# Georgia (Fort Valley State University, University of Georgia Combined) Annual Report - FY2024

# Report Status: Approved as of 05/22/2025

## **Contributing Organizations**

Fort Valley State University University of Georgia

#### **Executive Summary**

Overview

#### OVERVIEW

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 (AES) and Cooperative Extension units at both universities.

Georgia's Extension program has programming in all of Georgia's 159 counties. UGA and FVSU personnel are housed in jointly selected 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.

UGA and FVSU 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, eight Georgia research and education

centers and five 4-H facilities are located throughout the state.

Core projects and Extension targeted programs 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. **Critical Issue: Animal Production** 

This issue explores different areas of animal production and protection, focusing on the production of sheep, goats, dairy and beef cattle, swine, poultry, aquaculture, and small ruminants. Equine and bees are also included. Specific topics for this issue include, but are not limited to: Georgia Beef Challenge, Master Cattleman's Program, profitability of dairy farming, swine intake regulation, IPM and evaluation of new forages and feeds.

- **Georgia 4-H Livestock Ambassador Program**: The Georgia 4-H Livestock Ambassador Program helped youth build leadership skills by providing educational experiences on livestock and poultry production. Through training sessions, hands-on activities, and media advocacy, the participants learned about the challenges facing the food animal industry and how to educate others. They then shared their knowledge through community outreach, including social media, events, and workshops, thus becoming effective advocates for the agricultural industry. The broader public benefitted from the Livestock Ambassadors' outreach efforts, which directly impacted over 3,600 people and reached thousands more indirectly.
- Living with Wildlife in a Growing County: The Oconee County Extension Agent organized a hands-on Make & Take program series to educate residents about declining native wildlife species and their role in local ecosystems. Through presentations and the construction of nesting boxes for species like songbirds, bats, and bees, participants gained practical knowledge and tools to support native wildlife and reduce conflicts on their properties.
- Enhancing Livestock Sustainability During Drought: The Harris County Extension Agent delivered targeted educational programs and made individual farm visits to equip cattle producers with Best Management Practices for drought management. These activities emphasized optimizing forage utilization, reducing herd sizes strategically, and implementing rotational grazing systems to improve forage recovery and pasture health.
- Automated Poultry Footpad Monitoring with Computer Vision: Dr. Lilong Chai's lab developed an innovative machine vision system that combines deep learning models and thermal imaging to automatically detect and assess footpad dermatitis in chickens. This system achieved a precision of 95% in research trials, demonstrating its potential as an accurate and effective tool for monitoring footpad health in real-time.
- Help on the Homestead: Hart County has a growing number of small acreage farms, with 44% of farms being under 50 acres, and many new farmers having limited agricultural experience. The "Help on the Homestead" series provided practical, research-based education tailored for small acreage producers. Through weekly sessions, participants learned essential management

practices for livestock and crops, as well as food preservation and marketing techniques. The program fostered hands-on learning and addressed common challenges faced by small-scale farmers.

- Equine Welfare Assessment: The Equine Welfare Assessment Skills Certification course addresses the lack of agricultural and equine welfare knowledge among stakeholders such as law enforcement, rescue operators, and veterinarians. The three-day certification course combined classroom instruction, hands-on learning, and a tour of a rescue and rehabilitation facility. Topics covered included equine health, nutrition, transportation safety, and welfare assessment. The program culminated in a competency exam, ensuring participants gained the practical skills and theoretical knowledge needed to make informed decisions regarding equine welfare.
- Smart Farming with Sericea Lespedeza and AI: Farmers are looking for affordable ways to boost animal health and productivity, and many are turning to sericea lespedeza, a nutrient-rich legume with natural parasite-fighting properties, especially beneficial for sheep and goats. In response to the crop's growing popularity, Fort Valley State University is developing an AI-powered app that helps farmers manage invasive weeds using image recognition. The app aims to save farmers time, money, and effort by providing expert guidance directly at their fingertips. Ranchers are already seeing benefits from using the crop and express interest in the time-saving potential of the app.
- Empowering Small Beef Cattle Farmers in Georgia: Beef cattle are vital to Georgia's agriculture, but small farmers often face marketing challenges. To address this, Fort Valley State University partnered with AgriUnity LLC and other organizations to support limited-resource beef cattle farmers. Through training, farm visits, and improved genetics, participants in 2024 saw major gains: 95% improved cattle quality, 85% enhanced herd management, 71% improved soil health, and 82% reduced feed costs by planting winter forages. The program has also inspired greater participation among small Black farmers and the next generation of producers.

