

AGENCY NAME:	Clemson University PSA		
AGENCY CODE:	P200	SECTION:	45

Fiscal Year 2017-18 Accountability Report

SUBMISSION FORM

AGENCY MISSION	<p>I. Mission Statement Clemson Public Service and Agriculture (PSA) is a state agency comprised of four units: Clemson Experiment Station, Clemson Cooperative Extension, Livestock Poultry Health, and Regulatory Services. Clemson PSA safeguards the health and safety of livestock, poultry and companion animals and protects the food supply and public health of South Carolinians through its Livestock Poultry Health division, while PSA's Regulatory Services division ensures the safe, effective use of fertilizers and pesticides, and the quality of seeds and plants grown in the state and conducts programs that prevent agroterrorism. Clemson PSA works collaboratively with Clemson's College of Agriculture, Forestry and Life Sciences for research and outreach through the Clemson Experiment Station and Cooperative Extension Service.</p>
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AGENCY VISION	<p>II. Vision Statement 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 select 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.

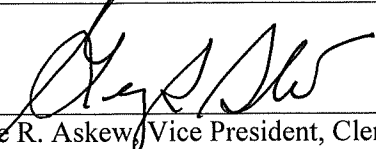
RESTRUCTURING RECOMMENDATIONS:	Yes	No
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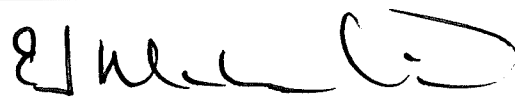
Please identify your agency's preferred contacts for this year's accountability report.

	<u>Name</u>	<u>Phone</u>	<u>Email</u>
PRIMARY CONTACT:	Dr. George Askew	864-656-3140	gaskew@clemson.edu
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I have reviewed and approved the enclosed FY 2017-18 Accountability Report, which is complete and accurate to the extent of my knowledge.

AGENCY DIRECTOR (SIGN AND DATE):	 9/10/18
(TYPE/PRINT NAME):	Dr. George R. Askew, Vice President, Clemson University Public Service and Agriculture

BOARD/CMSN CHAIR (SIGN AND DATE):	 9/21/18
(TYPE/PRINT NAME):	E. Smyth McKissick, III, Chairman, Clemson University Board of Trustees

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AGENCY'S DISCUSSION AND ANALYSIS

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 outreach and research facilities include the Clemson Experimental Forest, which comprises 17,500 acres of near-campus forestland dedicated to education, research and demonstration in order to better understand and manage forest resources for the benefit of society, and the South Carolina Botanical Garden (SCBG), a 295-acre public sanctuary focusing on teaching, research, and outreach that advances awareness and understanding of plants, animals, minerals and our culture.

Clemson PSA also includes a host of centers and institutes whose missions support and advance South Carolina's agribusiness and forestry industries while also developing solutions to sustainably manage the state's natural resources. These include the Institute of Translational Genomics, Wood Utilization + Design Institute, South Carolina Water Resources Center, Animal Coproducts Research and Education Center and Archbold Tropical Research and Education Center.

PSA is currently under the leadership of Vice President for Public Service and Agriculture, Dr. George R. Askew and the new College of Agriculture, Forestry and Life Sciences (CAFLS) Dean, Dr. Keith L. Belli. Belli serves as the chief academic and administrative officer and associate vice president for Clemson Public Service and Agriculture (PSA) where he collaborates with Askew to advance the interests of both complimentary units. Other unit heads include Dr. Stephen Cole, Regulatory Services Director; Dr. Boyd Parr, Livestock, Poultry and Health Director; Dr. Paula Agudelo, Clemson Experiment Station Director; and Dr. Thomas R. Dobbins, Cooperative Extension Service Director. Clemson University continues to be led by President, Dr. James P. Clements, and is a 23rd best national public university, as ranked by *U.S. News & World Report*.

Public Service and Agriculture (PSA) is at the core of Clemson's land-grant university mission of teaching, research, and public service and 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 and at 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

Clemson University's Public Service and Agriculture (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 of its four major 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

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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, protect the meat supply and public health of South Carolinians and serve as lead agency for animal/agricultural emergency response (ESF-17) in state emergency operations plan.

