2019 Annual Report of Accomplishments and Results

Georgia
University of Georgia
Fort Valley State University

I. Report Overview

The NIFA reviewer will refer to the executive summary submitted in your Plan of Work. Use this space to provide updates to your state or institutions as needed.

1. Executive Summary (Optional)

This executive summary provides background information about Georgia and the state's Federal Report of Accomplishments. This summary provides data on the state and its universities, program highlights, examples of collaborative efforts between the University of Georgia (UGA) and Fort Valley State University (FVSU), and brief summaries of each of the eight planned programs.

BACKGROUND

FVSU and UGA address major agricultural issues and other problems that affect rural and urban areas, the environment, families and youth. This accomplishment report presents coordinated efforts between the state's 1862 and 1890 land-grant institutions, UGA and FVSU, respectively, and covers the joint planning that occurs between agricultural experiment stations and Cooperative Extension units at both universities.

Georgia's Extension program has 167 offices with programming in all of Georgia's 159 counties. FVSU and UGA personnel are housed jointly in county offices. Extension delivers programming in Agriculture and Natural Resources, Family and Consumer Sciences, and 4-H Youth Development as both individual county efforts and as multicounty programs. State faculty members deliver training to county agents and programming directly to clientele, when appropriate.

FVSU and UGA researchers and scientists conduct research programs through a system of agricultural experiment stations. There are several campuses throughout the state, but the four largest are located in Athens, Fort Valley, Tifton and Griffin, Georgia. In addition, 11 Georgia research and education centers are located throughout the state.

Core programs and targeted issues are determined and guided by a structured program-development system, and they are the focus of this joint report. The program-development system is a multistep process that remains in operation throughout the year. It enables needs assessment, problem identification and program evaluation, which is used to determine impact. The Georgia program development model works in cooperation with multiple advisory systems at county and state levels.

EXTERNAL FACTORS

Hurricane Michael moved through southwest Georgia Oct. 10-11, 2018, causing more than $2.5 billion in losses to the state's agriculture industry, according to estimates from University of Georgia Cooperative Extension agents and agricultural economists.

Direct losses are a result of immediate damage to commodities grown by Georgia farmers and agricultural producers. These losses include commodity damage to crops (cotton, soybeans, corn silage), trees (pecans, timber), livestock (chickens), and structures (greenhouses, chicken houses, dairy buildings). Impacts on the agricultural support sector refer to Georgia agribusiness losses resulting from reduced output from the state's farmers and producers, restricting the value-added services necessary to produce finished goods.

Hurricane Michael was catastrophic for commodities integral to Georgia's economy. To contextualize the impact of the storm's damage, it is helpful to consider the direct and ancillary losses within the scope of the state's agricultural economy.

Cooperative Extension responded in a myriad of ways to help address the issues created by this storm. We have many resources to help before, during and after emergency situations. Whether the need is flood clean-up or financial considerations, Extension offers valuable research-based information to support communities preparing and recovering from disasters. Topics include family food, health, home, and finances; disaster preparedness and recovery; disaster relief resources; agriculture; livestock; climate and environment; emergency loans; food safety; mold and air quality; and more.

Extension also hosted two resource fairs in conjunction with the 2019 Ag Forecast meeting in Bainbridge and Tifton to bring resources to those affected by the hurricane. This led to our ramping up our programs in rural stress and partnering with the UGA College of Social Work and the Georgia Department of behavioral Health and Developmental disabilities.

II. Merit and Scientific Peer Review Processes

The NIFA reviewer will refer to your Plan of Work. Use this space to provide updates as needed or activities that you would like to bring to NIFA's attention.

Process	Updates
1. The Merit Review Process	Supervisors are responsible for determining merit increases, which are related to the annual performance evaluation. Throughout the year, comments from external stakeholders are noted. For county Extension faculty, particular notice is taken of county stakeholder input. Both universities incorporated the items above in their respective merit review processes. Extension reviews the quality and relevance of the state program goals at the state, district and county levels. Departmental Extension coordinator contacts provide insight at the state level. The program development team provides the district-level input. This team consists of the district program development coordinators, evaluation specialists, and Extension administrators. County agents provide input directly to the program development team and the state Extension coordinators. The constituents provide input through the county council as part of the Extension leadership system.
2. The Scientific Peer Review Process	All research projects conducted during this year were peer reviewed by both internal and external reviewers. In addition, greater than 20 percent of approved research projects are also associated with multistate/integrated projects that undergo an extensive review by the Southern Association of Agricultural Experiment Station Directors (SAAESD).

III. Stakeholder Input

The NIFA reviewer will refer to your Plan of Work. Use this space to provide updates as needed or activities that you would like to bring to NIFA's attention.

