

AGENCY NAME:	Clemson University PSA		
AGENCY CODE:	P200	SECTION:	045

**Fiscal Year 2015-16
Accountability Report**

SUBMISSION FORM

AGENCY MISSION	<p>I. Mission Statement</p> <p>Clemson University Public Service Activities is made up of four interrelated units: Experiment Station, Extension Service, Livestock Poultry Health and Regulatory Services. The overall agency mission is to conduct research, extension (knowledge transfer) and regulatory programs that:</p> <ul style="list-style-type: none"> • Advance the competitiveness of South Carolina’s \$41.7 billion agriculture and forestry industry • Enhance the economic potential of rural communities • Safeguard the food supply • Preserve natural resources • Prepare young people for the workforce through 4-H
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AGENCY VISION	<p>II. Vision Statement</p> <p>To be acknowledged as the foremost provider of practical new discoveries, outreach education and technical assistance in the areas of agribusiness productivity and profitability, economic and community development, environmental conservation, food safety and nutrition, and 4-H youth development to enhance the quality of life for South Carolina’s citizens.</p>
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Please state yes or no if the agency has any major or minor (internal or external) recommendations that would allow the agency to operate more effectively and efficiently.

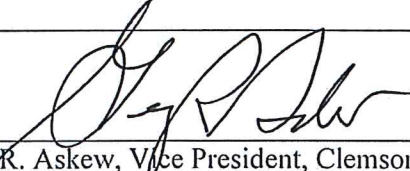
RESTRUCTURING RECOMMENDATIONS:	No
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Please identify your agency’s preferred contacts for this year’s accountability report.

	<u>Name</u>	<u>Phone</u>	<u>Email</u>
PRIMARY CONTACT:	Dr. George Askew	864-656-3140	gaskew@clemsn.edu
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I have reviewed and approved the enclosed FY 2015-16 Accountability Report, which is complete and accurate to the extent of my knowledge.

AGENCY DIRECTOR
(SIGN AND DATE):  9/8/16
(TYPE/PRINT NAME): Dr. George R. Askew, Vice President, Clemson University Public Service and Agriculture

BOARD/CMSN CHAIR
(SIGN AND DATE):  9/15/16
(TYPE/PRINT NAME): E. Smyth McKissick, III, Chairman, Clemson University Board of Trustees

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AGENCY'S DISCUSSION AND ANALYSIS

Clemson University's Public Service Activities (PSA) welcomes the opportunity to provide: 1) relevant information regarding its mission, funding, and performance; 2) external and internal factors affecting our performance this year; 3) our current efforts and results; and 4) present and anticipated changes.

Please see the Appendix for very brief information regarding Clemson University and PSA's accountability systems both external and internal. The 2015-16 reporting period is driven by the leadership of Vice President for Public Service and Agriculture Dr. George R. Askew, Regulatory Services Director, Dr. Stephen Cole, Livestock, Poultry and Health Director, Dr. Boyd Parr, Clemson Experiment Station Director, Dr. Christopher Ray, and Cooperative Extension Service Director, Dr. Thomas R. Dobbins. Clemson University continues to be led by President, Dr. James P. Clements, and is a 21st best national public university, as ranked by *U.S. News & World Report*.

Public Service Activities (PSA) is at the core of Clemson's land-grant university mission of teaching, research, and public service. Located in all 46 counties and at five Research and Education Centers around the state, PSA develops and delivers research-based information in five major focus areas - agrisystems productivity and profitability, natural and environmental resources, food safety and nutrition, agribusiness, and 4-H youth and families.

Clemson PSA is part of the national USDA system of research and knowledge transfer. We work collaboratively with stakeholders and other state agencies to identify issues and develop research-based solutions that enhance South Carolina's largest industry—agribusiness—that contributes \$41.7 billion and 200,000 jobs to the state economy. Clemson PSA is uniquely equipped to transfer science-based information to the state's citizens through the Extension Service, which conducts educational programs in all 46 counties targeted to the local needs.

Clemson Public Service Activities is made up of four interrelated units: Regulatory Services, Livestock-Poultry Health, Experiment Station, and Extension Service.

