| • Chief Operating Officer, Extension Service | • Assistant to VP for PSA |
| • Director of Livestock-Poultry Health | • PSA Chief Financial Officer |
| • Special Assistants to VP | |

◆How do senior leaders establish and promote a focus on customers and other stakeholders?

The commitment to customer service is reflected in the goals of PSA, and is supported by a sophisticated and long-standing network of advisory boards and committees at the county, regional and state levels. Depending on the focus and mission of the individual units within PSA, a leadership team is established to relay information and set objectives. The focus on customer service is an element of each leadership team meeting. In addition to the team meetings, the President of the University and the Vice President for PSA meet with constituency groups on campus and at the Research and Education Centers and at Extension Service offices. The PSA Advisory Committee

also provides relevant and timely feedback that keeps PSA leaders focused on issues of concern from committee members' areas of expertise.

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

PSA depends on feedback from its advisory system, a close working relationship with appropriate leaders at the local, state and federal level to provide feedback on the impact of programs. Consensus building and broad-based public relations activities precede the introduction of new programs in the state. Additionally, research is peer reviewed internally, externally, and at the federal level. Concerning risks, research must meet stringent requirements when involving human and animal subjects or involve recombinant DNA.

Customer 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.

♦How do senior leaders maintain fiscal, legal, and regulatory accountability?

The organization is well equipped to monitor itself to maintain fiscal, legal and regulatory requirements. As a part of Clemson University, PSA leadership relies on the various offices within the University and within PSA to make sure all aspects of the organization are in compliance. 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.

♦What key performance measures are regularly reviewed by your senior leaders?

An organization this large has many levels with each level having very specific responsibilities and processes to measure performance. However, there are a few measures that are considered key to the overall "health" of the organization. The following are but a few of these key measures:

- Number, amount, and types of sponsored research
- Number proposals submitted for Sponsored Activity
- Number of sponsored research awards
- Number of Disclosures (an official announcement of a potential invention)
- Number of Patent Applications: filed, issued and licenses Issued
- Number and types of research publications
- Number of media articles and published articles in scientific journals
- Significant research and program impact of Research and Education Centers, Cooperative Extension Service, PSA Institutes, and Regulatory Agencies
- Number of stakeholders benefiting from PSA programs
- Quantity of both national and international accomplishments of faculty, staff and students
- Improvement in local readiness of counties to Agricultural Biosecurity challenges and ability to respond to agroterrorism in areas under purview of the Cooperative Extension Service
- Amount of trainings and effect on lessening the impact of animal agriculture on the environment
- Measure participation of 4-H youth in each county
- Measures of Livestock-Poultry Health's surveillance, containment, and control of regulated animal diseases to ensure disease-free status in SC livestock and its ability to prevent, detect, mitigate, and minimize animal agroterrorism
- Measures of Regulatory Services surveillance for regulated plant diseases, insects and weeds; control programs to ensure plants sold and shipped for sale are disease free, compliance to laws and regulations enforced, pesticide inspections for safe use, recycling programs for pesticide containers, and other measures (see Section 7).

- Number and types of contacts with stakeholders
- Dollar amount of gifts and pledges
- National and international accomplishments of faculty, staff and students
- Adoption of practices and recommendations:
 - Ag production improvements
 - Animal health/compliance issues
 - Regulated plant and animal disease control and eradication

Note: See indicators in Section IV of report for key performance measures from the major divisions of PSA

♦How do senior leaders use organizational performance review findings and employee feedback to improve their own leadership effectiveness and the effectiveness of management throughout the organization? How do their personal actions reflect a commitment to the organizational values?

An ongoing review of key performance criteria and employee feedback is used to improve leadership and management effectiveness. Reverse reviews are conducted by employees at the unit level to rate and provide feedback to leadership. The following is a list of the rating questions:

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

The senior leaders have always had an “open-door” policy when it comes to communications. It is common knowledge that anyone within the organization can meet with any member of leadership and discuss any problem. Faculty and staff have always exercised their privilege to having an open dialogue with the administration. The most powerful use of this policy has been their collective strength through the Faculty and Staff Senate organizations. These organizations represent their respective areas 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.

♦How do senior leaders promote and personally participate in succession planning and the development of future organizational leaders?

Key positions in which a vacancy is anticipated are identified and a study of potential candidates for that position from within the organization are determined to assess the possibility to implement a succession process. If the opportunity exists and a potential candidate is identified, then a process to “pair” the two individuals on key projects is implemented. The administration plays a primary role in this process by constantly working with the candidate on special issues and on joint projects.

♦How do senior leaders create an environment for performance improvement, accomplishment of strategic objectives and innovation?

The assessment process, which is reported in the USDA Plan of Work, the Budget and Control Board Accountability Report, the annual report to the Southern Association of Colleges and Schools (SACS) and the just implemented Unit Assessment and Performance Measurement Report (Quarterly), assist the PSA Associate Deans and Directors and the PSA Council to gauge areas which merit the most effort for improvement.

The Vice President for PSA outlines specific objectives for the next review period for each of his direct reports in his annual review of their performance. The next level of leadership, the PSA Cabinet, similarly charges their direct reports with objectives for the for the next review period using

the formalized EPMS process, as well as regularly scheduled and ad hoc individual and team meetings.

Priorities, initiatives, strategies, objectives and goals are communicated, depending on topic and target, to the faculty and staff from various levels throughout the University and via many forms of communication. At the leadership level, this is accomplished through the Vice President's participation in the University's Administrative Council, Vice Presidential meetings and in exchanges with the President and key members of the President's staff and the staff of the Vice President. The latest technologies are also employed to enhance communications capabilities, to include e-mail, teleconferencing via satellite and the internet and on the PSA web sites.

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 length to highlight the innovative, ground-breaking and unique contributions of our employees. Our various web sites hosted by the department, unit or organization identify accomplishments by our employees. A number of awards for various achievements are made each year. An incentive plan to reward exemplary accomplishments by individuals within the organization is being studied. These examples and others too numerous to mention set the environment for improved performance and the recognition for that performance.

◆How does senior leadership actively support and strengthen the community?

The intent of the mission of PSA is to help people in South Carolina make informed decisions which will improve their lives and the communities where they live. In reality, this is the philosophy behind the mission and goals of PSA. PSA accomplishes this mission by developing new knowledge through research and transferring this knowledge to the citizens of the state through a range of educational techniques. With agents serving every county, working with and for our various stakeholders all over the state and research facilities in key agricultural areas of the state, PSA is constantly involved with community activities and growth.

III-2 Strategic Planning

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

◆What is your Strategic Planning process, including KEY participants...?

PSA is committed to taking a leadership role in addressing challenges and realizing opportunities in South Carolina. PSA is poised for the future within its five strategic goal areas aimed at meeting the needs of South Carolina citizens and achieving the highest levels of scholarly excellence in research, outreach, and service. The goal areas are compatible with the Clemson University's goals and emphasis areas. PSA seeks input from all employees and considers previous stakeholder input when composing the five year plan. The administration then charts the proposed course. Feedback is provided by the PSA Cabinet and the plan is refined.

◆What are your key strategic objectives that are addressed in your strategic plan?

The key objectives are described in the Strategic Planning Chart on page 35.

♦**What are your key action plans/initiatives addressed in the strategic planning chart?**

The plans/initiatives are described in the Strategic Planning Chart on page 35.

♦**How do you develop and track action plans that address your key strategic objectives (part 1)?**

How do you allocate resources to ensure accomplishment of your action plans (part 2)?

During this fiscal year (2006), Public Service Activities initiated a self-evaluation of each program unit (PSA Unit Quarterly Reporting and Program Assessment Report) that required each unit to: 1) justify relevance to the organization and to the state of South Carolina; 2) implement a strategic plan and use-of-results process for each planned objective; 3) measure performance and 4) highlight significant achievements. This information is submitted to PSA's Office of Accountability at the end of each quarter and is subsequently published in a quarterly performance report.