Stakeholder Input Aspects	Updates
1. Actions taken to seek stakeholder input that encouraged their participation with a brief explanation	Each county Extension agent has an Extension leadership group that serves in an advisory capacity. Extension specialists and agents as well as administration are also well connected to industry and commodity groups and allied organizations. After visiting with local advisory committees, county agents provide data directly to state specialists through listening group meetings, which are conducted annually and by individual departments for a total of 12 or more meetings. The data from these agent/specialist sessions is then analyzed by the state program development team and recommendations are made for next year's programming. County agents also use input from advisory committees to plan, execute, evaluate and communicate programming at the local level.
2. Methods to identify individuals and groups and brief explanation.	Statewide stakeholders and potential collaborators were identified by faculty and recommendations were made to the dean for statewide advisory committees. The counties used a structured identification process to select a diverse advisory committee at the local level, to include representatives of both traditional and nontraditional stakeholder groups. The majority of counties reassessed and rotated their advisory committee membership this year.

3. Methods for collecting stakeholder input and brief explanation.	Stakeholder input is also sought by members of search and screen committees prior to selecting candidates to interview and prior to the final recommendation. UGA Extension has a strong relationship with commodity groups and industry organizations. We utilize these groups for needs assessments, industry trends and feedback. Individual county-level advisory committees meet up to four times during the year. One youth development statewide survey was conducted to collect county input. The statewide CAES advisory committee met two times during the year. In addition, college administration meets at least annually with the Department of Agriculture, Georgia Farm Bureau and commodity boards to gather input, identify needs and discuss programming priorities.
4. A Statement of how the input will be considered and brief explanation of what you learned from your stakeholders.	All input is channeled to college administration so they have the knowledge to make budgetary decisions. All vacant positions in all departments are brought to college-level administration for evaluation based on these criteria before a decision is made to refill. Positions may be redirected as needed. The dean solicits input from all faculty, staff and stakeholders prior to making hiring decisions on major administration positions. County agent and staff positions are reallocated to counties of higher need and those willing to contribute more county funding. Finally, legislative allocations greatly influence the type and amount of new positions added.

IV. Planned Program Table of Contents

V. Planned Program Activities and Accomplishments

Please provide information for activities that represent the best work of your institution(s). See Section V of the Guidance for information on what to include in the qualitative outcomes or impact statements. Add additional rows to convey additional accomplishments. You may expand each row as needed.

No.	Title or Activity Description	Outcome/Impact Statement	Planned Program Name/No.
1.	FAMACHA	Collaborating with researchers, information was obtained related to alternative parasite control measures for small ruminants. That information was shared throughout Georgia via Cooperative Extension workshops/programs. In addition, other small ruminant (sheep and goat) information was provided to help support new and beginning farmers and ensure the viability of existing farms. At least 17 presentations were given with over 420 attendees. At least 64 participants received FAMACHA(c) certification as part of internal parasite management training. Overall, participants were able to learn more about sheep and goat production, especially related to the problem of internal parasites (worms).	Animal Production
2.	Reproductive fitness in poultry	The modern broiler reaches twice the live weight on 50 percent less feed when compared to their performance in 1953. From a poultry production standpoint, an undesired effect of genetic selection for rapid growth and meat yield in poultry breeders has been an associated decline in fertility. One unknown factor impacting male fertility and/or sperm quality is the increased exposure of broiler breeders to common herbicides and pesticides that are detrimental to both fertility and livability in several species. The adoption of genetically engineered (GE) crops in agriculture has increased dramatically over the last few decades. Among the transgenic plants, those tolerant to the herbicide glyphosate are among the most common. Weed resistance to glyphosate-based herbicides (GBHs) has been on the rise, leading to increased herbicide applications. This, in turn, has led to increased glyphosate residues in feed. Although glyphosate has been considered to be generally safe to animal health, recent studies have shown that GBHs have potential to cause adverse effects in animal reproduction. Since a UGA poultry science lab is interested in improving broiler breeder fertility, they recently started an experiment to determine the impact of a glyphosate-based herbicide on male broiler breeder reproductive fitness. Since GBHs contribute to a reduction of fertility associated with broiler breeder males, either removal of these residues from feed or inclusion of a neutralizing additive, like Humic acid (HA), will provide a method for improving fertility for breeder stock and result in a positive economic and environmental impact. If the industry could improve fertility by only 1 percent in 2015,	Animal Production