- Salmonella Detector: A Mobile Application for On-site Broiler Salmonella Infection Diagnosis: The CDC identified Salmonella as the leading cause of foodborne illness in the U.S., with poultry as a major source. To improve detection, a UGA research team developed a mobile app that identifies Salmonella in broilers with over 95% accuracy using fecal images, costing less than \$500. As a proof of concept, the app showed strong potential for early disease control. To make it more widely applicable, the team planned to collect 10,500 samples from Georgia broiler farms to train and refine the model.
- Fostering Technologies, Metrics, and Behaviors for Sustainable Advances in Animal Agriculture: This UGA project tackled the need for automated tools to monitor chicken behavior and foot health, key to improving animal welfare on poultry farms. Using deep learning, UGA researchers developed accurate, non-invasive models to track activity and detect footpad dermatitis. Over 2,200 stakeholders were trained through industry conferences, and the research supports more efficient, sustainable poultry production to help meet the rising global demand for safe, affordable protein.
- Molecular Mechanisms Regulating Skeletal Muscle Growth and Differentiation: This project examined muscle fascicle fracturing, where fiber bundles separate on boneless pork loins, reducing

quality in thinly sliced products. UGA researchers found the condition was linked to larger muscle fibers and more fibers per bundle, suggesting hypertrophy and fiber density as key factors. The study offered new insight into its biological origins, supporting future breeding strategies to improve pork quality. Findings were shared at the 77th Reciprocal Meat Conference, and 15 students gained research experience through the project.

- Sustainable Solutions to Problems Affecting Bee Health: This project addressed the decline of pollinators, which threatens crop yields and food security, by investigating stressors affecting bee health and developing mitigation strategies. UGA researchers Bartlett and Delaplane contributed through studies on queen health, parasite control, and breeding, leading to over \$4 million in grants, 15+ publications, and the registration of the world's first bee vaccine. Their outreach trained over 10,000 beekeeper-hours, improved management practices, influenced pesticide labeling, and supported pollinator education across North America. Their work advanced understanding of pollinator resilience and directly supported the sustainability of agriculture and food systems.
- Addressing Welfare Challenges in Commercial Poultry Production Using Sensing Technologies: Using advanced technologies like radio-frequency identification (RFID) and wearable sensors, the research aims to develop objective and automated welfare monitoring systems to address these challenges. Initial results suggest a correlation between hen movement patterns and potential keel bone damage, informing further investigations into RFID tracking and computer vision systems to improve bird well-being in cage-free environments.
- Global AI App for Small Livestock Farmers: Fort Valley State University is developing a mobile app using a \$750,000 USDA grant to help small and limited-resource farmers in the U.S. and South Africa manage the health of their sheep and goats. The app uses AI and GIS technology to diagnose issues like internal parasites through cell phone images, offering immediate treatment advice. It also helps farmers grow medicinal plants and reduce costs. A new GIS lab at FVSU will support student training, and the app will be available globally to improve animal health and productivity.

#### Critical Issue: Community, Home and Life Skills

This issue explores areas related to community, home and life skills. Specific topics for this issue include, but are not limited to community development, economic development, indoor air quality, water quality, waste management, energy management, homebuyer education, consumer economics, financial literacy, and emergency preparedness.

- "Let Them Cook" Kids' Cooking Camp: The "Let Them Cook" Kids' Cooking Camp provided 5th to 7th graders with hands-on experience preparing balanced, healthy meals and snacks using fresh produce. Daily lessons covered essential skills such as knife safety, budgeting, and recipe execution, empowering kids to make nutritious choices. Engaging activities, such as creating homemade foods and grocery store visits, helped campers build confidence, making healthy eating and cooking an enjoyable and sustainable part of their lives.
- **Supporting Parents from the First Steps:** The Muscogee County First Steps program faced challenges in serving the Hispanic community due to a lack of bilingual staff. Hiring a bilingual First Steps Coordinator in May 2024 allowed the program to expand its outreach to Spanish-speaking families, increasing screenings and providing resource packets in Spanish. Partnerships with local

organizations, such as Valley HealthCare System, also facilitated in-person screenings, further improving accessibility and engagement with the Hispanic community. The program significantly increased its support for Spanish-speaking families, with screenings rising from 5% of all families served before May 2024 to 31% by the end of September 2024. Families received tailored resources and referrals to community services, with 157 families referred to home visitation programs, including 31 Spanish-speaking families. Though 28 were placed on a waitlist, the effort laid a foundation for better service accessibility.