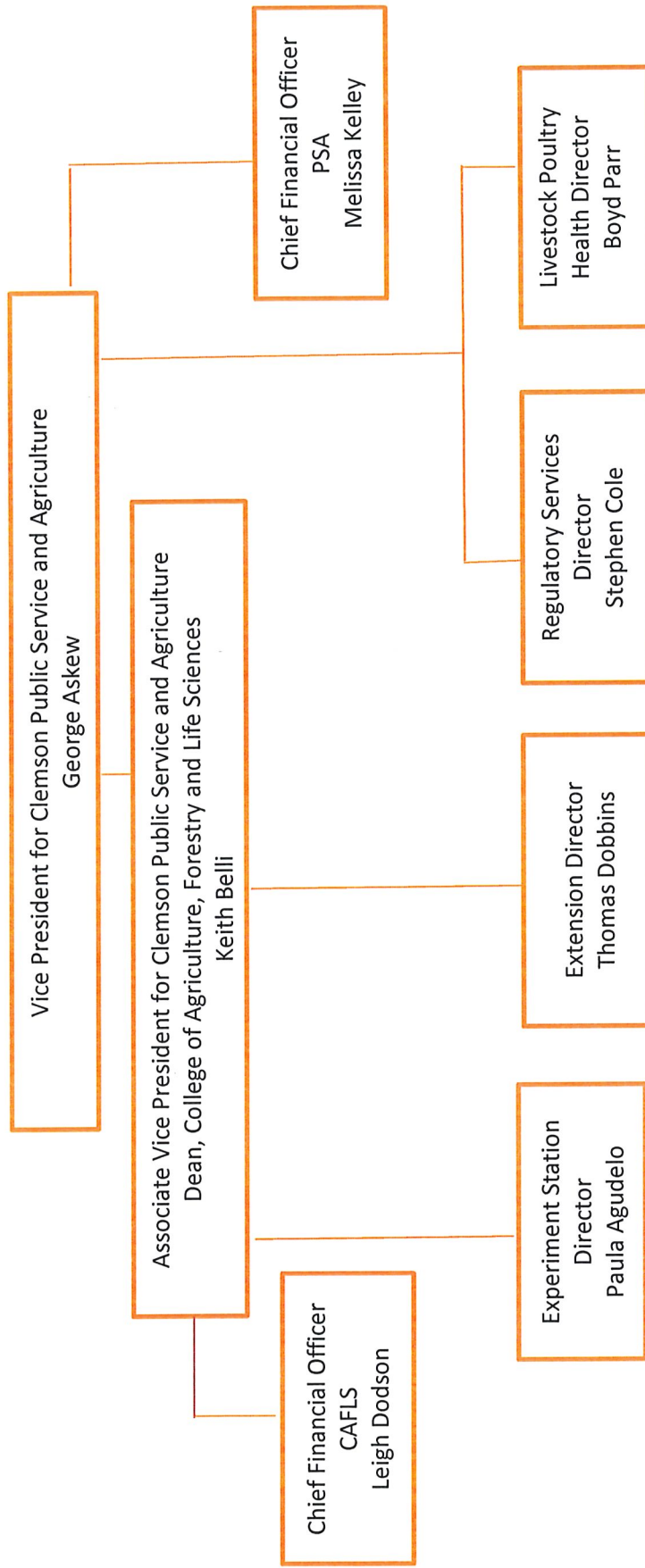
Clemson Experiment Station scientists work to improve the quality of life for people in South Carolina, the nation, and the world by providing science-based information on major issues facing decision makers.

Cooperative Extension Service, with offices in all 46 counties, has professionals that 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. The land grant system would not be able to function if Extension did not accomplish its goals. 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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REGULATORY SERVICES www.clemson.edu/public/regualtory/

Efforts to expand collaboration between Clemson Regulatory Services and Clemson Extension continues. Regulatory and Extension personnel identified the following programs that could be expanded by collaboration:

- **Integrated Pest Management in Schools:** Department of Pesticide Regulation’s (DPR) School Compliance Program, designed to contact and inspect all applicators that are either contracted to or employed by school districts. DPR’s compliance inspectors have collected pesticide application records for over 900 schools since the launch of this program. These application records are reviewed by the Reduced Risk Specialist and logged for future reference. Application records for 10 public school districts and 33 commercial and noncommercial companies that perform pest control services for schools were reviewed during the last fiscal year. The reduced risk specialist provided 18 training classes in the last fiscal year for Public School Districts across the state in which 392 school employees were trained.
- **Promoting Stewardship with Pesticides:**
 - The Department of Pesticide Regulation (DPR) along with the South Carolina Department of Agriculture collected 210,601 pounds of used pesticide containers for recycling during the last fiscal year. Since the program began in 1993, nearly 3+ million pounds of pesticide containers have been recycled, representing an equal number of containers.
 - In FY18 DPR placed a greater emphasis on agriculture related pesticide compliance with 11 aerial applicator inspections, 1 ag. use inspections for dicamba technologies and 1,380 applicators completing required dicamba training for 2018.
- **Supporting Agriculture in South Carolina:**
 - 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. Additionally, the Ag Service Lab completed the following activities in 2018:
 - The lab hosted 8 tours for university classes, Master Gardeners, extension employees, and others
 - An evening class was held for the New and Beginning Farmer Program participants with a lecture and lab tour
 - The lab participated in a Precision Ag Event at Edisto Rec by hosting a vendor table.
 - The Agricultural Service Laboratory processed a total of 66,593 samples for 2017. Those samples fall into the following categories: Soil samples: 54,296; Plant tissue samples: 1,408; Feed samples: 1,003; Animal waste samples: 1,496; Irrigation water samples: 837; Compost samples: 85; Other samples (research and commercial customers): 7,468.
 - The seed certification department aims to have high standards for certification in South Carolina. This voluntary program holds growers to a set of standards imposed on the production of seed which ensures its purity and germination. During the 2017-2018 growing season, the department certified over 14,000 acres of crops with 5,300 acres being turfgrass for certified sod production.
 - The Department of Plant Industry’s Fertilizer Program collected 2,224 Fertilizer samples with 95 samples being deficient. The calculated deficiency rate for the year was 4.2%. This was a decrease from a 6.24% deficiency rate the previous year. The target deficiency rate is 20%.

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Fertilizer tonnage was reported at 593,048 tons, an increase of 181,930 tons from the previous year.

- Apiary Inspection Program: The program continues to grow and serve this vital state agricultural industry. In 2017 DPI conducted 94 apiary inspections for disease, pest and export certification throughout South Carolina. These inspections may include investigative incidences of suspected pests of regulatory concern affecting honey bees and initiate regulatory action if indicated. DPI monitors honey bees and fixtures shipped or moved into South Carolina from other states and countries to assure that they have been inspected and are accompanied by a certificate of inspection issued by a plant or apiary official from the state, county or country from which the bees originated. There were 60 honey bee import permits issued. Imports included 23,965 colonies, 9,978 three-pound bee packages and 1,180 queens imported into SC. DPI inspects honey bees and fixtures to be moved from South Carolina into other states and countries, and issues certificates of inspection verifying apparent freedom from contagious and infectious diseases. There were 55 honey bee export certificates issued. Exports included 31,204 colonies, 550 three-pound packages and 3,800 queens. DPI Apiary surveyed 24 apiaries for the National Honey Bee Survey for diseases, pests and pesticides.

- **Protecting South Carolina’s Environment:**

- Following the first-time discovery in FY18 of this federally and state regulated pest, the Department of Plant Industry established a statewide quarantine on the regulated articles associated with the human-assisted movement of the emerald ash borer. By implementing a statewide quarantine in lieu of, a more localized one, we were able to lessen the impacts associated with several affected industries while continuing to prevent the increased movement of the pest. For FY19 we have expanded our trapping efforts.
- In a continued effort to improve collaborations with other state and federal agencies, the Department of Plant Industry collaborated with the South Carolina Forestry Commission on executing their Cogongrass Prevention and Eradication grant, with Clemson Extension on various regulatory trainings and field exercises, and with USDA-APHIS-PPQ in fulfilling the requirements of their Witchweed Prevention and Eradication grant.

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 humans 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 contributes \$14.5 billion to South Carolina’s overall economy, with over 58% of direct farm sales in South Carolina agriculture in a 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 made 920 inspections at livestock auction markets, after-hours markets, dealers, farms and miscellaneous sales such as flea markets. These inspections are part of the requirement for **maintaining the state’s “disease free”** status and are coordinated with USDA.

Virulent Newcastle Disease (VND – formerly exotic Newcastle Disease) was discovered in backyard poultry in Southern California in the Spring of 2018, representing the first confirmed cases of the disease in the US since

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2003. Over 100 state and federal personnel are actively working to identify and eliminate all infected birds and have been successful in preventing spread to commercial poultry as of July 2018. **Low Pathogenic Avian Influenza (LPAI)** in commercial and backyard poultry in Missouri and Texas was confirmed in the Winter of 2018 and successfully contained and eliminated. South Carolina did not have any diagnoses of either HPAI, LPAI or vND. A top priority for Livestock-Poultry Health continues to be to encourage management practices to reduce the possibility of infection and to assure early detection should HPAI, LPAI and/or vND infect SC poultry, followed by swift eradication and rapid recovery for the state’s poultry producers. “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. chicken exports were valued at \$202 million in 2017** (US Census Bureau).