		that would have produced 90 million extra chicks. Furthermore, considering average mortality of 2 percent, the industry would have yielded an extra 88.2 million pounds of broiler meat worth about $800 million in 2015.	
3.	Adding Value To Dairy Production	Narrow profit margins in the dairy industry have led to producers having to increase the size of their operations to remain viable businesses. The necessary increase in herd numbers has exacerbated issues related to the handling, storage, disbursement, and land application of animal waste products. Regulatory issues relating to the storage and application of animal waste products are an everyday concern with the larger dairy operations. A large international energy/climate management corporation was seeking opportunities to partner with local dairy producers in methane production. The Putnam County Extension agent worked with representatives of the energy/climate management corporation to identify interested producers and develop working relationships with them. He also worked with Eatonton officials to help them understand the opportunity at hand and develop pathways of cooperation concerning the marketing potential for locally produced methane. The agent facilitated initial sampling to determine biotic content in animal waste products through the UGA Feed and Environmental Water Laboratory. Relationships were established with two large Putnam dairies, both with over 1,200 animal units to participate in a feasibility study. One Putnam dairy with over 1,200 animal units participated in the program. They have worked with the international energy/climate management corporation to develop a system that will be feasible for their location. An agreement was reached with the dairy producer concerning the proceeds from the operation of the digestion facility. It is estimated that the annual value of methane production for the dairy producer will be $50,000 to $70,000 per year once the system is complete. The producer will also retain the rights to solids produced by the digestion system. A local garden soil production facility has expressed interest in the remaining solids with an estimated value of $5,000 to $10,000 annually. In addition to the income from methane production the dairy will satisfy nearly 100 percent of its nutrient management requirements by digesting generated animal waste products. That will greatly reduce operating costs relating to equipment maintenance and manual labor.	Animal Production
4.	A New Tick Species	A new tick species that originated in Asia is moving into the southeastern United States. Little is known of the threat it presents to wildlife, livestock, pets and people. A new tick, the Asian Longhorned Tick, was found in New Jersey in 2017 and in the past couple of years has spread to 12 states, including Tennessee and North Carolina. UGA's Veterinary Entomology program conducted a field study in 2019, funded by the Georgia Beef Commission, to determine how prevalent native ticks are on Georgia's herds. Only two tick species were found on all the animals sampled: the American Dog Tick (which is known to have a wide host range) and the Lone Star Tick (the most common tick in the Southeast). Only 1 percent of cattle examined had any ticks, explaining why historically ticks have not been a significant pest of Georgia's cattle. But arrival of the Asian Longhorned Tick in the state may significantly change that picture. Already, deaths of five cattle in North Carolina have been blamed on the Asian	Animal Production

		Longhorned Tick. To protect Georgia's $450 million beef industry, research must determine the risk this tick poses to cattle, disease agents it can transmit, other health risks, and suppression options.	
5.	Goat Meat – Food Safety	Demand for goat meat is increasing in the U.S. due to its nutritional values and the growing foreign-born population. Though goat meat is susceptible to foodborne pathogens, research in this area is limited. Therefore, Fort Valley State University researchers developed non-thermal processing methods to inactivate E. coli O157:H7 on goat meat. This approach combines pulsed ultraviolet light with sonication or lemongrass oil to enhance inactivation of E. coli. The processing methods will improve the microbial safety and quality of goat meat and promote goat meat hygiene practices to benefit smallholder producers.	Food Safety
6.	Fulton Fresh	UGA Extension Fulton County's Fulton Fresh Mobile Market is a multigenerational nutrition education program that promotes awareness and presence of healthy and sustainable local food systems in urban communities. The Fulton Fresh Mobile Market continued its Featured Farmer program during summer of 2019. This engaged urban producers by featuring one unique local crop grown within 15 miles of Atlanta, or available for purchase at accessible locations in Fulton County. Each farmer who provided the crop was featured in a rack-card style profile containing statements on why they farm, how they like to prepare their featured produce item, where they can be found selling their produce, and other information of interest to the public. The reverse side of the card included a recipe provided by the farmer that featured their crop. This promotional material was inserted into every produce bag given away. Additionally, the mobile market partnered with a distributor at the State Farmers Market who specializes in locally and Georgia Grown produce, furthering its mission to support the local economy as much as possible. Throughout the 10-week summer season of the Fulton Fresh Mobile Market, a total of 36,975 pounds of fresh produce were distributed to a total of 2,568 Fulton County residents. Each of these bags of produce contained one unit of a locally grown Featured Farmer item, totaling 425 pounds of local metro-Atlanta produce distributed. Additionally, almost 23,090 pounds of Georgia Grown produce such as Vidalia onions, sweet potatoes, squash, peppers, peaches and tomatoes were distributed, and the remaining items were sourced from throughout the Southeast.	Health & Nutrition
7.	FVSU Family Life program	The work completed this year for the FVSU Family Life area comprise of various community programs to engage our constituents of self-awareness and improvement. Several programs were offered for youth and college students dealing with soft skills. Educational activities were conducted with middle school students in family and consumers sciences - STEM education, the students were introduced to various occupations that originated from FCS	Home & Life Skills