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

Livestock-Poultry Health (LPH) Programs ensure the health and safety of the livestock/poultry industries and companion animals, and protect the meat supply and public health of South Carolinians.

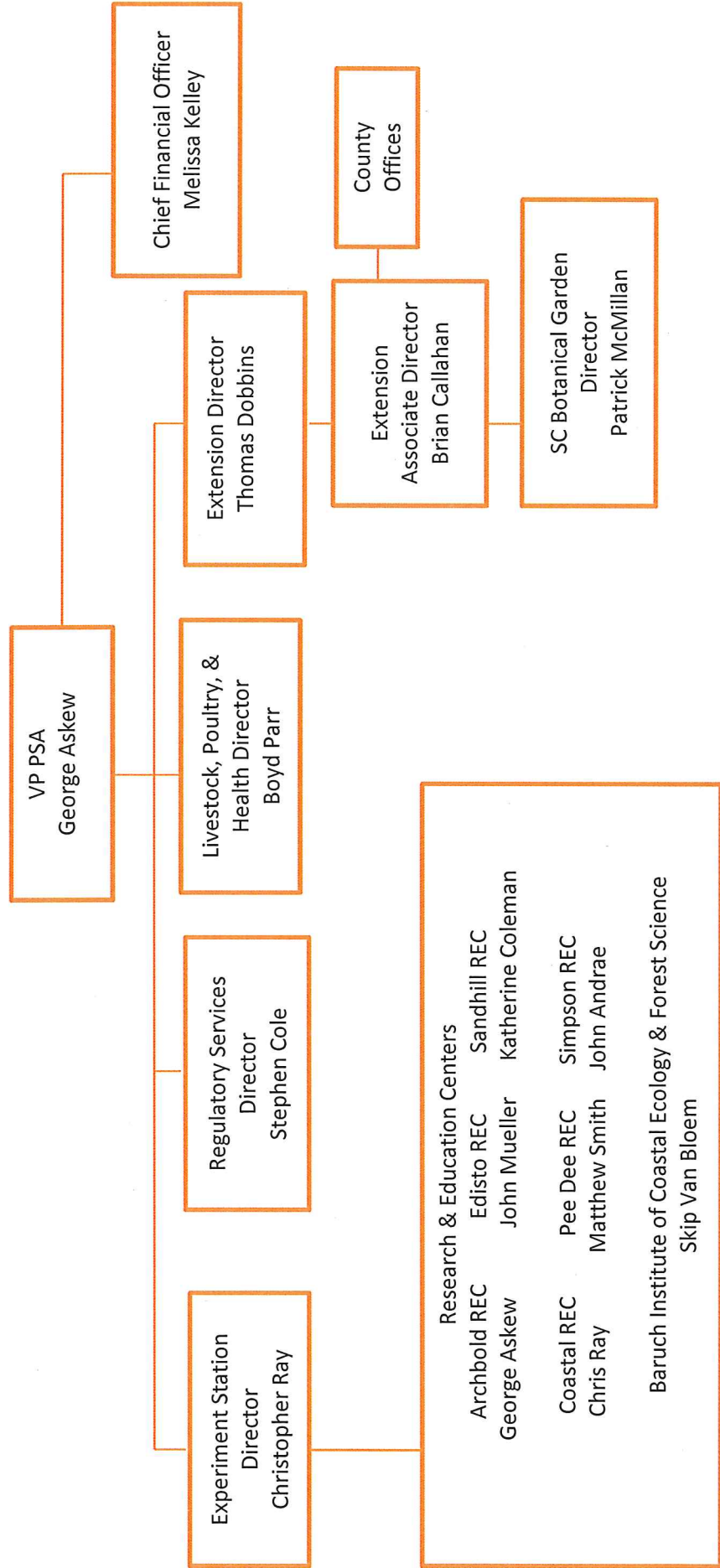
Clemson Experiment Station scientists work to improve the quality of life for people in South Carolina, the nation, and the world by providing science-based information on major issues facing decision makers.