Below is an excerpt from the PSA Unit Quarterly Reporting and Program Assessment Report highlighting Section 1 (Unit Identification and Relevance) of this report:

Unit Identification:

Unit Name	Unit No.	Director/Head
Agricultural Service Laboratory/Plant Problem Clinic	0114	Neil Ogg/Kathy Moore/Meg Williamson

Unit Relevance:

<p><u>Part 1. Unit Contribution</u> – Explain your unit's unique contribution/relevance to any of the five PSA goal areas and how that contribution helps the citizens of South Carolina (region, nation, etc.) improve the quality of their daily lives? (Note: Answer as if you had to justify why your entire unit should exist.)</p>	
<p>The Agricultural Service Laboratory contributes to the PSA goals of Agrisystems Productivity and Profitability and Environmental Conservation by: providing the basis for soil fertility recommendations with the objective of optimizing production while protecting the environment by avoiding any unnecessary application of nutrients; providing accurate diagnoses of plant pest and disease problems in order to facilitate appropriate corrective actions.</p>	
<p><u>Part 2. Unit's Activity Contribution</u> –List the major activities your unit undertakes and explain the relevance of that activity.</p>	
Activity	Explain why your unit must perform this specific activity and answer the "So What" question.
Soil, Animal Waste, Feed and Forage, Plant Tissue, Irrigation Water, and Compost Analytical Analysis	<p><u>Why Statement</u> –</p> <p>The purpose of the analytical section of the Agricultural Service Laboratory is to provide information and analytical testing for soil, plant tissue, feed and forage, animal waste, irrigation water, and compost samples. Individual clients, commercial dealers, Extension Agents, Extension Specialists, and researchers may submit samples to the laboratory. Analytical testing increases the awareness, understanding, and interpretation of soil, plant tissue, animal waste, feed and forage, irrigation water, and compost analyses and their proper application to land and resource management in the state of South Carolina by providing unbiased, scientifically sound information.</p> <p><u>So What Statement</u> – The need for accurate and timely analyses of soil, plant, animal waste, feed and forage, water, and compost using appropriate analytical and interpretation procedures is unquestionable, given the current emphasis on nutrient management and its impact on the quality of life in both rural and urban areas. Nutrient management issues are of high priority at the local, regional, and national levels, and a number of institutions, organizations, and agencies cooperate to ensure the economic sustainability of production agriculture and industrial activities while striving to maintain a healthy environment. It is widely recognized that effective nutrient analysis programs serve not only commercial agriculture, but also the general public, by pinpointing nutrient problems and ensuring that soil amendments are used wisely.</p>

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Activity	Explain why your unit must perform this specific activity and answer the “So What” question.
Diagnosis of plant diseases and other plant problems and identification of insect pests, weeds and other plants.	<p>Why Statement –Because plant problems can have great economic significance, the Clinic strives to provide both accurate and timely diagnosis of all samples it receives. Detection and documentation of exotic pests has become increasingly important as new destructive diseases, such as soybean rust, arrive in the U.S.</p> <p>So What Statement – If left untreated, soybean rust can cause up to an 85% loss. Early detection will enable a farmer to treat the crop with fungicide, preventing losses and preventing spread to adjacent land. Home growers can benefit by learning about the pests they face and how to best control them.</p>

Each unit must complete a self-assessment of their efforts each year and report quarterly the results toward the objectives developed from that self-assessment. 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. See excerpt from the PSA Unit Quarterly Reporting and Program Assessment Report below:

PSA Unit Quarterly Reporting and Program Assessment Form (revision 5)

Section 2 - Planning and Results – This section is to be completed in two stages – a Planning Stage and Results Stage.

Planning and Results Part 1 – Unit Objectives					
Planning Stage				Results Stage	
Objective	What process(es) will be used to meet this objective?	How will you know when this objective is complete?	What benefit, economic or otherwise, will this objective have to SC?	Results of objective (after objective is complete)	How will you use the results of this objective to improve the process
Maintain deficiency rate of less than 20%	<i>Sampling and analysis of samples procured.</i>	<i>Comparison these figures to following quarter figures</i>	<i>Assurance that label guarantees are met and that crop production is maximized.</i>	<i>Deficiency rate = 11.9%</i>	<i>Focus on sampling and inspection at manufacturers with excessive deficiency rates.</i>
A minimum of 95% of all seed lots inspected meet SC Certification and standards for purity. All Organic program participants are in compliance with USDA NOP Standards.	<i>Sampling and analysis of all seed lots for purity. Inspection of organic producers and processors for compliance with USDA NOP</i>	<i>Comparison these figures to following quarter figures</i>	<i>Assurance that certified seed and organic products are of the quality they expect. Maximize return on cost of seed and organic inputs</i>	<i>3876 acres of certified seed were inspected. 44 certified seed lots were sampled and 100% of them met purity standards.</i>	<i>Focus on inspection of certified seed and organic producers with difficulty complying with program standards.</i>
Maintain an acceptance rate above 94% for phytosanitary certificates issued.	<i>Inspection of plants and commodities for compliance with applicable state, federal, and international laws and regulations.</i>	<i>Comparison these figures to following quarter figures</i>	<i>Issuance of phytosanitary certificates facilitates movement of South Carolina produced plants and commodities which increases profitability to South Carolina agribusinesses.</i>	<i>No rejections from foreign countries for phytosanitary certificates issued in 4Q 2005 by DPI</i>	<i>Focus on maintaining successful efforts and maximizing compliance.</i>
Inspect annually each licensed nursery in SC. Achieve a 95% compliance rate of nurseries meeting inspection criteria.	<i>Annual inspection of SC greenhouses, nurseries, sod and turf farms, and vegetable transplant producers for insect pests and diseases.</i>	<i>Conduct one inspection of each nursery annually. Achieve a 95% compliance rate of nurseries meeting inspection criteria.</i>	<i>Plant material shipped and sold in SC and nationally is free of insects and disease. This enhances the reputation and productivity of SC's nursery industry.</i>	<i>27.7% of SC nurseries were inspected by end of the second quarter of the 2005-06 nursery inspection year (4Q 05).</i>	<i>Continue successful efforts to educate the nursery industry regarding regulatory compliance issues.</i>
Conduct surveys for Giant Salvinia, and survey TSA infested sites.	<i>Survey lower state aquatic sites for GS and infested sites for TSA every six weeks from June 15 to killing frost to prevent mature fruit production.</i>	<i>Any plants of these species found will be destroyed</i>	<i>These inspections protect the environmental resources of SC from invasive plants. TSA populations are reduced, saving cattlemen and landowners thousands of dollars in production losses and control costs</i>	<i>1065 TSA plants were found and killed during 4Q 2005. Three small GS plants were found and destroyed.</i>	<i>Continue all survey efforts.</i>

Sufficient allocation of resources to accomplish the plan is ensured by the various directors as they oversee the operation and activity of their units during the reporting period. All appropriate sources of revenue, state, federal and sponsored activities are used to accomplish the plan.

◆How do you communicate and deploy your strategic objectives, action plans and performance measures?

Unit leaders select appropriate portions of the annual plan to assign to their direct reports as performance objectives for the future reporting period. The strategic objectives are further communicated through presentations, written announcements to the organization, posted on white boards in managerial offices, and published on various internet sites.

◆How do you measure progress on your action plans?

This process is done at both the unit level and at the organization level. At the unit level, each unit sets objectives (actions) that are initiated in a given fiscal year. These objectives may or may not be completed in a given year but at the end of the 4th quarter of each fiscal year, an assessment of progress toward completion is made on each objective. This assessment is published in the quarterly report for that unit and compiled into an organization-wide report that is reviewed by the leadership (see example on previous page).

A much broader and more encompassing set of objectives is established in PSA's 5-year plan. These objectives are monitored and a progress report is developed. This document is updated periodically and reports are made to PSA leadership. The Vice President assigns portions of the 5-Year Plan to direct reports and evaluates them on their success.

◆How do your strategic objectives address the strategic challenges you identified in your Organizational Profile?