		education. Our adult/senior population programs consisted of chronic disease, health and wellness, recreational ideas on budgeted incomes. All work conducted was in collaboration with other FVSU staff and state/federal organizations. The impact that soft-skills programs were that participants gained interpersonal, communication and critical thinking skills and behaviors necessary to be hired and to increase one's ability to work in a multitude of organizations. The programs conducted are relevant, and continued a life-long teaching process for new generations.	
8.	Virtual Volunteer Income Tax Assistance	The Internal Revenue Service estimates that one out of five workers who qualify for the earned income tax credit do not claim it. These workers are losing millions of dollars that can improve their financial situation. Virtual Volunteer Income Tax Assistance (VITA) provided through UGA Extension Family and Consumer Sciences helps Georgia households maximize their financial resources. UGA Extension partnered with the University of Florida and UGA teaching and research faculty and financial planning and accounting students to provide VITA virtually to Georgia taxpayers. UGA pilot tested the project in the Southwest District during the 2017 tax season and expanded to all four districts during the 2018 tax season. Working with undergraduate and graduate students in the financial planning and accounting programs and teaching and research faculty, the Extension financial planning specialist worked with county agents to implement the Virtual VITA project. During the 2019 tax season, 16 agents participated in Virtual VITA to provide taxpayer assistance to taxpayers in their counties, as well as surrounding counties. A total of 442 tax returns were filed. Total amount in federal tax refunds received by taxpayers participating in the project was $332,023. State refunds totaled $92,772. The total amount of earned income tax credit dollars received was $97,281. Total amounts received by taxpayers as a child tax care credit, additional child tax care credit and education credit were $51,045, $29,927, and $21,820, respectively. It is estimated that Virtual VITA saved taxpayers $132,600 in tax preparation and refund anticipation loan fees.	Home & Life Skills
9.	Peanut Production	The UGA Extension Peanut Team prepared and provided education materials and recommendations at peanut production meetings to assist them in making informed economical decisions regarding their production practices and pest management through the year. To accomplish this, more than 95 production meetings were conducted over a compressed time period of 45 days and more than 10,000 miles were traveled to provide growers the unbiased, research-based information they needed to remain economically viable in Georgia. Based on surveys filled out by growers, their knowledge base increased from 26 percent to 79 percent after the production meetings. The growers (representing half of the planted acres) also indicated in the survey that the information provided	Plant Production

		would gain and or save them an $12.09 per acre or $4.1 million. Applying this impact over all acres in Georgia would be $7.8 million.	
10.	Cotton Production	97% of cotton producers, representing 782,002 acres, reported they would definitely or probably use the information provided at Extension cotton meetings in January – March 2019. On average, cotton producers in attendance reported they would save or gain $12.11 per acre as a result of implementing changes related to the information provided. The total self-reported value of the information presented at Extension cotton production meetings was $10,730.637.	Plant Production
11.	Using Pesticides Wisely	Growers must have access to economically effective pesticides. However, it is equally important that all pesticides are used carefully and strategically in ways that protect the consumer, the grower and their neighbors, and the environment. So the University of Georgia and Georgia Department of Agriculture developed a training program titled Using Pesticides Wisely. This program shares innovative research results from over 112 experiments designed to help pesticide applicators improve on-target applications. After 76 classroom trainings and 45 Extension agents making on-farm training visits, over 7,806 individuals have been trained. As a result, pesticide drift complaints to Extension have dropped 67 percent.	Plant Production
12.	Completing the peanut genome sequence	Advanced DNA-based genetics enables faster crop improvement. A completed genome sequence is key in this endeavor, serving as a reference framework and allowing genetic data from breeding programs from all over the world can be integrated and leveraged. However, until very recently peanut lacked a complete genome sequence. To construct a common reference for peanut genetics, UGA crop and soil scientists led an international consortium that sequenced the peanut genome. Cutting edge technology was needed to resolve peanut's peculiar doubled genome structure, a result of its hybrid origin in prehistory. This year saw the formal completion of the project, with a publication in the premium scientific journal Nature Genetics. This genome sequence has been recognized as the "reference genome" and is now being used internationally as a common standard. The sequenced peanut genome provides a framework for research results from all over the world to be directly compared, within a context of more than 66,000 genes, identified and characterized within their chromosomal context. This is leveraging research in the USA and the world, generating more knowledge and benefits, pure and applied. UGA's work with wild peanut species has now generated peanut lines that are 95 percent or more elite peanut genetics, with 5 percent or less wild species that confers pest and disease resistance. Collaboration with peanut breeding	Plant Production

		programs in the U.S., Brazil, Senegal and Uganda are incorporating these wild species-derived traits into elite local peanut varieties using a combination of traditional breeding and selection using DNA markers. So far, six new varieties have been released in Senegal and one in Brazil. New improved varieties are expected soon in the U.S. This will reduce farmer costs, increase yield, reduce fuel use and lower the environmental impact of farming.	
13.	Precision Ag and Irrigation Efficiency	The results of research work have shown that the implementation and incorporation of irrigation scheduling tools into production practice has the potential to not only increase water use efficiency of crops, but the potential to increase yield. Climate variability is a major concern across the southeastern portion of the U.S., in some years we have ample rainfall to produce very good yields, while in other years, dryland yields are near zero. The typical farmer practice is to follow a checkbook or calendar water schedule method where a set rate of irrigation is applied to the crop per week based on historical values and measured precipitation. This method is very conservative in all row crops produced in Georgia and typically applies the highest amount of irrigation. However, our studies have shown that the implementation of irrigation scheduling technologies such as soil moisture sensors or scheduling applications can increase yields in peanuts by approximately 20% while reducing irrigation applied by up to 60% (it should be noted that these drastic reductions were noted in extremely wet years, where the advanced irrigation scheduling methods only called for two or three irrigation events, when compared to methods such as the checkbook which irrigates weekly). Based on estimated electrical energy costs for pumping irrigation water (@$7/ac-in) this can translate to an estimated savings of about $250/acre in peanuts. These numbers were estimated from a very dry year, while in a year with ample rainfall, where very little irrigation was required, the implementation of irrigation scheduling tools beyond the checkbook method had the potential savings of $100/acre in peanuts. Cotton is very similar to peanuts, and the studies we have done have shown that in wet years utilizing irrigation strategies in cotton have the potential to increase yield by 10% while reducing water use by 75% when compared to the checkbook method. Dry years produced similar yields, but with a 40% reduction in water use. These numbers can be directly translated to savings and increased profitability by the producer. It should be noted that studies in both cotton and peanut have shown yield reductions for over-irrigation in wet years, thus it is strongly encouraged that farmers utilize some sort of irrigation scheduling method to prevent yield reductions.	Plant Production