Cooperative Extension Service agents meet the diverse needs of South Carolina citizens by delivering research-based information on agriculture, the environment, food safety and nutrition, agribusiness, and 4-H youth and families to farmers, producers, agribusiness professionals, and individuals across the state. Educating people in these types of areas in each state is the directive of the Land Grant College Act. If we did not accomplish our goals, the land grant system would not be able to function. South Carolina citizens and PSA stakeholders have direct input into decisions of the Extension system through statewide planning efforts and a needs identification process. The exchange between field and campus staff informs the research agenda, ensuring that program development addresses real needs of South Carolinians. In addition, working with Regulatory and LPH, our motto is *regulation through education*.

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PSA Organizational Chart



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Accountability and Format of Templates

The Strategic Planning and Performance Measures sections are arranged by the four main units within Clemson PSA: Regulatory Services, Livestock-Poultry Health, Experiment Station (Research), and the Extension Service. The results of our efforts are highlighted in the Strategic Planning and Performance Measures section of this report, however, the impact of Public Service Activities' research, educational, and regulatory programs goes far beyond the immediate recipients and is not easily formatted to an Excel spreadsheet. Below are some PSA accomplishments for FY 2015-16, organized by major unit.

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

Efforts to expand collaboration between Clemson Regulatory Services and Clemson Extension began in FY 2015 to leverage the expertise of Regulatory Services and the statewide connections of Extension agents. Regulatory and Extension personnel identified the following programs that could be expanded by collaboration:

- **Integrated Pest Management in Schools:** The Department of Pesticide Regulation (DPR) Compliance Inspectors collected pesticide application records for 647 schools since mid-2013. These application records are reviewed by the Reduced Risk Specialist and logged for future reference. Application records for 97 schools were reviewed during the last fiscal year. Also, pesticide applicators in 15 school districts were contacted last year. A breakdown of the applicators contacted is as follows: Commercial Lawn Care Operators (13), Noncommercial Lawn Care Operators (8), and Structural Pest Control Operators (11). In addition to preparing informational materials related to School IPM, DPR held ten training sessions on School IPM for Extension and Regulatory personnel throughout SC. Approximately 60 Extension and Regulatory employees participated in these trainings.
- The Department of Pesticide Regulation (DPR) **collected 208,042 pounds of used pesticide containers for recycling.** Since the program began in 1993, nearly 3 million pounds of pesticide containers have been recycled, representing an equal number of containers. The program helps protect the environment.
- **Invasive Species Program:** In response to new 2015 legislation, an Invasive Species Advisory Council was installed and put into service twice within the past year. Chaired by the Department of Plant Industry (DPI), the Council recommended the addition and deletion of several plant pests from the State Plant Pest List. A second impromptu meeting was called by DPI in response to a new disease of boxwoods discovered in South Carolina in which the Council recommended proper DPI action.
- **Benghal Dayflower:** In fall of 2015 this noxious weed was found in Dorchester County in South Carolina. After an extensive survey a quarantine was issued in an attempt to stop the continued spread of this weed across the state. The Department of Plant Industry implemented innovative technology in the form of a GIS mapping system to track and monitor eradication efforts.

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- **PCR testing for fecal coliforms:** Department of Plant Industry is assisting South Carolina municipalities in meeting EPA water quality standards. A molecular method was developed, tested and successfully implemented to differentiate fecal coliforms of animal origin in water samples. In FY 2016 we expanded the water sampling program for counties and municipalities as a service. This project is being done in conjunction the Clemson Center for Watershed Excellence. Pilot testing samples have already begun with the actual municipalities’ samples to begin September 2016.
- The Department of Plant Industry’s **Fertilizer Program** has increased the fertilizer samples by 40% since 2014. The sample numbers are now at 3,400 samples per year with 11.7% deficiency rate, well below the target of 20%.
- **Apiary Inspection Program:** In one year the DPI Apiary Inspection Program saw a dramatic increase in the issuance of Entry Permits and requested certifications for apiary shipments. With this increase in hive inspections and statewide education came an increase in Africanized Honeybee inspections (10+ inspections; none positive) and the discovery of American Foulbrood (3 confirmed). The program continues to grow and serve this vital state agricultural industry.