Linkages to the challenges outlined in the organizational profile are primarily at the highest level. PSA leadership recognizes these challenges, studies possible solutions, identifies affected units, develops an action plan (either via a 5-year plan or short-term initiative), and communicates the plan to affected units.

Some plans can be carried out at the highest level; however, there can be a trickle-down effect from an organizational objective based on an organizational challenge that would require a specific unit's involvement. If that is the case, that particular unit would play a key role in meeting that challenge.

◆If the agency's strategic plan is available to the public through the agency's internet homepage; please provide an address for that plan on the website?

Currently, the strategic plan is not available to the public through the agency's internet homepage. It is, however, available to all PSA employees via the internet. The PSA homepage is in the process of being redesigned and displays a limited amount of information. The new design will allow for the public and employees to easily see our organization's strategic plan and various performance measures. The PSA Office of Accountability is also developing a departmental internet site that will contain various accountability reports with both restricted and public access.

Information about PSA's programs and goal areas can be viewed by visiting the following web pages:

<http://www.clemson.edu/public/>
<http://www.clemson.edu/extension/>
<http://www.clemson.edu/agforestryresearch/>

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♦Strategic Planning Chart

Program Number and Title	Supported Agency Strategic Planning Goal/Objective	Related FY 05-06 Key Agency Action Plan/Initiative	Key Cross References for Performance Measures*
I. Regulatory Services	<ul style="list-style-type: none"> o Agrisystems Productivity and Accountability o Economic and Community Development o Environmental Conservation o Food Safety and Nutrition 	<ul style="list-style-type: none"> o <u>Pesticide Regulation</u> - To ensure safe & legal use of pesticides; to regulate the pest control industry; o <u>Plant, Fertilizer, and Seed Regulation</u> – To ensure the quality of fertilizer & lime; the prevention & control of introduced plant pests/invasive species, & pests of honey bees; the certification of seed purity/germination; the certification of freedom from plant pests in nursery, greenhouse & transplants; o <u>Soil and Other Analyses</u> - To examine soil samples and provide recommendations for soil composition and nutrient levels to clients, as well as to analyze feed and forage, animal waste, plant tissue, irrigation water, and compost samples and provide results to clients. o <u>Plant Problem Clinic</u> – To analyze plant samples for plant pests and diseases and provide results to clients. o <u>Polymer Chain Reaction Lab</u> – To analyze DNA and RNA of potential plant diseases to identify specific pathogens. o <u>Other Analyses –Homeland Security/Agroterrorism</u> – To administer programs preventing Agroterrorism. 	Indicator 7.1; Indicator 7.2; Indicator 7.3; Indicator 7.4; Indicator 7.5
II. Livestock and Poultry Health	<ul style="list-style-type: none"> o Agrisystems Productivity and Accountability o Economic and Community Development o Environmental Conservation o Food Safety and Nutrition 	<ul style="list-style-type: none"> o <u>Disease Eradication</u> – To maintain the livestock-poultry disease-free status for cattle brucellosis, swine brucellosis, classical swine fever, pseudorabies, tuberculosis and pullorum-typhoid for the purpose of protecting the health and marketability of South Carolina livestock-poultry. o <u>Disease Control</u> - To increase awareness among producers of disease control programs, e.g., South Carolina Voluntary Bovine Johne's Disease Control Program (SC VBJDCP), SC Egg Quality Assurance Program (SCEQAP) and encourage participation in them. o <u>National Animal Identification System (NAIS)</u> – 1) To develop a system to consolidate premises information on South Carolina livestock-poultry operations and coordinate that information with the national premises allocator and repository. 2) To compete for Cooperative Grants from USDA to help fund activities related to populating the premises identification system. o <u>Cooperative Agreements & Grants</u> - To actively pursue available cooperative agreements and grants that are relative to our mission to supplement state appropriations. o <u>Animal Emergency Response/Agro-Terrorism</u> - To further define the role of Livestock-Poultry Health, Animal Health Programs in animal emergency response and training in SC and seek funding for these activities. 	Indicator 7.15; Indicator 7.16; Indicator 7.17
II. Agricultural Research	<ul style="list-style-type: none"> o Agrisystems Productivity and Accountability o Economic and Community Development o Environmental Conservation o Food Safety and Nutrition o Youth Development 	<ul style="list-style-type: none"> o <u>Agricultural Productivity and Profitability</u> - To improve agricultural productivity and profitability in all the major crops, grains, fruits, vegetables, livestock, poultry, fish, cotton, and timber. o <u>Enhanced Economic Opportunity and Quality of Life for Americans</u> – To provide research which will enhance economic opportunities and improve the quality of life for South Carolinians. o <u>Greater Harmony between Agriculture and the Environment</u> – To protect and enhance South Carolina's natural resources to ensure the quality of life and the future economic 	Indicator 7.11; Indicator 7.12; Indicator 7.13; Indicator 7.14

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		<p>development potential in the state.</p> <ul style="list-style-type: none"> ○ <u>A Safe and Secure Food System and a Healthy Well Nourished Population</u> - To improve the quality of life for South Carolinians by developing and delivering food safety, food security and nutrition knowledge. ○ <u>Family and Community Living</u> - To strengthen the support for families and young people in South Carolina, through ongoing family and youth development research programs. 	
IV. Cooperative Extension	<ul style="list-style-type: none"> ○ Agrisystems Productivity and Accountability ○ Economic and Community Development ○ Environmental Conservation ○ Food Safety and Nutrition ○ Youth Development 	<ul style="list-style-type: none"> ○ <u>Sustainable Forest Management and Environmental Enhancement</u>-To conduct educational programs that promote sustainable management of forest resources and understanding of natural forest systems through: 1) proactive leadership, (2) continuing education, and (3) educational training on public issues affecting forestry. ○ <u>Risk Management Systems for Agricultural Firms</u> – To conduct educational programs to assist farm managers in agricultural market assessment and appropriate marketing strategies for agricultural commodities in South Carolina. ○ <u>Agricultural Biosecurity</u> – 1) To improve state, regional, and local capabilities to detect, recognize, diagnose and prevent agroterrorism and threats to food safety, through training exercises and the dissemination of educational information and 2) To respond to agroterrorism, foreign plant and animal diseases, and other disasters that threaten agriculture or food safety. ○ <u>Sustainable Agricultural Production Systems</u> –To support the development of niche markets for beef, dairy, and poultry producers to allow farmers in the state to diversify their operations and make local products available to the citizens of the state, develop and implement animal production systems that are economically sustainable and environmentally sound, and provide training that will increase herd management skills and assist producers in making informed business decisions. ○ <u>Reducing the Impact of Animal Agriculture on the Environment</u> - 1) To develop and deliver educational programs for training and certification of animal facility operators to reduce the environmental impact of animal waste. 2) To present county and state programs on environmentally sound manure treatment, storage, and utilization systems. ○ <u>4-H, Youth and Families</u> – 1) To develop communities of young people in South Carolina who learn leadership, citizenship and life skills by creating healthy experientially educational environments in the local community which support the positive development of young people ages 5 to 19. Youth will develop life skills and the corresponding competency, coping and contributory skills through a variety of educational experiences. 2) To train 4-H volunteers and staff who will provide land-grant based subject matter curriculum and educational experiences so that youth might develop specific life skills. ○ <u>Natural Resources and the Environment</u> – 1) To develop models which will provide a scientific basis for decisions on long term water quality issues in South Carolina and to teach Best Management Practices (BMP's) of natural resources at all levels of land ownership to minimize the negative environmental impacts on water. 2) To provide landowners and natural 	<p>Indicator 7.6; Indicator 7.7; Indicator 7.8; Indicator 7.9; Indicator 7.10</p>