Examples of 2024 Research:

- Developing and Testing Science Communication Models to Increase Adoption of Emerging Agricultural Technologies and Best Management Practices: This project explored how scientists can effectively communicate agricultural and environmental advancements to both producers and the public. UGA Researchers analyzed national survey data to identify how messaging strategies, cognitive factors, and communication platforms influence public acceptance of best practices and new technologies. Findings informed how producers can better market their practices and how scientists can improve public engagement, supporting informed decision-making and long-term sustainability.
- Personalized policies in agriculture, network analysis and preference estimation: This project applied cutting-edge causal machine learning and statistical methods to address economic issues in agriculture, health, and education. Research included individualized treatment strategies for farmers, peer influence analysis in therapeutic communities, and network effects on health and education outcomes. Papers were published or submitted to top journals, and findings were presented at major conferences. Collaborations with organizations like Precision Development led to practical improvements in digital agricultural advisories, while ongoing efforts aimed to design impactful, low-cost interventions in recovery communities.

## Critical Issue: Food Safety & Quality

This issue explores different areas of food safety and quality, focusing on food processing, protection, and safety; plant production; and animal production and protection. Specific topics for this issue include but are not limited to consumer demand for food, food industry needs, and the food processing industry.

- Reducing Contamination in Irrigation Water: A multi-institutional team led by the University of Georgia developed a curriculum, training aids, and tools such as videos and an interactive app to educate fruit and vegetable growers and Extension educators on field water treatment techniques. The project included grower workshops and train-the-trainer sessions to build capacity and knowledge within the industry and among allied sectors.
- ServSafe Certification for Inmates: The inmate kitchen staff at Coweta County prison prepares meals for high-risk populations, including seniors and other inmates, making food safety training critical to preventing foodborne illnesses. To address these issues, a ServSafe Food Handlers course was offered to inmate kitchen staff, providing essential food safety training in areas like hygiene, preventing cross-contamination, and proper sanitization. This training improved food safety for meals served at the senior center, civic events, and within the prison while also equipping participants with a valuable, marketable skill for post-incarceration employment.

 The Economic Potential of Cannonball Jellyfish: Climate change and human activities, such as eutrophication, are leading to an anticipated global increase in jellyfish populations, including cannonball jellyfish (CBJ), an emerging fishery in Georgia. Despite its potential as a source of marine collagen for food, cosmetics, and pharmaceuticals, consumer skepticism and food neophobia limit domestic use of salted and dried jellyfish products. The UGA team developed innovative products from CBJ, including instant ready-to-eat options and collagen powders with versatile applications in food, cosmetics, and pharmaceuticals. By applying modern food technology, they created products tailored to consumer preferences, overcoming the reluctance associated with traditional jellyfish consumption and unlocking new market opportunities.

- Improving the microbial safety of fresh and imported produce: This project addressed the growing concern of foodborne illness linked to fresh produce by evaluating both pre- and postharvest contamination risks and interventions. UGA Researchers tested alternative postharvest washes like pelargonic acid, investigated pathogen persistence in fields and distribution centers, assessed contamination risks in aquaponic systems, and studied rain-splash contamination in organic lettuce fields. Findings were shared with growers, packers, and distributors to enhance food safety practices, while also contributing to public health by supporting safer produce consumption and increasing consumer confidence in fresh fruits and vegetables.
- Fresh Produce Safety and the Ecology of Foodborne Pathogens: This project addressed the risk of fresh produce contamination through waterborne foodborne pathogens during both pre- and post-harvest stages. In 2024, researchers developed improved methods to detect Cryptosporidium oocysts and E. coli in various soil types, assessed pathogen persistence under different environmental conditions, and investigated insects as potential carriers of Cyclospora. These efforts benefited farmers, processors, and public health agencies by improving pathogen detection, identifying environmental risk factors, and offering surveillance strategies to enhance produce safety and reduce foodborne illness outbreaks.
- Advancing Home Food Preservation, Food Safety and Improving Consumer Acceptance of Safe and Nutritious Recipes: This project addressed the rising interest in home food preservation by expanding research efforts to develop safe, evidence-based methods and recipes. In collaboration with 18 states and institutions like the University of Maryland and the University of Maine, the National Center for Home Food Preservation validated preservation techniquesâ€"including a seafood broth recipeâ€"and improved public access to food safety information. These efforts benefited home preservers, educators, and researchers by providing reliable, science-backed guidance, ultimately helping the broader public reduce foodborne illness risks and preserve food safely at home.
- A Numerical Approach to Understanding Risk Factors in the Farm-to-Fork Pastured Poultry Supply Chain: This project addressed the food safety risks associated with the growing popularity of pastured poultry by examining contamination points from farm to fork. Researchers used numerical risk assessments to track pathogens such as Salmonella and Campylobacter across