LIVESTOCK-POULTRY HEALTH <http://www.clemson.edu/lph/>

The Livestock-Poultry Health Programs protect the health of food animals, other livestock, and companion animals, conducting constant surveillance for diseases that affect both man and animals, providing the diagnostic expertise that allows for treatment and eradication of disease of domestic animals, inspecting/testing the processing of foods of animal origin, and coordinating state agricultural/animal emergency response as lead agency of ESF-17.

Animal agriculture represents \$14.5 billion to South Carolina’s overall economy, with over 58% of direct farm sales in South Carolina agriculture in a January 2015 study. Livestock-Poultry Health (LPH) programs protect and monitor the health of all livestock and poultry in the state and are integral to this industry’s continuation and growth.

Animal Health Programs personnel conducted 898 inspections at livestock auction markets, after-hours markets, dealers, farms, and miscellaneous sales sites such as flea markets. These inspections are part of the requirement for **maintaining the state’s “disease free”** status and are coordinated with USDA.

A novel H5N2 strain of **Highly Pathogenic Avian Influenza (HPAI)** caused the largest and most expensive foreign animal disease outbreak in the history of the United States in the Upper Midwest in 2015. Livestock-Poultry Health’s top strategic need is to be adequately staffed and equipped to help assure early detection, swift eradication and rapid recovery for the state’s poultry producers in an HPAI event in SC. Direct losses to the poultry industry in SC would be substantial and the potential loss of export and interstate markets is a significant concern we will face for the next several years. “Disease free” status improves access to both interstate and international markets. The state veterinarian signed 252 letters this year certifying South Carolina’s status for poultry enabling import to certain countries. S.C. poultry industry exports were valued at \$145.8 million in 2009.

SC Ag-Watch program led by LPH provides training to livestock owners on improved biosecurity practices, foreign animal disease awareness, and notification procedures. This approach emphasizes prevention of disease along with the traditional roles of disease surveillance, control, and eradication. State and local emergency managers also use SC Ag-Watch Manuals as a reference for agricultural emergencies.

LPH continued work on the **Mid-Atlantic Secure Milk Supply Project** in SC along with the State Veterinarians in TN, NC, VA, MD, WV, DE, NJ, PA, NY & GA. This project, developed in collaboration with all S.C. dairy

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industry segments, created a regional plan to mitigate potential economic losses of non-infected, voluntarily participating dairy farms in the event of a foot and mouth disease outbreak, without significantly increasing the likelihood that the disease could spread. LPH & Clemson University completed work on the official MOU that was endorsed in SC by the State Veterinarian, Clemson VP for PSA, Commissioner of Agriculture and the Governor. It has since been endorsed by all 11 states.

The **Veterinary Diagnostic Center** completed 91,495 tests and procedures during FY15-16 in performing its animal and food safety diagnostic duties. Of these, 90,508 were related to production animals and regulatory duties; the remaining 987 were from companion animals and wildlife.

SC Meat-Poultry Inspection completed its **annual audit by USDA Food Safety Inspection Service**. This review is to ensure a safe meat supply. The S.C. program continues to meet or exceed the federal requirements. Department activities included 100% on-line inspection during slaughter operations on 1,170 slaughter days that processed 22,520 livestock and more than 3.9 million poultry. Additionally, inspectors performed 42,824 individual inspection procedures during daily inspection in 73 slaughter and processing facilities.

Livestock-Poultry Health helps assure South Carolina's concerns are discussed at the national and international levels. Professional staff served in many roles including the Secretary's (USDA) Advisory Committee on Animal Health, American Veterinary Medical Association (AVMA) Animal Agriculture Liaison Committee, National Animal Health Information Technology Board (USDA), Vice-Chair of US Animal Health Association (USAHA)/American Association of Veterinary Laboratory Diagnosticians (AAVLD) Joint Committee on Animal Emergency Management, First Vice-President of USAHA, S.C. Delegate in AVMA House of Delegates, and President-elect of the American Association of Small Ruminant Practitioners.