		This information has been presented to UGA Extension Agents and producers at Agent trainings, county production meetings, and at both in-state, and national conferences. The impact of this data is well over the crop producing area of Georgia. Thus, it could be inferred at a minimum in Georgia, the irrigated cotton and peanut acreage has been impacted by these data, accounting for approximately one million acres of irrigated land just between these two crops in Georgia. It can also be estimated that over 3,000 producers have been exposed to this information regionally and nationally during 2019.	
14.	Water Conservation and Irrigation	The USDA-NASS 2018 Irrigation and Water Management Survey is now available and provides much interesting data. It reports GA has 3861 farms irrigating 1,163,038 acres. And it's great to see that Ga farmers depend on UGA Extension and Research as their primary go-to source of info on "Reducing Irrigation Costs and Conserving Water" - 79% of irrigated farms in GA mentioned this! Next closest source was "Neighboring Farmers" (28%) then "Irrigation Equipment Dealers" (24%). You can find the report at: https://www.nass.usda.gov/Publications/AgCensus/2017/Online_Resources/Farm_and_Ranch_Irrigation_Survey/fris.pdf	Plant Production
15.	Whiteflies in Georgia	Silverleaf whitefly is one of the world's most serious insect pests. Entomologists hypothesize that these populations result from increasingly diverse cropping systems that provide excellent year round cultivated hosts, increased survival of whiteflies over the winter and a lack of specialist natural enemies. UGA entomologists conducted a comprehensive assessment of whitefly distribution and abundance in 2018 and 2019. More than 150,000 whiteflies were captured over the life of the project. Research showed that whitefly captures always increased when traps were adjacent to cotton, vegetables, morning glory, Cypress vine and lantana. They detected and collected at least six species of whitefly parasitoids from Georgia fields. Further, they identified and ultimately cultured a naturally occurring entomopathogen, Isaria fumosorosea, from dead whiteflies in cotton. Subsequent work with the wild strain shows that this isolate is at least as effective as commercially available Isaria strains and more virulent than other types of entomopathogens against silverleaf whitefly.	Plant Production
16.	Competitiveness of Vidalia Onions	Center rot of onion (causal agent: Pantoea ananatis) has emerged as a chronic problem in onion growing regions in the U.S., including Georgia, and it has been responsible for significant economic losses in yield and quality. Presence of multiple sources of inocula (seed, weeds and insects) and a lack of resistant varieties makes this disease extremely difficult to manage. A collaborative effort between UGA Extension specialists and county Extension agents was initiated using funding from the Specialty Crop Block Grant to evaluate the impact of weed, thrips and foliar P. ananatis control on the management of center rot. Based on field evaluations, they concluded that effective weed control with herbicide treatments comprised of Dual magnum, Prowl H2O and Goal can reduce center rot severity under field conditions. In a separate field trial they evaluated chemical control for P. ananatis and thrips for the management of center rot. They observed that an effective bactericide program, along with a	Plant Production