farming, processing, and consumer handling stages. Their findings identified critical control points and informed evidence-based guidelines for farmers, processors, and public health educators, ultimately helping reduce foodborne illnesses and improve the safety of pastured poultry products for consumers.

#### **Critical Issue: Health & Wellness**

This issue explores areas of chronic disease prevention and healthy lifestyles, focusing on weight control, physical activity, diabetes management and prevention, cardiovascular diseases prevention and cancer prevention for the public. A large focus of this issue is on the state's youth.

Examples of 2024 Extension Programs:

- FACS of Life Vodcast: The FACS of Life vodcast leverages engaging multimedia content to
  provide research-based, non-biased information on nutrition, chronic disease, and social
  determinants of health. Through 20 episodes and a 5-part miniseries on sleep, the vodcast has
  used video, audio, and storytelling to educate audiences while showcasing the personal stories of
  researchers and health professionals. This format has increased accessibility and interest,
  evidenced by a 29% rise in views and a 19% increase in impressions over the past year.
- **Kitchen Masters Youth Program:** The Kitchen Masters program engaged 49 youth participants in hands-on sessions that included interactive activities like a Glo Gelâ,,¢ handwashing exercise, a food safety scavenger hunt, and a knife skills workshop. Teens also practiced setting formal dining tables through a competitive and fun table-setting challenge. These activities fostered self-confidence and encouraged the application of skills in real-life scenarios, achieving the program's goal of empowering youth with essential life skills.
- Healthy Protein Choices for Stronger Lives: Gwinnett County, home to the largest population of Asian residents in Georgia, faces challenges related to age-related muscle loss and insufficient dietary protein among seniors. Studies show that protein is critical for preventing muscle decline, reducing fall risk, and supporting overall health in individuals aged 40 to 80. Through collaboration with Gwinnett Parks and Recreation and local libraries, the FACS Agent implemented educational workshops for 213 Asian seniors. These programs included hands-on recipe preparation using high-protein ingredients, culturally tailored educational materials in Korean, Chinese, and Vietnamese, and evaluations to measure impact. These activities made it easier for participants to understand the importance of protein and how to incorporate it into their diets.

- The relationship among food insecurity, public assistance program participation, health, and health care utilization in older adults: The UGA team continued to collaborate with GA DAS to study food insecurity among older Georgians using longitudinal state data. By analyzing secondary datasets such as the Medical Expenditures Panel Survey, they explored how food insecurity and family structure influenced health care expenditures, producing insights that can inform programs, policies, and future research aimed at improving the well-being of low-income older adults.
- Parental Practices Supporting Positive Eating Behaviors during Independent Eating
  Occasions among Early Adolescent Children: This project addressed the limited understanding
  of independent eating occasions (iEOs) among early adolescents, focusing on how food choices
  made without adult supervision impact diet quality and weight status, and how food parenting

practices influence these choices. UGA researchers conducted a descriptive analysis of parentadolescent survey data, revealing significant associations between sociodemographic factors, food parenting behaviors, and adolescent dietary intake during iEOs. Despite challenges posed by the COVID-19 pandemic, the team shared findings through publications and presentations, providing valuable insights for Extension agents and health professionals developing interventions to promote healthy eating and positive parenting practices.

#### **Critical Issue: Plant Production**

This issue explores plant production and protection. Specific topics for this issue include, but are not limited to: plant growth and crop production; plant diseases, weeds and pests; developing new breeding tools; soil quality; irrigation; plant pathology; genetics; entomology; IPM, harvest and post- harvest handling; conservation; cultural trends; and breeding programs that incorporate variability derived from interspecific hybrids from which new cultivars can be developed.