CLEMSON EXPERIMENT STATION http://www.clemson.edu/public/experiment_station/

As a leading land-grant public research institution, Clemson University highlights its federal **grant activities** in this report. The number of externally funded research grants is one measure of Experiment Station scientists' success in competing for limited funding. The data is cyclical in nature because of long-term funding periods—usually two to five years—limited numbers of principal investigators, and time constraints. This data is used to evaluate researchers' productivity as well as to determine PSA's contribution to university goals for generating external funding for research. In addition, the active Experiment Station projects produced 65 annual technical contributions, 164 journal articles and 14 book chapters in FY16.

The National Institute for Food and Agriculture will be moving towards a project format with similar projects being grouped together, called umbrella projects. Meetings were held with Clemson University researchers to discuss the potential for group participation in an umbrella project, based on fields of study for the Experiment Station. Over the course of the year, these groups have written their proposals and had them approved externally through peer review as well as through internal review. The research proposed in these new umbrella projects will begin on October 1, 2016.

COOPERATIVE EXTENSION www.clemson.edu/extension/

Last year, the Clemson University Cooperative Extension Service completed a 5-year strategic plan and has begun implementation of that plan. Extension has moved from 13 regions to 6 regions each with a Regional Lead Agent (RLA). Previously, RLAs were heavily involved in programs. A major change allows the RLAs to become leaders that are actively involved in the daily operations and implementation of our strategic plan. There is now one Regional Business Center (RBC) per region to help establish regional consistency. These changes have allowed Extension to be a more responsive administration to the needs of the professional county agents.

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As we studied the formation of our team structure and through careful and deliberate constructive conversations with agents, stakeholders and industry leaders, a change was made in the Natural Resource and Horticulture Teams to enhance the programmatic activities in both areas and two new Program Team Leaders were named. The Water and Forestry teams have combined under the Natural Resource Team to gain more synergy. The Horticulture Team has split into two teams, Commercial and Urban Horticulture. These changes will allow us to focus more on quality programming. The Economic and Community Development Team has been renamed Agribusiness and has a goal of fostering the development of local and regional food systems, promoting entrepreneurial and agribusiness development, and enhancing community resiliency and economic capacity.

In order to provide more opportunities for advancement and a way to develop succession plans, a formal Regional Lead Agent internship program has been developed and is offered to two individuals annually. In addition, a new Extension Mentoring Program is being established. The goal of the Extension Mentoring Team is to develop an individualized mentoring program for all of our new and beginning agents. The State Extension Advisory Council has been restructured and is now called the State Extension Advancement Council. Last year because of the hard work of Extension Agents and our advocacy team to develop quality programming, we were able to hire 14 new agents.

This has also been a very relentless year on our Agribusiness, Agronomic, Forestry and Livestock Teams with the historic flooding in the lower part of the state. Our agents were some of the first responders to help our most treasured commodity, *South Carolina farmers*. Our Agribusiness team has worked hand-in-hand with the S. C. Commissioner of Agriculture and the South Carolina Farm Bureau President to get the Farm Aid Bill passed through our legislation session. The South Carolina Department of Agriculture has lead on this project, but our agents are and will be the frontline for our farmers to assist with the application process.

Extension personnel delivered **educational programs** and information through 254,286 contacts across all 46 South Carolina counties. More than 155,991 participants attended 9,740 Extension programs. We have developed numerous partnerships with federal, state, local, and non-governmental entities, which has allowed us to eliminate duplication of service and at the same time, increase programmatic output and expertise.

To **reduce food-borne illness**, agents conducted ServSafe® food safety training for managers, supervisors, and other food handlers. A total of 255 food-service employees earned a course completion certificate, representing 176 food establishments. The National Restaurant Association estimates that, on average, a food-borne illness outbreak costs an establishment about \$75,000. The approximate economic value of the trainings could be as high as \$13,200,000 by preventing outbreaks.

Extension agents developed and delivered 1,210 educational programs in the areas of **Sustainable Forest Management and Natural Resources** (including water quality and quantity programs), reaching 26,385 people. Volunteers such as Master Naturalists contributed over 22,163 hours, which represent \$468,526 of program support. Agents conducted fire assessments, and presented workshops on prescribed fire burning, timber taxation, wildlife and pond management, hunting and land liability, forest landowner association meetings, and worked with individual families. The total acres affected was over 500,000.