		strong thrips management program, is necessary for effective center rot management. The improved management strategy can potentially reduce economic losses due to center rot by 65 percent, which can account for $250 per acre in savings. If the improved management strategy is used over the entire onion acreage in Georgia, a total savings of $25 million can potentially be achieved.	
17.	Blueberries a New Crop	To address the declining net farm income and population in Baker County, farmers turned to UGA Extension for help. Studying the UGA crop comparison budgets, blueberry production appeared to have the greatest potential to make a profit. In 2013, the first 10 acres of blueberries were planted in Baker County. The cost to establish an acre of blueberries with frost protection was about $30,000 per acre. There were more farmers putting in blueberries every year. In 2019, Baker County has three farmers growing 138 acres of established blueberry production. Three more farmers are putting in 30 additional acres in the fall of 2019. In 2015, the county Extension agent contacted the UGA Center for Agribusiness and Economic Development to do a feasibility study on building and operating a blueberry processing facility. Using the results from this UGA feasibility study, a new blueberry packing facility was built and operated in the spring of 2019 to accept delivery of all the blueberry production in Baker County and from several counties in southwest Georgia. Before this facility was built, all the blueberry production had to be shipped to Alma, Georgia, to be sold. Through the educational efforts of the University of Georgia, blueberry production in 2019 is now seen as a proven new crop in Baker County and southwest Georgia.	Plant Production
18.	Landowners Initiative for Forestry Education (LIFE)	The LIFE program worked with over fifty-five (65) small and/or minority landowners through a workshop series to increase their knowledge of sustainability forest practices and estate planning. This series of workshop sessions produced a raised awareness of 80 percent among participants in the knowledge area of forest management and estate planning. Four estate planning wills were completed for minority landowners creating clear title to over 950 acres.	Sustainability, Conservation & the Environment
19.	Rural Economic Development Projects	The UGA Center for Agribusiness and Economic Development was been involved in three major economic development projects during 2019. During 2019, feasibility studies were conducted for a number of agribusinesses that will create jobs in rural Georgia and add value to the production of the state's agriculture industry. Among them was a study to examine the feasibility of a small-scale beef processing plant that will offer Georgia cattlemen a local market for their production as an alternative to shipping animals to western feedlots for finishing. If such a project was launched, it would have the potential to immediately create between 15 and 20 full-time processing and administrative jobs, as well as supporting producers by creating a market for about 5,000 head of cattle and could generate between $6 million and $10 million in additional profits for participating cattlemen. A second study is underway for a fully integrated sheep farm that would address the growing demand for sheep and mutton in the Southeast. CAED staff are currently working with investors in the project, which is anticipated to initially create 10	Sustainability, Conservation & the Environment

		to 15 jobs in rural Georgia and generate about $5 million in economic activity annually. As part of another long-term project begun in 2014, consulting services continued to be provided to the Central State Hospital Redevelopment Authority in Baldwin County, as it seeks to create a food business innovation district that will provide processing space, storage, logistics, and distribution services to small and start-up food businesses across the state, creating both jobs in Baldwin County and serving as an economic engine to transplant incubated businesses across Georgia. The project is currently projected to create more than 250 jobs in Baldwin County and provide a market for $20 million in purchases of locally produced agricultural products annually. Although these projects are ongoing and their full impacts may not be known for several years, they are generally projected to create nearly 300 jobs in rural Georgia and generate more than $30 million in economic activity annually. The estimate of jobs created is for food processing, administrative, sales, and logistics jobs directly related to the businesses. Additional jobs may be created on the farms selling to these businesses, and their purchase of locally grown Georgia products will further stimulate the state's rural economy.	
20.	Communities Establish Strategic Priorities	The agricultural industry needs to plan effectively for the future and to build the leadership capacity necessary to confront critical issues today and tomorrow. It needs creative and tested approaches to build organizational capacity and move all members of organizations to facilitate, manage and cope with change. The UGA Agricultural Leadership, Education and Communication unit developed five programs with a variety of organizations ranging from a summit on rural stress to a county health department to a professional development conference for veterinarians. Using a robust strategic planning process that focuses on critical issue identification and core strengths, individuals and organizations are able to better identify the most likely areas for need and construct plans to address emerging challenges. In total, 217 individuals participated in the programs. Individuals were asked to indicate whether they intended to change their behavior based on the program and 93.4 percent of participants said they would probably or definitely use the program information. Individuals were asked to assign a monetary value to the financial benefit they, or the organization they represented, would derive based on program participation. An aggregate value of $1.2 million or an average of $8,310 per participant was reported.	Sustainability, Conservation & the Environment
21.	Replacing Plastic Mulch	When Hurricane Michael hit southwest Georgia on October 10, 2018, it caused significant damage to large portions of the state's $1.1 billion vegetable industry. Georgia vegetables are grown either plasticulture (majority) or on bare-ground. There are many advantages of plasticulture production including higher yields, but it is much more expensive than bare-ground production. UGA agricultural and applied economists received an urgent request from the Georgia Fruit and Vegetable Association to assist to develop an economic analysis for plastic mulch replacement. The UGA specialists and Extension agents immediately visited the most affected counties and conducted plastic mulch damage assessments and data collection aimed at preparing a comprehensive report to	Sustainability, Conservation & the Environment