- Advancing Georgia's Citrus Industry: The Georgia citrus industry, which has grown to over 4,385 acres in 2024, faces challenges in identifying suitable non-satsuma citrus varieties with optimal cold hardiness. After a severe Christmas freeze in 2024, the Area Citrus Agent conducted a comprehensive survey to evaluate the cold tolerance of non-satsuma citrus varieties. Data from this survey guided growers on variety selection and helped justify the creation of a Citrus Extension Specialist, a Citrus Breeder position, and a Citrus Commodity Commission. These advancements provided crucial support for an industry that has seen over \$31.2 million in fruit sales and \$9.5 million in new tree sales.
- Sustainable Irrigation and Precision Agriculture for Georgia Farmers: Agriculture remained Georgia's leading industry, with over 1.3 million irrigated acres of row and specialty crops, but rising costs, declining prices, and groundwater restrictions made efficient irrigation management increasingly vital. UGA Researchers addressed this by conducting on-farm trials, developing scheduling apps, and promoting tools like soil moisture sensors and evapotranspiration estimates. By collaborating with agronomists and economists, they delivered data-driven strategies that improved yields, reduced water and energy use, and increased profitabilityâ€"such as helping peanut farmers achieve up to a 20% yield increase and 60% reduction in irrigation, resulting in potential savings of \$100 million annually.
- Introducing Aronia Berry: UGA conducted trials on Aronia 'Viking' plants over three years, demonstrating excellent survival rates (97-99%) and increasing yields from 0.41 to 4.5 pounds per bush. Initial findings showed that Georgia-grown berries have higher sugar content, potentially enhancing their flavor compared to northern-grown berries. Additional research into irrigation and fertilization provided key insights for optimizing production in Georgiaââ,¬â,,¢s climate. Aronia berry, with its high nutraceutical value, offers consumers a locally grown, healthy food option. The development of this crop also contributes to North Georgiaââ,¬â,,¢s agricultural economy, supporting local farms and rural economic sustainability. Additionally, the findings position Georgia as a leader in alternative crop research, influencing regional agricultural practices.
- Heirloom Apple Education: As public interest in the Georgia Heritage Apple Orchard project has surged, there is a need to educate individuals on the history and techniques of apple cultivation, particularly grafting, to help sustain these unique varieties and ensure their continued growth. The

project organized several educational events, including the Southern Heirloom Apple Conference, where experts shared knowledge on apple history and grafting techniques. Collaborative workshops in multiple counties provided hands-on grafting experience, allowing participants to work with 40 different heirloom apple varieties. These events enhanced public understanding and skills in apple cultivation, directly supporting efforts to preserve these valuable genetic materials.

- Increased Adoption of Innovative Technology to Advance Forest Monitoring and Management for Underserved Forestry Landowners in Georgia: The FVSU project, "Increased Adoption of Innovative Technology to Advance Forest Monitoring and Management for Underserved Forestry Landowners in Georgia," focuses on addressing deforestation and improving forest management through advanced technologies. The project integrates tools like drones, AI, GPS, GIS, and LiDAR to educate and train students and local landowners in sustainable forestry practices. In 2024, 73 students and 24 landowners participated, gaining firsthand experience in tree identification, soil analysis, wildlife habitat assessment, and fire prevention. Collaborations with the Georgia Forestry Commission and National Wildlife Federation have strengthened expertise in conservation and wildlife protection. In response to recent wildfires, the program is incorporating thermal sensors and expanding training in fire management and emergency response. Future plans include workshops on sustainable timber harvesting and reforestation of longleaf pine.
- Using Pesticides Wisely: FVSU is using Georgia's Using Pesticides Wisely program to support both family farms and wildlife by promoting responsible pesticide use amid stricter EPA regulations under the Endangered Species Act. We have had 2,718 applicators attend 21 trainings focused on on-target pesticide application, representing over 1.9 million acres and valuing the program's impact at over \$546 million. Since 2015, more than 17,000 individuals have participated, resulting in an 80% drop in pesticide drift complaints, highlighting the program's success in promoting effective and environmentally responsible pest management.