SC Ag-Watch program led by LPH continues to provide training to livestock owners on improved biosecurity practices, foreign animal disease awareness, and notification procedures - emphasizing prevention of disease along with disease surveillance, control, and eradication. A new edition of the SC Ag-Watch Manual was published in December 2017, made possible by Homeland Security grant funding administered through SLED. In addition to producers, state and local emergency managers use SC Ag-Watch Manuals as a reference for agricultural emergencies.

With leadership from LPH veterinarians, the **SC Veterinary Reserve Corps (SCVRC)** has been created, under the auspices of the Surgeon General’s Medical Reserve Corps. 59 veterinarians, veterinary technicians, animal handlers or veterinary practice managers have signed up to date. SCVRC members are a resource for emergency managers at local, regional and state levels with animal and agriculture issues in disasters. One example of the training activities provided for SCVRC members was Slackwater animal rescue training held on Lake Thurmond at Hickory Knob State Park in April of 2018.

The **Mid-Atlantic Secure Milk Supply Project** is regional project developed in collaboration with all S.C. dairy industry segments that SC helped create 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. This project is one example of the work LPH is doing to promote business continuity during emergency disease events under the national Secure Food Supply umbrellas: Secure Poultry, Secure Pork and Secure Beef in addition to Secure Milk.

The **Veterinary Diagnostic Center** completed 100,427 tests and procedures during FY17-18 in performing its animal and food safety diagnostic duties. Of these, 99,337 were related to production animals and regulatory duties; the remaining 1,090 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 1,772 slaughter days that processed 39,294 livestock and more than 3.8 million poultry. Additionally, inspectors performed 45,401 individual inspection procedures during inspection in 74 slaughter and processing facilities served.

Livestock-Poultry Health helps assure South Carolina’s concerns are discussed at the national and international level. Professional staff served in many roles including as Past-President of the United States Animal Health Association (USAHA), American Veterinary Medical Association (AVMA) Animal Agriculture Liaison Committee, National Animal Health Laboratory Network (NAHLN) Coordinating Council, National Animal Health Information Technology Board (USDA), National Poultry Improvement Plan (NPIP) Coordinating Council, as Co-Chair of USAHA Committee on Animal Emergency Management, S.C. Delegate in AVMA House of Delegates, Past-President of American Association of Small Ruminant Practitioners, and President of American Association of Extension Veterinarians.

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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. These data go along with a higher number of educational programs and published peer-reviewed journal articles. Over the past year, there has been increased focus on integrating the Research and Education missions of the Experiment Station. We highlight the increase in graduate students, many of them advised or co-advised by faculty located at the Research and Education Centers (RECs).

COOPERATIVE EXTENSION www.clemson.edu/extension/

A new Extension employee onboarding program was launched in 2018. This year-long program equips new Extension agents with the tools and resources necessary to successfully deliver the Extension mission. An onboarding manual was compiled for supervisors with a step-by-step guide to aid in ensuring a smooth onboarding process for new employees. In addition to the guide, six in-person training sessions are required of new employees. These training sessions provide hands-on lessons for learning various aspects of the job and introduces new employees to support personnel throughout the state. The new onboarding program will make new employees feel welcome, more confident as new Extension agents, and provide tools for future success. As of May 2018, the first two in-person workshops, Marketing & Communicating Programs and Field Operations were conducted with a total of 12 and 13 agents in attendance (respective).

A new Extension employee leadership program, Extension Emerging Leadership Institute, was planned and ready to launch in November, 2018. The goal of the program is to develop the leadership skills of existing Extension personnel to fill vacated leadership roles due to retirements. The program has an entry level program and an advanced level. To complete both levels will require a one-year commitment to the program. The initial program will accept 20 employees based on a competitive selection process.

Clemson Extension is divided into nine program focus areas. These areas include: **4-H, agronomy, agribusiness, agriculture education, food systems and safety, forestry and natural resources, health and nutrition, horticulture and livestock and forages**. Across these focus areas, a total of 132,319 adults and youth participated in 11,297 programs throughout the state. As a result of these efforts, almost 95% of program participants reported gaining valuable knowledge. These programs were offered as either in-person programs, online programs or a hybrid program (a combination of in-person and online).