		determine the actual cost per acre to get the affected growers up and running again. Calculations were based on the information gathered from growers and county extension agents during farm visits in southwest Georgia. These studies depicted that the total dollar value for replacing plastic mulch loss due to Hurricane Michael to the south Georgia vegetable industry, 2018, is estimated at $2,761.45 per acre. The estimated cost included removal of plant material, plastic mulch, stakes and disposal at land fill, laying new plastic, land prep, materials, fertilization, fumigation and labor. Expert testimony and studies will be useful for policy implementation by the state legislators, stakeholders and congressional representatives, especially in getting some millions of dollars of disaster relief assistance from the block grant, for the state of Georgia at large, the vegetable industry and affected farmers.	
22.	Web-based Water Quality Evaluation	A section of the Produce Safety Rule of Food Safety Modernization Act regulates water quality to ensure that growers of certain produce types that are frequently consumed raw use water that does not contribute microbial contamination to their produce and is safe for human consumption. The UGA Agricultural and Environmental Services Lab developed an online water quality evaluation and an Extension educational tool designed to help Extension agents, growers' associations and growers in Georgia and other states who deal with the water quality evaluation and getting/making recommendations to comply with the water quality component of the Act. The program is delivered through an on-line tool (http://aesl.ces.uga.edu/calculators/FSMA/), which has been made available for public use in Georgia and beyond. The program also involves training the stakeholders on how to use this tool using various model situations. The impact of this program is enormous in protecting the health of the consumers of fresh produce from the harmful effects of water-borne contaminants. It also helps the fresh fruits and vegetables growers and packing facilities in Georgia and other southern states stay in compliance with the water quality requirements of PSR-FSMA.	Sustainability, Conservation & the Environment
23.	FVSU – Urban Agriculture	Graduate Research Students studied how to increase crop production in urban farming. They compared between hydroponics farming (soil less) and traditional farming (raised bed and soil) in various seasons. Through annual workshop on July 18, 2019 we demonstrated our research findings to local farmers, home growers and community people at the Fort Valley State University, Fort Valley, GA. Over 120 people were present in the workshop. We have established a modern farming facility at the Fort Valley State University to train our graduate students through hands on experience in Hydroponics Farming and conduct research in Agriculture. Over 20 undergraduate and 6 graduate students have been trained in last one year. Over 100 local community people includes farmers and home growers were informed about modern farming technology and its benefits through one day workshop. Four research presentation were made in national and international conferences where over hundred participants were present.	Urban Agriculture

24.	Tifton Turfgrass Breeding	Turfgrass breeding efforts at the University of Georgia Tifton Campus are focused on developing stress tolerant grasses that are more sustainable than older varieties. Recent evaluations using rain-out and shade structures, non-irrigated plots, and reduced fertilizer input have been prioritized. Pesticide applications, including insecticides and fungicides, have been eliminated from routine maintenance programs to better identify varieties with natural resistances or tolerances. Turfgrasses developed in Tifton during the past 20 years have been licensed to numerous growers around the globe. Currently, the UGA program encompasses bermudagrass, centipedegrass and zoysiagrass breeding material from the seedling stage to advanced experimental hybrids which have persisted through rigorous testing for over a decade. Over 69 laboratory, greenhouse, and field evaluations are underway to maintain the pipeline that has provided leading turfgrass cultivars for over a half century. Collaboration with other institutions during the past few years and has included work with Purdue University, the University of Tennessee, and the University of Arizona to test advanced turfgrasses for stresses not found in Tifton.	Urban Agriculture
25.	New Ornamental Plants	Consumers want the latest and greatest plants with larger flowers, disease and insect tolerance, improved drought tolerance, etc. The UGA Department of Horticulture is in a unique position to help the green industry by developing new selections for consumers. So far the program has released 23 cultivars. Twelve of these selections have U.S. Plant Patents while others are in the process of being patented. The horticulturist has trialing agreements for over 150 ornamental plant selections with many of the prominent nursery marketing programs in the United States and Europe. Of the nine cultivars currently on the market, estimated sales are in excess of 400,000 units. Using a conservative sales price of $10 per unit and a standard industry multiplier, this research has a calculated industry (wholesale, retail, and landscape) impact of over $13 million.	Urban Agriculture
26.	Georgia 4-H total enrollment	4-H is delivered by Cooperative Extension that provides experiences where young people learn by doing. Kids complete hands-on projects in areas like health, science, agriculture and citizenship, in a positive environment where they receive guidance from adult mentors and are encouraged to take on proactive leadership roles. Kids experience 4-H through in-school and after-school programs, school and community clubs and 4-H camps. A total of **242,884** young Georgians gained experience and knowledge through enrollment in 4-H programs.	Youth & Family Development
27.	FVSU 4-H	The Fort Valley State University Cooperative Extension 4-H Program provided positive youth development experiential learning opportunities for youth between the ages of 9-19 in the areas: science, novice agriculture education, civic engagement, healthy living education, mentoring, college and career readiness, entrepreneurship, life on the farm, and arts education. The Fort Valley State University Cooperative Extension 4-H Program collaborated successfully with school systems, rural communities, the Office of Juvenile Justice and Delinquency Prevention (OJJDP) 4-H Mentoring Youth Futures, Colleges Within Reach Program to underserved and	Youth & Family Development