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		<p>resource managers with the tools, information, and economic incentives to maintain and enhance lands for wildlife and to provide services and solutions to mediate and resolve human-wildlife conflicts as they occur.</p> <ul style="list-style-type: none"> ○ <u>Household and Structural Pest Control and Pesticide Training</u> - To conduct educational programs to increase consumer knowledge of structural design conducive to pest damage, wood-destroying insect control alternatives, implementation of safe pesticide application, and responsibilities under pesticide regulations. ○ <u>Integrated Pest Management</u> – To teach producers and homeowners to use practices to reduce costs, negative environmental impacts, and increase profitability. 2) To encourage growers to adopt new agronomic and horticultural production practices. ○ <u>Environmental Horticulture Education</u>- 1) To educate consumers, horticulture professionals, and master gardeners on environmentally sound horticultural practices. 2) To recruit and train volunteers to assist with educating consumers on environmentally sound horticultural practices. ○ <u>Food Safety and Nutrition – 1)</u> To conduct educational programs to reduce the prevalence of obesity and the associated health risks, teach consumers safe food handling and good nutrition practices, and promote healthy lifestyles of South Carolinians. 2) To improve the quality and safety of food for citizens of South Carolina. ○ <u>Community, Leadership and Economic Development</u> – 1) To conduct educational programs, training, and activities that enhance leadership, communication, team building and strategic planning efforts of citizens. 2) To provide communities with tools to develop a vision for transformation to a future state of increased livability, prosperity and sustainability. 3) To strengthen the economic competitiveness of rural areas. 	
V. State Energy	<ul style="list-style-type: none"> ○ Economic and Community Development ○ Environmental Conservation 	<ul style="list-style-type: none"> ○ To promote energy research and development in and for the state. ○ To transfer energy technology developed by others to South Carolina applications. ○ To contribute to national energy issues in areas of excellence. ○ To promote state-wide energy education activities. 	N/A
VI. BioEngineering	<ul style="list-style-type: none"> ○ Agrisystems Productivity and Accountability ○ Economic and Community Development ○ Food Safety and Nutrition 	<ul style="list-style-type: none"> ○ To increase enrollment of graduate students and post-doctoral fellows in the CU-MUSC Bioengineering Program. ○ To increase infrastructure improvement through federal funding (U24 proposal with the College of Dental Medicine at MUSC). ○ To establish an undergraduate research program in bioengineering in the low country of South Carolina. ○ To initiate major funding for research programs in bioengineering at the CU-MUSC Bioengineering Program. ○ To consolidate bioengineering education and research in the State of South Carolina ○ To disseminate bioengineering education and research conducted in SC nationally and internationally. ○ To significantly impact cardiovascular, and orthopedics, dental, and neurological healthcare research in SC. 	N/A

III-3 Customer Focus

PSA was built on “service” and that is what people have come to expect from us. Providing a high level of “service” amidst staff cuts and limited program resources always is a challenge. Consideration and communication are two wise strategies to keep in mind while deciding on high and low priority services. Marketing to customers and providing good customer service involves the processes of building relationships with clientele, establishing communication, building trust, developing mutual understanding and resolving problems or conflicts. All these involve two-way communication between you and the people you do business with--the customers PSA serves. Clients will know you value them when you practice the four “Cs” of customer service:

- Consideration
- Commitment
- Caring
- Communication

All members of the PSA workforce, especially the Extension Service, are front-line employees who represent our organization. These individuals reach the customer and deliver knowledge. In many people’s eyes, they are Clemson University whether they work for Extension Service, Regulatory or any other division of PSA.

♦How do you determine who your customers are and what are their key requirements are?

Contact data identifies customers and their needs. Last year alone, nearly 600,000 people in South Carolina were contacted by the PSA units to determine their requirements. They represent a variety of people from all walks of life. These people are integral to programs and initiatives and provide valuable feedback on performance. A majority of these contacts were programmatic, meaning that customers came to programs or personally sought information based on an identified need. Telephone calls, office visits, farm and home visits, participation in workshops, demonstrations, and seminars are some of the methods employed to provide information and at the same time determine the customer’s needs and wants. In addition, print media such as brochures, pamphlets, and “how-to” guide books have also been downloaded from our websites, or published and distributed to the customers.

When a research need is identified, such as the appearance of a new pest or disease, a critical social or environmental phenomena or a agricultural commodity production concern, the customers needing the information are personally contacted by PSA and the solution to the problem is found.

♦How do you keep your listening and learning methods current with changing customer/business needs?

We are in touch with our clients more closely than any other state agency. The annual nature of surveys and contact data gathering, coupled with the fact PSA has at least one service unit in each county of the state makes it possible to constantly assess the validity and strength of listening and learning methods. The staff at the local level is in constant contact with state legislators, local elected officials and citizens who are served daily, which keeps PSA current. The unanticipated occurrence of new diseases such as West Nile Virus (impacts birds, animals and humans, plant pests), Tropical Soda Apple (impacts pasture land and the environment), or Plum Pox disease (impacts peach production) triggers a planned response by PSA units to the needs of our customers with customers. Climatic changes and events such as droughts, hurricanes and varied rainfalls across the varied landscape of South Carolina require very specific answers to specific problems. With extension personnel in nearly every county of the state, our organization can meet the myriad of needs where PSA has purview.

The potential threat of bio-terrorism and agro-terrorism sets a different series of processes in motion which mobilizes elements of all PSA units into a coordinated effort with the relevant agencies in state and federal governments.

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

Periodic meetings with advisory boards, local leaders, and other stakeholders along with focus groups, provide feedback on how programs and initiatives are meeting their needs. Information gathered from meetings and from periodic survey instruments is conveyed to the PSA Cabinet members for review and recommendations for faculty and staff in the various PSA units.

Advisory boards have played a significant role in providing input and feedback used to improve both services and programs.

♦How do you measure customer/stakeholder satisfaction and dissatisfaction...

PSA is implementing a process to measure the quality of services provided in all the 46 counties of the state. Part of this process involves a customer satisfaction survey (CSS) which has been developed to collect data from the customers. The goal of CSS is to find ways to improve program quality, information delivery, and more importantly, to assist in the accountability process. Four indicators (benchmarks) were identified to assess the quality and satisfaction of services provided. These include: 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.

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

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 needs.

III-4 Measurement, Analysis, and Knowledge Management

PSA has developed a comprehensive network of information systems in support of our activities and planning. These systems collect data from many sources and summarize the data in such a way that allows the administration to understand the trends and progress of the organization. Although these systems are still evolving, they are able to collect all financial data from the University's financial systems, performance data from PSA's own performance tracking system for Extension Activities and from the system for tracking faculty performance, and data from several federal data sources which track research activities. See page 32 for further information on knowledge management through the PSA Unit Quarterly Reporting and Program Assessment Report.

♦How do you decide operations, processes and systems to measure for tracking financial and operational performance?

Financial tracking is ensured by rigorous University and state expenditure and accounting procedures. All programmatic endeavors must fit within the PSA goal areas as well as meet the goals/objectives of the individual units within PSA and the University goals/emphasis areas. These units have their own established process to determine their success in addressing the needs of their

customers/ stakeholders. This process could be peer review committees, focus groups, surveys, and personal contacts. Decisions are made that guide the units in directions that focus their programs on relevance, capacity and impact.

◆How do you use data/information analysis to provide effective support for decision-making?

Data gathered by PSA's network of information systems are combined with data received from various survey instruments, advisory board sessions and made available to the PSA Directors, the PSA Cabinet and to unit directors. Special reports are developed from these various systems and others on request from the Directors and the PSA Cabinet. The Chief Financial Officer also prepares special reports at the request of the Directors and the Council.

◆What are your key measures, how do you review them, and how do you keep them current with business needs and direction?

Key measures have been identified in Section III Category I and in Section IV (please see pages 29 and 47-52).

Review of many of these key measures is now available in a new quarterly reporting process. This report collects data from various sources and compiles the data into the Budget and Control Report format by quarters.

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

Various computerized systems bring in information from all areas of PSA. Much of this data is grouped into predefined areas that allows for comparing performance between departments, or stations, or between individuals. These predefined areas have certain criteria or performance measures that can allow for these comparisons to be made.

Because these systems are linked to numerous data sources, comparisons can be made between Clemson and other "like" institutions across the country. This not only makes it possible to gauge performance (performance measures) but also presents opportunities to collaborate efforts with other institutions.