- Crop diversification opportunities to enhance the viability of small farms: This project addressed the challenges small-acreage farmers faced in capitalizing on the local foods movement, emphasizing the need for improved production and marketing knowledge. In Georgia, UGA researchers conducted high tunnel trials on crops like indeterminate tomatoes and water spinach, providing data on season extension strategies tailored to niche markets such as metro-Atlanta. Through field days and trainings, small farmers and extension providers gained valuable knowledge to boost crop yields, extend market windows, and increase local food availability—ultimately benefiting both consumers and food-insecure populations through improved access to fresh, nutritious produce.
- Research and Extension for Unmanned Aircraft Systems (UAS) Applications in U.S. Agriculture and Natural Resources: This project utilized UAV data and machine learning to assess cotton growth stages, including plant height, flowering, and boll development, aiming to replace labor-intensive manual measurements. As part of the 4D-Farm project, UGA researchers gathered UAV imagery and ground data from cotton fields under various treatments, using the findings to guide precision applications of growth regulators. Weekly UAV flights over a 90-acre demonstration farm, along with the deployment of an autonomous drone system, provided valuable

datasets to inform ROI analysis and promote more efficient, sustainable farm management practices. These efforts equipped farmers with data-driven strategies to improve profitability, while contributing to a more reliable and environmentally responsible food supply for the broader public.

- Cultural Management Strategies to Enhance Pecan Production: Due to declining pecan prices
  and rising production costs, UGA researchers focused on strategies to improve profitability for small
  to mid-sized pecan growers, such as hedge pruning, efficient irrigation, and disease-resistant
  cultivars. A four-year study found that both dormant and summer hedge pruning improved nut
  quality, water efficiency, and resistance to wind damage, with no negative impact on yield.
  Additional trials revealed that fertilizer and irrigation rates could be significantly reduced without
  sacrificing production, and cultivars like Lakota, Excel, Creek, and Avalon performed well under
  low-input conditions. These findings helped growers reduce input costs, improve sustainability, and
  remain competitive, while also benefiting the broader public through more environmentally friendly
  agricultural practices.
- Postharvest technologies and techniques to improve the quality of fresh fruits and vegetables: This project addressed the persistent issue of postharvest losses in Georgia's fresh produce industry by researching and evaluating advanced technologies to extend shelf life and maintain quality. UGA researchers conducted field trials and lab experiments to assess factors like firmness, acidity, and micronutrient levels, while collaborating with industry stakeholders to apply findings in real-world settings. The project delivered science-based recommendations and handson training to growers, packers, and distributors, resulting in improved postharvest handling, reduced losses, and higher quality produce for consumers. These efforts also contributed to food security, sustainability, and reduced food waste throughout the supply chain.
- Using remote sensing to improve water and nutrient management through the exploration of spatiotemporal variability of soil properties and in-season crop responses: This project addressed the challenge of improving precision agriculture by exploring how soil, crop, and environmental variability affect water and nutrient needs. UGA researchers mapped soil properties, tested nitrogen and irrigation strategies, and used UAVs to detect crop stress. Early results showed promise for optimizing inputs and improving efficiency, with benefits for growers and stakeholders through more sustainable and profitable crop management practices.

Critical Issue: Sustainability, Conservation and the Environment

This issue explores areas related to the sustainability and profitability of agriculture. Specific topics for this issue include, but are not limited to: natural resource management, minimum tillage and cover crops; value added products or production practices that can improve sustainability and profitability; investigation of niche markets in Georgia; financial accounting and reporting strategies; and alternate cultural practices that will protect, improve and maintain soil fertility.

Examples of 2024 Extension Programs:

• **Georgia's First Youth Honeybee Show:** Walker Extension partnered with Pigeon Mountain Trading Company to create Georgia's first-ever Youth Honey Show, hosted during the Walker County Agricultural Festival. This event offered youth in grades K-12 a chance to showcase their knowledge and creativity through writing, art, and honeybee-related exhibits. Collaborative efforts with local educators enhanced the writing and art divisions, while robust promotion and organized judging ensured high-quality participation.