Agents conducted 5,433 **4-H programs** that reached 94,486 youth and families with programs on agriculture, science and natural resources, food safety and nutrition, and leadership. In STEM programs, youth used critical thinking and problem-solving skills. Some 1,813 youth participated in citizenship/service projects. Over 3,352 adult volunteers contributed 20,112 hours, which represents a value of \$425,167 of program support.

Extension programs on productivity and profitability benefitted growers farming more than 1,100,000 **acres of agronomic crops**, which included 115,000 acres of peanuts, 440,000 acres of soybean, 180,000 acres of cotton, 350,000 acres of corn, and 15,000 acres of sorghum.

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Participants in the **Palmetto Leadership, Senior Leadership, and Junior Leadership** programs reported that they strengthened their community awareness and ability to access community resources, built partnerships, and strengthened their capacity to respond to future issues and opportunities. The most recent research indicates that 70% of graduates were still involved in a responsible community project three years after graduation. Youth and adults completing leadership projects collaborate with others in the region to address an issue or concern.

Extension Livestock and Forages programming focuses on increasing the adoption of research based best management practices to increase environmental sustainability, profit, and livestock/forage health. Programs increased market awareness and marketing strategy, leading producers to sell feeder calves directly off the farm, which increased the value of these cattle by an average of \$77/head compared to traditional marketing options. By marketing cattle off-farm, participating cattle farmers received an average of \$5,515 more income per farm versus traditional marketing methods. Other programs included Southern Forages Seminar, Hay Production Field Day, Sire Seminar, Master Cattleman, Grazing Management, Grass Masters, Small Ruminant Management, Backyard Poultry, Animal and Agriculture Flooding, Pork Quality Assurance trainings, biosecurity programs, meat goat workshops, and quality milk initiative assessments. Certification and re-certification credits were offered.

South Carolina Regulation R.61-43 provides requirements for confined animal facilities and the utilization of animal manure from those facilities. Under this regulation, managers of confined animal facilities must obtain a manure management certification through Clemson University and maintain that certification. Trainings were held around the state for 1,663 producers who received certification or recertification.

The economic impact of selected **Extension Horticulture Programs** again last year was estimated at \$2,836,000. Extension commercial vegetable production was \$235,000, commercial fruit production was \$960,000, commercial ornamental production was \$500,000, and the Clemson Small Farm Projects was \$105,000. The Small Farm Projects with SC State University with Clemson’s assistance resulted in \$36,000 in savings due to improved fertility and pest management with some reporting a 50% increase in sales volume and a 25% increase in profit margin. Due to improved knowledge of tree management, pest management, and fertility management particularly in old orchards undergoing renovation, growers have saved or gained in better quality and yields approximately \$47,500.

Agents conducted 319 **nutrition, physical activity, and health programs** for the public, reaching 4,605 persons. Expanded Food and Nutrition Education Programs were conducted for 527 limited resource adults and resulted in improved nutrition, physical activity, food safety, and food resource management practices (such as planning meals, comparing prices, and using grocery lists). Approximately 2,140 volunteer hours were contributed for adult and youth EFNEP programs, representing a program value of \$45,240.

Home and Garden Information Center (HGIC) experts provided gardening information to 9,291 individuals by telephone or in person. In addition, the HGIC website recorded 3,931,758 hits last year. HGIC updated 183 fact sheets and created 11 new fact sheets.

Some 454 **Master Gardeners** contributed 103,697 hours of volunteer service through programs, oral presentations, newsletters, radio programs, and TV appearances. This represents a value of \$2,192,155 in program support.

Extension agents and specialists used traditional media and social media to publish 2,501 articles in newspapers, trade publications, and newsletters. They delivered information on television, radio, Facebook, blogs and websites, reaching potentially over 1,000,000 people in South Carolina and neighboring states. In some counties text messages are sent to farmers with daily weather forecasts and local grower updates.