PSA has initiated a plan to combine the various systems currently used, into a comprehensive, easy to read system. This will allow for better collection of comparison data plus give a more complete picture of the efforts within all of PSA.

Our information systems are designed to transfer data to anyone requesting information regardless of type and scope. That means our own staff, faculty and administrators have access to what they need to make decisions. As mentioned earlier in this document, we are in the process of redesigning all our systems to better ensure that we collected the types of information needed by our organization and our employees as well as our stakeholders.

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

PSA and its units maintain customized databases to capture data for key measures. The University also maintains information systems for various business processes, which feed queried data to PSA systems. These systems are designed with data limits and data validation mechanisms to ensure data is accurate. Those responsible for the collection of data and reporting 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 building firewalls.

♦How do you translate organizational performance review findings into priorities for continuous improvement?

PSA units submit 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 a use of results report that explains how the results will be applied to the objective for improvement in the upcoming reporting period.

♦How do you collect, transfer, and maintain organizational and employee knowledge (your knowledge assets)? How do you identify and share 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 Clemson University's specific policies and procedures.

III-5 Human Resources

PSA's Business Services works together with Clemson University's Office of Human Resources (OHR) for all PSA employees. OHR offers professional development opportunities to all University employees. Additionally, PSA maintains the Office of Staff Development that offers professional development opportunities to ensure that PSA's staff are trained to meet the needs of their profession. This commitment to our employees is best exemplified in the Clemson University Human Resources Philosophy shown below:

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.

♦How do you organize and manage work...?

In most cases, the organization and management of work is carried out at the unit level and at the subunit level. Because of our previous consolidation and reduction-in-force measures, many areas have had to work together to accomplish our required tasks. Those areas that have been particularly affected by cost reductions have realigned their work force to meet our objectives and mission. This is an on-going process that is assessed each year. PSA leadership plays a key role in this process to ensure that our customer's needs are met and that new initiatives are properly staffed.

♦How do you evaluate and improve your organization's human resource related processes?

The evaluation of human resource related processes is a part of the performance measurement process (EPMS) that takes place each year. Our employees are required to establish a planning stage that is reviewed by the supervisor. An interview takes place to discuss the actual performance and open dialogue is encouraged as part of that interview.

♦How do you identify and address key developmental and training needs, including job skills training, performance excellence training, diversity training, management/leadership development, new employee orientation and safety training?

The Office of Human Resources conducts a training needs-assessment survey designed for each University unit. From the information gathered, sessions are scheduled to meet the needs of the unit. OSHA training is done in accordance with regulations. New employee orientation is offered to each new staff member online.

PSA provides an in-service training program for all employees. The training is divided into three categories: Subject Matter; Professional Development (which includes Orientation); and Technology. Extension specialists and initiative teams develop subject matter trainings each year and provide to agents to keep them up-to-date in the various program areas. A variety of Professional Development trainings are offered each year covering such topics 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 trainings are offered which cover the use of many computer programs. In addition, the Professional Associations associated with PSA also offer trainings and updates both at the state and national levels.

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

The Office of Human Resources communicates expectations during the planning phase of the process - employees are allowed input into formulating the planning stage. The ratings allowed by policy in the evaluation phase include not only one 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 Employee Performance Management System (classified employees) and the Faculty Activity System (faculty) - can be an incentive for higher level performance; and support of the President's University goals as a way in part of becoming one of the nation's Top-20 public universities increases awareness of a Mission above an individual's daily duties - supporting higher performance than usual. Employees must choose at least one of the goals relevant to their positions to include as part of their evaluation document.

Formal written performance evaluations and interviews are conducted with each faculty member to review accomplishments, weaknesses, and future goals. This information is utilized in determining the annual goals and objectives for the plan of work developed by each faculty member.

♦How do you motivate your employees to develop and utilize their full potential?

Employees are encouraged and motivated to develop and utilize their full potential through various means. By working with their department and supervisors, employees have the opportunity to fully develop their skills via professional development courses, professional meetings, and other opportunities available to all state employees.

PSA has a number of incentive and awards programs to support the employees within the system. The organization has the standard performance incentive raises. However, an innovative Distinguished Agent position was created which is reserved only 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 should exemplify efforts to enhance the public trust in science and to increase the public's knowledge of the benefits of agricultural research.

♦What formal and/or informal assessment methods and measures do you use to determine employee well being, satisfaction, and motivation?

Units periodically review well being, to include work level and schedule, satisfaction and expectations with personnel. Efforts are made to ensure that supervisors are available to discuss employment issues, problems, concerns, conflicts or any matter that may affect the employee's performance and well-being. This is also a good opportunity for the employee to assist the supervisor on ways to improve his/her performance and that of the unit.

♦How do you maintain a safe and healthy work environment?

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 DOT regulations governing training and drug testing of employees who are required to have a commercial driver's license (CDL). (Partnership stated under the first question of the assistance provided to employees in obtaining a license after requirement has been added to an existing position.) The University Smoking Policy is in compliance with the SC Clean Indoor Air Act. Training is provided annually on causes and symptoms of violence in the workplace. An Employee Assistance Program provides confidential assistance/referral for employees experiencing difficulties in coping in a variety of life/work situations. The intent of the program is to enable them to return to being a more productive employee.

The University and PSA focus on encouraging safe work environment/habits. Ergonomics specialists on staff will provide recommendations for improving workstations, etc; 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.

Employees are monitored to ensure that all safety measures are followed. Employees that become aware of a potential safety problem or area in need of attention are encouraged to report the need to their supervisor.

III-6 Process Management

Because of the complexity of our mission, PSA utilizes many instruments to ensure that our divisions and representatives are working together to deliver our services. Our reliance on PSA's mission and objectives, our close contact with our customers and stakeholders and the commitment of our employees ensures that we work together to accomplish this.

◆What are your key processes that produce, create or add value to your customers and your organization? How do you ensure that these processes are used?

The design of program initiatives is built around three primary criteria: relevance, capacity and impact. Needs assessments are targeted towards the customer base and systematically updated. Advisory boards with a broad cross section of members are asked to assess and provide input to the PSA Associate Deans and PSA Cabinet on the design of program initiatives and the delivery of services. Each unit within PSA is directly involved in service delivery unique to its own specific mission. The design of the delivery systems is constantly being impacted by increased demand for services, new types of services, and new means of service delivery. PSA responds to changing customer needs through remote delivery of service using Internet technology, satellite, two-way video, television, and radio.

◆How do you incorporate organizational knowledge, new technology, changing customer and mission-related requirements, cost controls, and other efficiency and effectiveness factors into process design and delivery?

The design and delivery of all PSA programs are built around achieving the objectives in the five PSA goals. Decisions are made in the design stage to focus research initiatives on the established goals. Spontaneous demand for service from customers is assessed in terms of PSA's ability to deliver the service within the context of the PSA goals. PSA has a reputation for being an agency that can respond to rapid change with new technologies and programs. In instances where the service request is beyond PSA's capabilities, mission or outside a goal area, efforts are made to refer the customer to other agencies, state or federal or to other land-grant universities, with different specialties.

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

Communications is a key support process in the design, production and delivery of products to customers. PSA has a communications center, web page authoring and management staff, radio station, publications and graphics capabilities, two-way video, and satellite facilities, a broad base of computer support, and access on a reimbursement basis to a range of communications support from Clemson University. PSA staff are responsible for the maintenance of computers, diagnostic and research equipment as well as vehicles, buildings and grounds. Maintenance can also be done either on a contractual basis with the University or an outside vendor. Personnel and property management are conducted internally. Legal, land management, computer, janitorial and legislative support services are shared with the University, funded by PSA at negotiated levels.

◆How do you systematically evaluate and improve your key product and service related processes?

The utilization of surveys has been the most reliable process used to evaluate how well we are meeting the needs of our customers. Our Extension service use exit surveys for each of their workshops to determine if that particular workshop met the anticipated need of the subject

matter presented. Periodic mail surveys are done on the list of Extension Service contacts to see if our overall service is adequate and to solicit suggestions for new and improved services.