In the area of **4-H**, a total of 104,562 youth participated in programs focusing on science, engineering and technology, citizenship and healthy lifestyles. The 4-H program also had 3,770 adult volunteers and an additional 522 youth volunteers serving in leadership roles. The 4-H STEM programs achieved almost 99% participation, while Citizenship programs saw 22% participation rate and Healthy Lifestyles had a 19% participation rate. (These numbers are a reflection of the participation in each program area by 4-H members and some 4-H members enroll in multiple programs and therefore, participation rates do not equal 100%.) The Pinckney 4-H Leadership program completed its 3rd year with one leadership camp hosting 37 youth. The program is designed to focus on understanding various leadership styles, understanding themselves better, promoting teamwork and the importance of civic duty.

In the area of **Forestry and Natural Resources**, land management and water resources conservation continue to be a focus. In the current Fiscal Year, a total of 1,244 programs and workshops were conducted throughout the state with a total of 12,521 participants. This program potentially impacted 151,314 acres of land across the state. The Master Naturalist program reported 25,699 volunteer hours, demonstrating a strong program presence for South Carolina. Water resources remains a focus within the state with citizen education programs and water use surveys. The Carolina Clear program is a partnership between Clemson Extension and cities, towns, and counties across the state to deliver comprehensive stormwater education and public involvement opportunities.

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The **Horticulture** team is tasked with environmental education for industry professionals, consumer education and landscape pest management. In addition, they are responsible for the protection of collards, peaches and organic production systems. Household and structural pest control is also a major focus area for the Horticulture team. One important area of consumer education is the Home and Garden Information Center (HGIC) which provides information on a variety of topics and areas to consumers in South Carolina and bordering states. The HGIC responded to 11,601 requests for from citizens through telephone and email. In addition, the HGIC website logged a total of 2,354,674 unique hits, confirming the importance of this resource to SC. To support the internet searches for information, the HGIC updated 115 facts sheets and added another 34 new fact sheets.

As South Carolina is concerned with major threats to the food supply from diseases and pests to agro-terrorism, the **Agronomy** team works to improve production, ward off pests and diseases and provide pesticide applicator training. Agents throughout the state provided information and conducted demonstrations of field trials for Bt varieties, soybeans, hemp, corn, peanut, and cotton. Pest management strategies for all crops throughout the state were presented to farmers through workshops, conferences and one-on-one farm visits.

Agriculture education plays a vital role in maintaining our agricultural economy. Participation in agriculture education is one indicator the importance of this program. In FY 2017-2018, 259 programs were conducted that attracted 905 participants. In promoting agricultural education, almost 19,000 people were reached through media activities. Emphasizing the importance of agriculture education will continue to be a focus area in the future.

Changes in government regulations and the economic environment have increased the risks of farming in South Carolina. As such, the **Agribusiness** team is tasked with providing information to farmers to mitigate the risks and plan for long-term profitability and sustainability. Many of the Agribusiness agents spent a considerable amount of time providing assistance to new farms, established farms, expanding farms and farm alliances. A new tool was also designed for the sod industry that will assist sod farmers to gauge the market and assess future marketing opportunities.

It is estimated that 48 million individuals, or one out of six people, become sick each year from the consumption of contaminated food. It is the overall goal of the **Food Systems and Safety** program team to educate food industry personnel as well as consumers on best practices related to food safety. The ServSafe® program reported a 73% success rate for food industry professionals taking the exam. Food safety is also the responsibility of individuals, which is another focus of the Food Systems and Safety team. These programs are designed to meet the Food Safety Modernization Act (FSMA) of 2011 that mandates seven key elements of food safety principles.

South Carolina ranks 13th in the nation for rates of adult obesity and 2nd in the nation for rates of obesity in children ages 10-17. This trend results in long-term physical and mental detrimental impacts that may last a lifetime. In order to reverse this trend, the **Health and Nutrition** team provides educational opportunities throughout the state to teach healthy food choices and the role nutrition plays in health. The Health and Nutrition team administers the Expanded Food and Nutrition Education Program (EFNEP) for adults and children and youth.

The Confined Animal Manure Managers (Camm) program is headed by the **Livestock and Forages** team to reduce the impacts of animal facilities on aesthetics (odors) and natural resources, particularly water. This program is in response to Regulation R.61-43, Standards for the Permitting of Agricultural Animal Facilities and trained 1,216 individuals in FY 2017-18 in 70 programs held across the state. The Livestock and Forages team is also instrumental in educating farmers on improved breeding and foraging strategies. For example, 318 farmers utilized Expected Prodigy Differences (EPD) in sire selection/proper breed complementation and/or improved health and reproduction methods. These improved techniques as presented by Clemson Extension will help sustain long-term production in farms across the state.