- Community-Driven Conservation: Stephens County is experiencing a significant decline in native plants due to invasive species and urban development, leading to habitat loss and threats to local biodiversity. This decline affects ecosystem services, such as soil stabilization and pollinator habitats, and compromises the region's ecological balance and natural beauty. The project implemented community-driven conservation initiatives, including planting native species, educational workshops, and hosting a Pollinator Fair. These activities engaged over 700 residents, students, and community members in efforts to restore native habitats, enhance pollinator populations, and promote sustainable gardening and landscaping practices.
- Stormwater Solutions Across Georgia: The UGA Extension delivered educational programs to over 3,100 clients and distributed media engaging more than 7,300 people on stormwater and water conservation practices. These programs emphasized cost-effective methods such as rain gardens, stream buffers, and sustainable landscaping to manage runoff and protect water quality. A demonstration site and grants supported broader community education and adoption of these practices.
- Bridging the Digital Divide in Rural Georgia: Fort Valley State University is working to close the digital divide in rural Georgia, where many students lack reliable internet and personal computers. Through partnerships with AT&T and the Fort Valley Youth Center of Excellence, the university has distributed 100 computers to Peach County K-12 students, provided hotspots to 80 FVSU students, and ordered over 750 laptops for nearby counties. The initiative also includes digital skills training and community hub setups to support underserved areas. Supported by federal funding, this effort enhances technology access and education for rural families.

- Prescribed fires as a climate change adaptation tool: Researchers at the University of Georgia conducted an econometric analysis and simulation to evaluate how prescribed burning by private landowners could mitigate future wildfires in the southeastern U.S. Their findings offered the first empirical economic insights into how climate change influences private land management and wildfire outcomes. The project provided valuable evidence to inform federal, state, and local climate adaptation strategies, with benefits extending to landowners, policymakers, and the broader public amid rising wildfire risks.
- Protecting family farms from herbicide resistance and regulations: In 2024, the University of Georgia led a comprehensive research and outreach initiative to support sustainable weed management on family farms. Through 58 field trials across Georgia, the team generated critical data on herbicide-resistant weeds and informed regulatory decisions, engaging over 5,100 stakeholders including farmers, policymakers, and federal agencies. Their efforts contributed to the U.S. EPA's final herbicide strategy and improved communication between the agricultural community and regulators, ultimately supporting more effective, science-based weed control practices nationwide.
- Understanding the Dynamics of Farmers' Experience with Climate-Smart Agriculture: In the first year of this project, significant progress was made toward understanding the dynamics of farmers' adoption and sustained use of sustainable agricultural practices, particularly cover crops. The UGA research team conducted interviews, focus groups, and workshops with farmers and agricultural professionals across multiple U.S. states, generating valuable data on farmers'

experiences and attitudes. Preliminary findings were shared through peer-reviewed publications and public-facing reports, helping inform both the scientific community and agricultural practitioners. The project aimed to improve soil health, water quality, and climate adaptation by supporting farmers in adopting sustainable practices.

#### **Critical Issue: Urban Agriculture**

This issue explores areas related to urban agriculture. Specific topics for this issue include, but are not limited to: water conservation technology and training; turf disease identification and management; IPM; development of new cost estimating and job bidding software for landscape installation; and Master Gardener programs.

#### Examples of 2024 Extension Programs:

- Horticulture and Healing at Victory Home: Victory Home, a substance abuse rehabilitation center, sought fresh produce for its residents and supplemental income opportunities to support its operations. By restoring a greenhouse, hoop house, and shade house, residents cultivated vegetables, propagated plants, and participated in watershed restoration projects. They grew and sold 1,000 bare root trees, raised three vegetable crops, and planted 1,268 trees and shrubs at 10 watershed sites. These activities provided residents with hands-on learning, fresh produce, and financial support while fostering connections with volunteers and community partners.
- Winterville Marigold Collective: The project addresses the challenge of creating a sustainable local food system in Winterville and east Athens-Clarke County. This system aims to support new and beginning producers while ensuring equitable access to fresh, local food for community members facing barriers like low income or lack of transportation. The Marigold Collective implemented activities such as the establishment of the Marigold Market, a food hub, and a certified community kitchen. By purchasing unsold produce and turning it into value-added products, the project reduced food waste, increased food accessibility, and provided financial support to farmers. Over \$122,000 was earned by producers and vendors during the 2024 market season, while 3,161 pounds of fresh produce were diverted from waste to address food insecurity.
- Journeyman Farmer Certification Program: The Journeyman Farmer Certification Program provided targeted training in small farm business management and production practices for small ruminants and fruit/vegetable farming. A blend of classroom instruction, hands-on labs, and farm tours allowed participants to gain practical skills. Hybrid delivery models also made the program more accessible, and mentorship opportunities helped solidify real-world applications.