Our contacts with industry and other government agencies are such that we can use the feedback from these sources to monitor our usefulness to these identities. Our research is best judged by the number of awarded grants and the quality can best be measured in the number of publications our faculty produce as well as the number of patents and licenses awarded. 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, etc. indicate the effectiveness of our regulatory programs.

◆What are your key support processes and how do you improve and update these processes to achieve better performance?

As has been stated previously, communication and feedback from our staff and suppliers has been the key to achieve better performance. Statewide, regional and national meetings are frequently initiated or attended by key individuals in our organization to ensure the efforts among our suppliers and our own organization are coordinated to ensure duplication of effort is minimized and that cooperation of effort is maximized. Feedback from our clients also initiates improvements.

III-7 Business Results

PSA is all about “service”. We generate and transfer knowledge through research and education. If we are not serving our customers and stakeholders well, we are not doing our job. Our primary deliverable is information. Whether the need is for a farmer in a rural county, the housewife, the researcher, an industry leader in the state, a member of the legislature, or a colleague in another state or across the world, PSA should be able to help them.

◆What are your performance levels and trends for the key measures of mission accomplishment and organizational effectiveness?

PSA has restructured to increase the focus on the five PSA goal areas, assigning an Associate Dean to focus on each goal area that in turn works with the University and within emphasis areas. This document has had the effect of increasing performance in the areas and improving reporting. As the Associate Deans continue with their efforts and as PSA initiates new programs, it is anticipated that the trend will be towards increased performance in each goal area.

◆What are your performance levels and trends for the key measures of customer satisfaction?

PSA is interested in enhancing the quality of the information and services it provides to customers, while expanding or at least maintaining the numbers of customers served. Performance levels to date indicate that PSA is successful in providing educational programs, research initiatives and regulatory services which benefit the citizens of South Carolina and leaves the recipient with the view that they have benefited. Continuing to achieve this goal was increasingly problematic in an era of decreasing budgets. PSA plans to increase customer satisfaction by achieving increased performance levels by expanding electronic media to meet customer needs and achieve customer satisfaction.

◆What are your performance levels for the key measures of financial performance?

The previous impact of budget reductions, attrition, retirements and subsequent restructuring has challenged PSA employees to take on additional, and oftentimes, more complex responsibilities. PSA employees have responded positively in this rapidly changing environment and PSA will increase opportunities for employee involvement and is refocusing efforts to provide professional development and training opportunities.

◆What are your performance levels and trends for the key measures of Human Resource Results?

The average level of outside funding for PSA activities the past several years has steadily increased. This increase reflects confidence on the part of federal, state and private partners in PSA's ability to provide research, education and regulatory programs. Increased partnering with outside funding agencies, organizations and companies is necessitated by the declining state budget situation and the University's goal of increasing overall research funding. The trend towards increasing collaboration with partners is expected to increase.

There has been a dramatic increase in activity on the regulatory side of PSA in the areas of biosecurity, food safety and security and the threat of diseases resulting from the increasing terrorist activities. Increased coordination with state and federal agencies to coordinate response scenarios has made for a close working relationship that is anticipated to continue and become more sophisticated. The security of the food supply and the ability to respond to threats to human life, livestock, air and water quality will become increasing important elements of the overall PSA thrust in South Carolina.

PSA has systematically undergone a series of funding reallocations, budget reductions and faculty and staff reassignments with the long-term goal of capitalizing on state and federal funding and leveraging private funds to achieve the organizations five goals and complement the university's goals and emphasis areas. Increasing the return on the dollar, while not compromising the unbiased nature of the information and services which are provided, is a top financial priority. PSA employees and those in leadership positions are going to extraordinary lengths to maintain, refine, and when possible expand the levels and quality of activities provided across the state. Budget reductions which cannot be offset by outside funding are requiring shifts in program emphasis, the elimination of some activities and new approaches to program delivery. The trend of positive, innovative responses and the concern of PSA staff and leadership to meet needs in the state and meet both the PSA and University goals are anticipated to continue.

◆What are your performance levels and trends for the key measures of regulatory/legal compliance and community support?

Community support is consistently monitored via survey or focus-group meetings sponsored by Extension Service personnel. With the Extension Service's role as communicator to the citizens of South Carolina, we have a strong connection to the community. Many of our performance measures monitor this activity and are reported on an annual basis to PSA leadership for review.

Regulatory and legal compliance issues are paramount to many units due to our linkage with federal agencies. These units are often monitored and must meet rigorous requirements for certification and health/environmental regulations. Much of our research can not be carried out without proper regulatory and legal compliance.

Section IV – Referenced Measures

Subset of Category 7 - Business Results

<p>Regulatory Service Performance Measure Series</p> <p><i>Indicator 7.1</i></p>	Obj.	FY 2005-06 Type of Measure	FY 2005-06 Output
	1	The percentage of fertilizer lots sampled that are found to be deficient in nutrient content. Benchmark: Maintain deficiency rate of less than 20%. Result: 14.09% = higher quality fertilizer for SC growers. Use of Result: Seek to identify ways to maintain or further reduce deficiency rate.	14.09%
	2	Seed lots (500 bushels or less) of seed production inspected for certification, and percentage of seed lots inspected that meet purity standards in laboratory tests. Benchmark: Maintain a minimum of 95% of all seed lots inspected meeting SC Certification standards for purity. Result: 100% compliance indicates effectiveness of inspections in ensuring that SC Certified seed meets high quality standards. Use of Result: Continue diligent efforts to achieve 100% compliance.	314 seed lots 100%
	3	The number of inspections required in addition to certification inspections conducted to certify plant/commodity shipments free of plant pests (transplants, nursery stock, seed, lumber) intrastate, interstate, and globally. Benchmark: Respond to phytosanitary requests within one week timeframe and maintain an acceptance rate above 94%. Result: This certification fulfills certification requirements for shipment of these materials. Shipments enhance the marketing and profitability of SC agricultural business. No rejections from foreign countries of 886 federal phytosanitary certificates issued. Use of Result: Seek to maintain successful efforts and maximize compliance.	Plant regulatory inspectors are now writing compliance agreements in lieu of issuing state phytosanitary certificates. 886 federal phytosanitary certificates were issued in FY 2005. Compliance rate 100%
	4	The number of inspections conducted of commercial greenhouses, nurseries, dealers, turf/sod farms and vegetable transplant producers for insect and disease detection. Benchmark: Conduct one inspection annually of each licensed nursery. Achieve a 95% compliance rate of nurseries meeting inspection criteria. Result: Plant material shipped and sold in SC and nationally is free of insects and disease, reducing the spread of invasive species. This enhances the horticultural industries (2 nd in cash receipts in SC) productivity and provides credibility to the industry and other states of our program. Use of Results: Continue successful efforts to educate nursery industry regarding regulatory compliance issues.	1749 inspections in addition to certification inspections 572 inspections of 695 nurseries. Compliance rate 100% Note 83% inspection rate accomplished despite 2 districts being without inspector for a total of 18 months (11 mo. in Dist. 3, and 7 mo. in Dist. 6).
	5	Invasive species surveys were conducted to detect/determine the presence of the invasive weeds Giant Salvinia in SC ponds and natural areas and Tropical Soda Apple and Benghal dayflower in the state. Benchmark: Survey lower-state aquatic areas for Giant Salvinia, and survey TSA infested sites every six weeks from June 15 th to killing frost to prevent mature fruit production. Result: No Giant Salvinia found in SC's lower-state aquatic areas. No TSA plants produced mature fruit at current infested sites. TSA populations are being reduced saving cattlemen and landowners thousands of dollars in production losses and control costs. No Benghal dayflower was found. Use of Result: Continue all survey efforts and consider modifying survey protocols for TSA in order to enhance eradication efforts and prevent new introductions.	Three Giant Salvinia plants found and eradicated from survey of 20 counties. . 4,267 TSA plants found and destroyed in FY2005 No Benghal Dayflower was found in cropland. BDF was found in containerized ornamentals at one SC nursery. Plants were destroyed and site is being monitored by DPI.