		underrepresented youth at George Washington Carver High School in Columbus, Georgia. Provided over youth with 10 or more hours of hands-on science, novice agriculture education, civic engagement, healthy living education, mentoring, college and career readiness, entrepreneurship, life on the farm, and arts education. With the support of collaborative partners, 4-H staff, and 4-H volunteers; the Fort Valley State University Cooperative Extension 4-H Program worked with a total of 8,655 youth participants during our last state federal reporting cycle. The FVSU's 4-H Program's Healthy Living Agri-STEM Community Garden is located in the rural, poverty-stricken community of Sylvester, Georgia, with a population of less than 6,200, is bridging arts and agriculture to create the world's largest sculpture that feeds people. Agricultural researchers and 4-H extension staff at Fort Valley State University (FVSU) combine aeroponic technology with a bee farm, banana farm, and integrated black plastic research to grow traditional crops that feed more than 1,000 households annually for free. The project affects Georgia's underserved-at-risk-minority youth and their families with quality healthy living education and experiential learning opportunities while improving dietary choices and increasing physical fitness.	
28.	Georgia 4-H Facilities Usage	Georgia 4-H provides experiences for youth to learn by doing. Georgia 4-H'ers participate in hands-on learning in the focus areas of Agriculture and STEM (Science, Technology, Engineering and Math), Civic Engagement, and Healthy Living. The 4-H mission is to assist youth in acquiring knowledge, developing life skills, and forming attitudes that will enable them to become self-directing, productive, and contributing citizens. 4-H Facility Users – 109,652 Environmental Education Participants – 43,403 Residential Summer Campers – 9,399	Youth & Family Development
29.	4-H Urban/Rural Exchange Program	Although at first glance agriculture may seem to be only important to rural communities, Georgia's cities and urban areas also play important roles within the agricultural industry. The One Georgia 4-H Urban/Rural Exchange promoted relationships and understanding across urban and rural youth through a two-session program that explored agriculture and agricultural careers in Georgia. Each session included tours of the agriculture industry and visits with Georgia leaders. Session 1 focused on rural Georgia and was held in southwest Georgia. Activities included a visit to watermelon fields (UGA research plot and commercial field), the Cordele Farmers' Market, agri-tourism sites, UGA micro-gin, cotton research plot, UGA turf grass greenhouse, Future Farmstead, UGA Tifton undergraduate admissions, UGA Veterinary Diagnostic Laboratory, SuperSod, Dickey's Peaches, and Lane Southern Orchards. The second session was focused on metro Atlanta and included visits to Delta, the City of Atlanta's urban food forest, a Hereford cattle ranch, the Georgia Department of Agriculture, the Georgia Grown test kitchen, the	Youth & Family Development

		Georgia Capitol, and the Atlanta History Center. The program was developed and implemented in partnership with 4-H agents from Fulton, Turner, Cobb, DeKalb, and Gwinnett counties. Additionally, UGA Extension specialists and county extension agents from Crisp, Mitchell, Peach, and Sumpter counties provided expertise and instructional support for the program. Twenty-four high school youth participated in the inaugural cohort of the One Georgia 4-H program. The youth represented urban and rural areas and north, central, and south Georgia counties. As a condition of their selection in the program, each participant is required to present to two community groups within their county about their experience. Participants also have the opportunity to serve as peer leaders and teach their fellow high school 4-Hers from across the state during the annual Georgia 4-H Fall Forum. Said one student, "I did not realize how the many different parts of agriculture in Georgia work together to create a strong economy."	
30.	4-H AmeriCorps VISTA and AmeriCorps	The Corporation for National and Community Service (CNCS) continues to award Georgia 4-H two AmeriCorps grants - AmeriCorps VISTA (Volunteers in Service to America) and AmeriCorps State. Georgia 4-H first received the VISTA grant in July 2010 and the AmeriCorps State grant in September 2012. During the entirety of these programs, CNCS has funded 289 full-time AmeriCorps Member Service Years (MSY). MSY is the terminology used to describe a full-time member. Both programs use a variety of member types (full-time, part-time, and summer only positions). VISTAs and AmeriCorps State members have been a great benefit to Georgia 4-H while serving in county offices, 4-H Centers and in the State 4-H Office. The two programs are designed to increase the capacity of Georgia 4-H, with the ultimate goal of improving results for the beneficiaries of the organization. Since 2010, 59 Georgia 4-H VISTAs have raised more than $611,000 in cash resources, developed more than $66,000 in noncash resources, produced more than 1,500 marketing pieces, and recruited and/or coordinated more than 3,150 volunteers. Five VISTA Summer Associates reached 791 youth this summer through various educational programs. During the first eight years of the AmeriCorps State Grant, 273 full, 84 half-time, and two minimum-time members have served more than 305,628 hours, reached more than 135,745 students through in-school programming, 94,716 students through 4-H Project Achievement and recruited more than 1,761 volunteers that contributed over 19,150 hours. The AmeriCorps State grant has grown significantly since July 2012. The first three-year grant provided 16 MSY per year (48 MSY total). The current program year Georgia 4-H was awarded 32 MSY. Georgia 4-H is the largest AmeriCorps State program in Georgia. In addition to the $3,143,608 in federal funds received, the AmeriCorps State grant has leveraged over $715,878 additional funds (county, state, and private) to support implementation.	Youth & Family Development