Examples of 2024 Research:

 Biology and Management Household and Structural Insect Pests: The project addressed the challenges of managing insect pests in the built environment, where responses to pests vary widely, from inaction to pesticide use, causing significant mental stress. The UGA team published Bulletin 1412, "Insect and Arthropod Pests of Southeastern Neighborhoods," and an economic assessment of Georgia's professional pest management industry, which provides a model for other states. Research findings were shared at scientific and industry training sessions, reaching thousands. These efforts provided valuable resources to industries, practitioners, and citizens, improving access to pest identification information and supporting better pest management practices.

#### Critical Issue: Youth & Family Development

This issue explores positive youth and family development. Specific topics for this issue include, but are not limited to: parenting; relationships, child and elderly care; 4-H and youth programming.

- **Community Hurricane Helene Aid:** In the aftermath of Hurricane Helene, the Tattnall County 4-H Agent worked closely with local organizations such as Tattnall EMA, Family Connections, and Action Pact to distribute books and essential supplies to families. By coordinating with the Tattnall County Board of Education, the agent secured and distributed 480 books to over 400 families and organized hygiene supply events that provided over \$9,000 in supplies. Additionally, the 4-H Agent played a key role in securing \$7,000 in financial grants to support ongoing recovery efforts.
- Junior Zoonotic Disease Detectives Program: The Junior Zoonotic Disease Detectives program engaged fifth-grade students in Tift County with an interactive and educational approach to learning about zoonotic diseases. Through a combination of lectures, hands-on activities, and case-solving exercises, students learned about viruses and bacteria, how zoonotic diseases spread, and the importance of preventative measures such as handwashing and avoiding contact with sick animals. These activities helped the youth understand the risks and learn how to protect themselves from infectious diseases.
- Cloverbud Program Increases Ag Literacy: Charlton County 4-Hââ,¬â,,¢s Cloverbuds program helped achieve its goals by providing hands-on agriculture lessons to students in grades K-3. Over the 2023-2024 program year, 42 students engaged in activities such as gardening, composting, planting seeds, and learning about where food comes from. These activities were designed to make agriculture fun and relatable for young children while aligning with state educational standards. Cloverbuds also showcased their knowledge at the annual Ag Night, helping to raise awareness of the importance of agriculture in their community.
- Elbert County Farm Camp: Elbert County 4-H partnered with local organizations to offer a handson three-day Farm Camp. Students learned about various agricultural topics, including livestock production, vegetable farming, animal health, and food origin. Activities like working with livestock, planting in hoop houses, and visiting local farms helped engage students and make agriculture more relatable and exciting. The hands-on experiences helped them gain a deeper understanding of the importance of agriculture in their community and daily lives.
- 4-H Tech Changemakers: The 4-H Tech Changemakers program addresses the digital divide in Whitfield County, where 1 in 3 people lack essential digital skills. With 90% of Georgia jobs requiring digital abilities and a 5% unemployment rate in Whitfield County, there is a clear need for accessible digital workforce training to enhance job opportunities and close the skill gap in both youth and adults. The program focused on providing digital skills training through bilingual presentations, workshops, and hands-on experiences like podcasting. 4-H Tech Changemakers created engaging content in both English and Spanish, taught digital marketing, resume writing, and interview skills, and participated in experiential learning activities like Teen Maze, which reinforced digital literacy through interactive games and scenarios.

Examples of 2024 Research:

• Developing a framework for engaging youth in STEM content in agriculture: The project addressed the challenge of increasing student retention in agricultural fields by focusing on reading comprehension strategies in agricultural education. Research revealed that middle-grade teachers primarily used teacher-centered approaches, leading to limited student engagement and poor literacy development. The study emphasized the need for integrating reading strategies, critical thinking, and professional development for educators to enhance student success. Teachers gained valuable insights to improve their methods, which, in turn, will produce a more literate and skilled workforce in agriculture, benefiting both the educational system and the broader public.

# **Merit and Scientific Peer Review Processes**

Updates

None

# **Stakeholder Input**

Actions to seek stakeholder input that encouraged their participation with a brief explanation

None

Methods to identify individuals and groups and brief explanation

None

Methods for collecting stakeholder input and brief explanation

None

# 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 and program planning 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. 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 number of new positions added.