**Regulatory
Service
Performance
Measure Series**

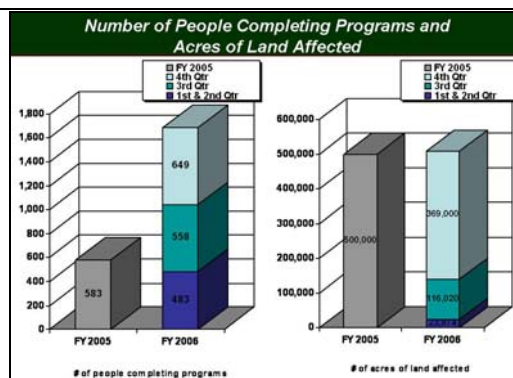
*Indicator 7.1
continued*

	6	The number of inspections conducted to assure proper pesticide use. Benchmark: There will be over 2,000 lawn care and structural pest control inspections to ensure safe pesticide use and structural and lawn care pest control compliance with pesticide labels, state and federal law. Result: These inspections protect the environmental resources of South Carolina from the effects of pesticide misuse. The educational regulation of pesticide use protects consumers and their property from harm as pesticide applicators are held to regulatory standards. Use of Results: Depending on numbers of violations decisions are made where to concentrate next year's inspections.	2,255 complaint and compliance-assistance inspections by DPR
	7	The number of pounds of pesticide containers recycled. Benchmark: Over 100,000 pounds of pesticide container plastic will be recycled. Result: The number of containers available for recycling has been declining steadily for the last few years. Part of this is due to the increasing dominance of "mini-bulk" and other returnable containers in agriculture. Use of Results: These results assist the DPR in determining how successful its efforts are in informing the public about recycling programs and assisting with their implementation.	92,016 lbs of pesticide containers recycled
	8	The number of groundwater samples procured and analyzed for pesticide and nitrite contamination. Benchmark: Over 150 groundwater samples will be taken and analyzed. Result: One hundred and fifty nine (159) groundwater samples were obtained from privately owned wells and from the DPR's in-field study sites. Approximately 7% of the private wells sampled yielded detectable levels of pesticide residues, and about 69% of the wells sampled contained detectable residues of nitrate. Use of Results: The presence of a groundwater-monitoring program increases compliance with groundwater-protection measures in the applicator community. This program also serves to set the baseline for South Carolina's groundwater protection efforts.	159 groundwater samples taken in SC
	9	Monetary savings of consumers where the Department of Pesticide Regulation investigated structural pest control activities. Benchmark: To save consumers, by our inspections, as much as possible. Result: This figure is a conservative estimate of the money refunded directly to consumers as a result of the DPR's activities. It includes legal settlements, refunds, and the value of repairs that would not otherwise have been made, but does not include the value of treatments already paid for but properly completed because of the DPR's involvement. Use of Results: The monetary savings to consumers resulting from the intervention of the DPR is an important measure that assists the Department in determining its overall value to SC consumers.	\$628,450
	10	Homeland Security prevention measures. Benchmark: The threat of terrorism will be reduced concerning agrochemicals or aerial application equipment. This will be measured by the actions taken to reduce terrorism and the success of those efforts. Result: Measures are in place to prevent and/or mitigate agroterrorism. Use of Result: Continued vigilance and progress toward developing increasing stages of readiness will occur.	1,666 inspections/contacts

<div>Regulatory Service Performance Measure Series</div> <div>Indicator 7.2</div>	<div>Seed Lots Meeting Certification Standards</div> <div><table><tr><th>Year</th><th>Percentage</th></tr><tr><td>1997-98</td><td>99%</td></tr><tr><td>1998-99</td><td>97%</td></tr><tr><td>1999-00</td><td>99%</td></tr><tr><td>2000-01</td><td>97%</td></tr><tr><td>2001-02</td><td>100%</td></tr><tr><td>2002-03</td><td>96%</td></tr><tr><td>2003-04</td><td>100%</td></tr><tr><td>2004-05</td><td>100%</td></tr><tr><td>2005-06</td><td>100%</td></tr></table><p>Benchmark = 95% Inspection Rate</p><p>Produced for BCR Accountability Report FY 2006</p></div>	Year	Percentage	1997-98	99%	1998-99	97%	1999-00	99%	2000-01	97%	2001-02	100%	2002-03	96%	2003-04	100%	2004-05	100%	2005-06	100%
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<div>Regulatory Service Performance Measure Series</div> <div>Indicator 7.3</div>	<div>Inspections made by DPR</div> <div><table><tr><th>Year</th><th>Inspections</th></tr><tr><td>1997</td><td>2,075</td></tr><tr><td>1998</td><td>2,140</td></tr><tr><td>1999</td><td>2,210</td></tr><tr><td>2000</td><td>2,637</td></tr><tr><td>2001</td><td>2,785</td></tr><tr><td>2002</td><td>2,834</td></tr><tr><td>2003</td><td>2,230</td></tr><tr><td>2004</td><td>2,220</td></tr><tr><td>2005</td><td>2,255</td></tr></table><p>Benchmark = 2000 Inspections</p><p>Produced for BCR Accountability Report FY 2006</p></div>	Year	Inspections	1997	2,075	1998	2,140	1999	2,210	2000	2,637	2001	2,785	2002	2,834	2003	2,230	2004	2,220	2005	2,255
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<div>Regulatory Service Performance Measure Series</div> <div>Indicator 7.4</div>	<div>Savings as a Result of DPR Inspections</div> <div><table><tr><th>Year</th><th>Savings (Millions of Dollars)</th></tr><tr><td>1997</td><td>0.16</td></tr><tr><td>1998</td><td>1.14</td></tr><tr><td>1999</td><td>2.15</td></tr><tr><td>2000</td><td>1.67</td></tr><tr><td>2001</td><td>3.07</td></tr><tr><td>2002</td><td>2.02</td></tr><tr><td>2003</td><td>1.99</td></tr><tr><td>2004</td><td>0.80</td></tr><tr><td>2005</td><td>0.63</td></tr></table><p>Produced for BCR Accountability Report FY 2006</p></div>	Year	Savings (Millions of Dollars)	1997	0.16	1998	1.14	1999	2.15	2000	1.67	2001	3.07	2002	2.02	2003	1.99	2004	0.80	2005	0.63
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<div>Regulatory Service Performance Measure Series</div> <div>Indicator 7.5</div>	<div>Total Samples by Type</div> <div><table><tr><th>Sample Type</th><th>Total Samples</th></tr><tr><td>Plant Problem/Disease</td><td>673</td></tr><tr><td>Plant/Weed Id</td><td>105</td></tr><tr><td>Insect Id</td><td>77</td></tr><tr><td>Nematode Assay</td><td>1041</td></tr></table><p>Produced for BCR Accountability Report FY 2006</p></div>	Sample Type	Total Samples	Plant Problem/Disease	673	Plant/Weed Id	105	Insect Id	77	Nematode Assay	1041										
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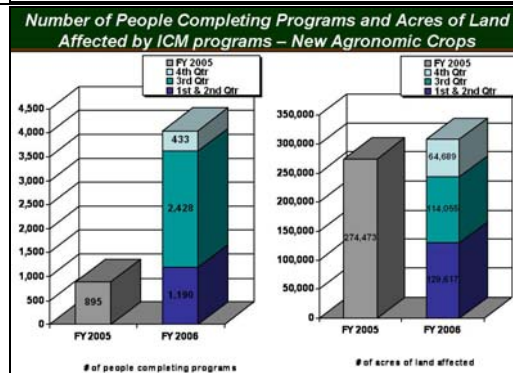
Extension Service Performance Measure Series

Indicator 7.6



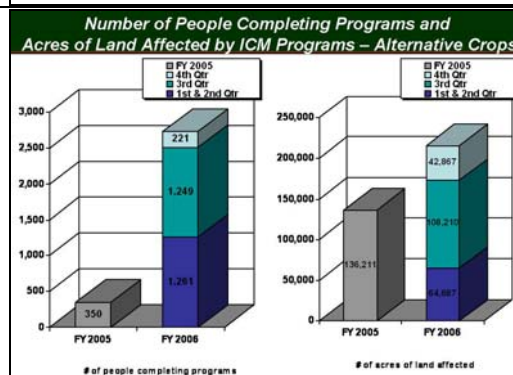
Extension Service Performance Measure Series

Indicator 7.7



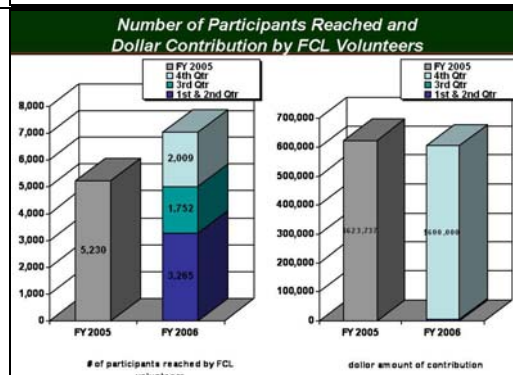
Extension Service Performance Measure Series

Indicator 7.8



Extension Service Performance Measure Series

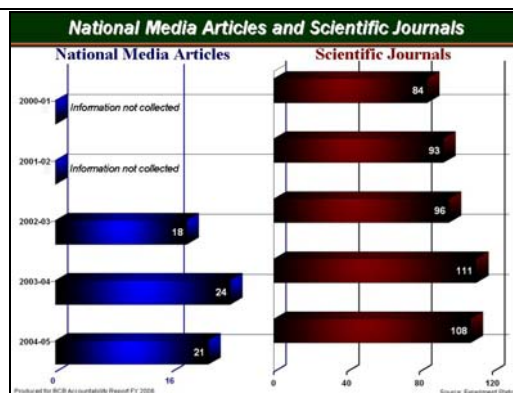
Indicator 7.9



<div>Extension Service Performance Measure Series</div> <div>Indicator 7.10</div>	<div>Number of People Participating in Programs and Acres Affected by IPM</div> <div><table><thead><tr><th>Category</th><th>FY 2005</th><th>FY 2006</th></tr></thead><tbody><tr><td># of people completing programs</td><td>248</td><td>1,148</td></tr><tr><td># of acres of land affected</td><td>45,300</td><td>75,100</td></tr></tbody></table></div>	Category	FY 2005	FY 2006	# of people completing programs	248	1,148	# of acres of land affected	45,300	75,100																					
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<div>Agricultural Research Performance Measure Series</div> <div>Indicator 7.11</div>	<div>Proposals Submitted</div> <div><table><thead><tr><th>Fiscal Year</th><th>Proposals</th></tr></thead><tbody><tr><td>FY 2000</td><td>78</td></tr><tr><td>FY 2001</td><td>107</td></tr><tr><td>FY 2002</td><td>104</td></tr><tr><td>FY 2003</td><td>121</td></tr><tr><td>FY 2004</td><td>146</td></tr><tr><td>FY 2005</td><td>150</td></tr><tr><td>FY 2006</td><td>252</td></tr></tbody></table></div>	Fiscal Year	Proposals	FY 2000	78	FY 2001	107	FY 2002	104	FY 2003	121	FY 2004	146	FY 2005	150	FY 2006	252														
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<div>Agricultural Research Performance Measure Series</div> <div>Indicator 7.12</div>	<div>Disclosures & Patents</div> <div><table><thead><tr><th>Year</th><th>Disclosures</th><th>Patents</th></tr></thead><tbody><tr><td>1998</td><td>7</td><td>1</td></tr><tr><td>1999</td><td>7</td><td>3</td></tr><tr><td>2000</td><td>4</td><td>2</td></tr><tr><td>2001</td><td>5</td><td>3</td></tr><tr><td>2002</td><td>5</td><td>1</td></tr><tr><td>2003</td><td>6</td><td>1</td></tr><tr><td>2004</td><td>5</td><td>1</td></tr><tr><td>2005</td><td>10</td><td>2</td></tr><tr><td>2006</td><td>8</td><td>1</td></tr></tbody></table></div>	Year	Disclosures	Patents	1998	7	1	1999	7	3	2000	4	2	2001	5	3	2002	5	1	2003	6	1	2004	5	1	2005	10	2	2006	8	1
Year	Disclosures	Patents																													
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<div>Agricultural Research Performance Measure Series</div> <div>Indicator 7.13</div>	<div>Sponsored Research Awards</div> <div><table><thead><tr><th>Fiscal Year</th><th>Awards</th></tr></thead><tbody><tr><td>FY 2002</td><td>19.90</td></tr><tr><td>FY 2003</td><td>26.10</td></tr><tr><td>FY 2004</td><td>19.00</td></tr><tr><td>FY 2005</td><td>17.30</td></tr><tr><td>FY 2006</td><td>17.68</td></tr></tbody></table></div>	Fiscal Year	Awards	FY 2002	19.90	FY 2003	26.10	FY 2004	19.00	FY 2005	17.30	FY 2006	17.68																		
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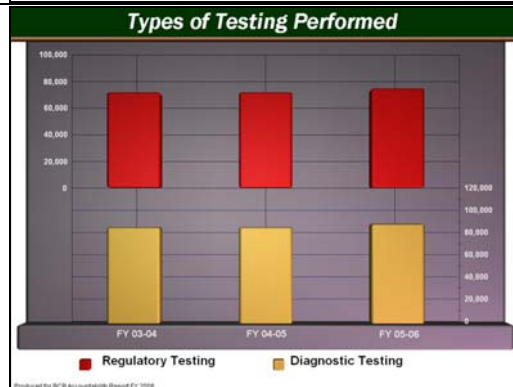
Agricultural Research Performance Measure Series

Indicator 7.14



Livestock-Poultry Health Performance Measure Series

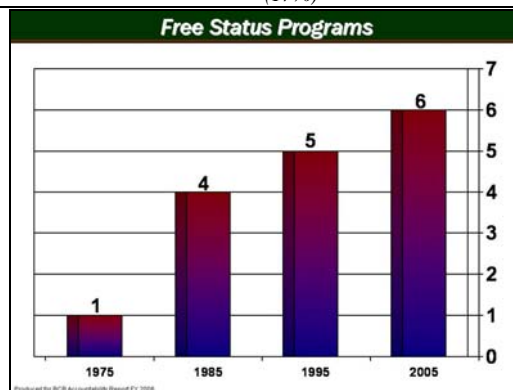
Indicator 7.15



Provides information relative to laboratory usage by clients, demand for specific services, and a means to analyze cost/benefit factors for planning how to direct limited laboratory resources most effectively and efficiently.
Total Laboratory Services Performed almost 88,000 Increased 3%
Regulatory testing at 72,800 tests (83%) greatly exceeds that of non-regulatory (diagnostic) testing at 15,091 tests (17%)

Livestock-Poultry Health Performance Measure Series

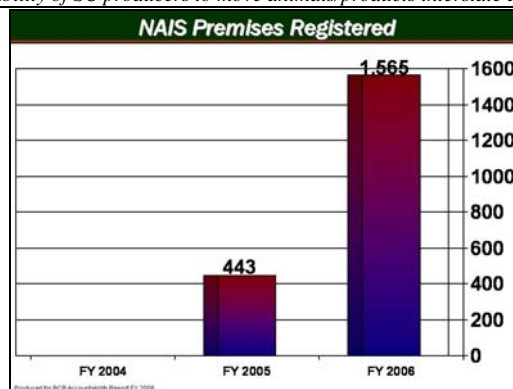
Indicator 7.16



Status impacts ability of SC producers to move animals/products interstate and internationally

Livestock-Poultry Health Performance Measure Series

Indicator 7.17



Indicates progress toward implementation of National Animal Identification System (NAIS) which is designed to enhance animal disease control, surveillance, and eradication program

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