

CLEMSON® UNIVERSITY COLLEGE OF  
AGRICULTURE, FORESTRY & LIFE SCIENCES

# Momentum



**2023**  
COLLEGE PROFILE

# COLLEGE LEADERSHIP



**Greg Yarrow**  
INTERIM DEAN



**Paula Agudelo**  
ASSOCIATE DEAN FOR RESEARCH  
AND DIRECTOR OF EXPERIMENT STATION



**Matt Interis**  
ASSOCIATE DEAN FOR  
ACADEMIC AFFAIRS



**Tom Dobbins**  
ASSOCIATE DEAN FOR OUTREACH  
AND ENGAGEMENT AND DIRECTOR OF  
CLEMSON COOPERATIVE EXTENSION



**Necole Richardson**  
ADMINISTRATIVE  
COORDINATOR



**Kayla Payne**  
CHIEF OF STAFF



**Leigh Dodson**  
DIRECTOR OF  
CAFLS BUSINESS CENTER



**Charles Privette**  
CHAIR  
DEPARTMENT OF  
AGRICULTURAL SCIENCES



**Charles Rosenkrans**  
CHAIR  
DEPARTMENT OF ANIMAL AND  
VETERINARY SCIENCES



**Feng Chen**  
INTERIM CHAIR  
DEPARTMENT OF FOOD, NUTRITION,  
AND PACKAGING SCIENCES



**Todd Petty**  
CHAIR  
DEPARTMENT OF FORESTRY AND  
ENVIRONMENTAL CONSERVATION



**Carlyle Brewster**  
CHAIR  
DEPARTMENT OF PLANT AND  
ENVIRONMENTAL SCIENCES



**Mazeika Sullivan**  
DIRECTOR  
BARUCH INSTITUTE OF COASTAL  
ECOLOGY AND FOREST SCIENCES



**Patrick Wechter**  
DIRECTOR  
COASTAL RESEARCH AND  
EDUCATION CENTER



**Chris Ray**  
DIRECTOR  
EDISTO RESEARCH AND  
EDUCATION CENTER



**John Andrae**  
ASSOCIATE DIRECTOR  
EXPERIMENT STATION  
INTERIM DIRECTOR  
PEE DEE RESEARCH AND  
EDUCATION CENTER



**Matt Hersom**  
DIRECTOR  
PIEDMONT RESEARCH AND  
EDUCATION CENTER



**Kathy Coleman**  
DIRECTOR  
SANDHILL RESEARCH AND  
EDUCATION CENTER

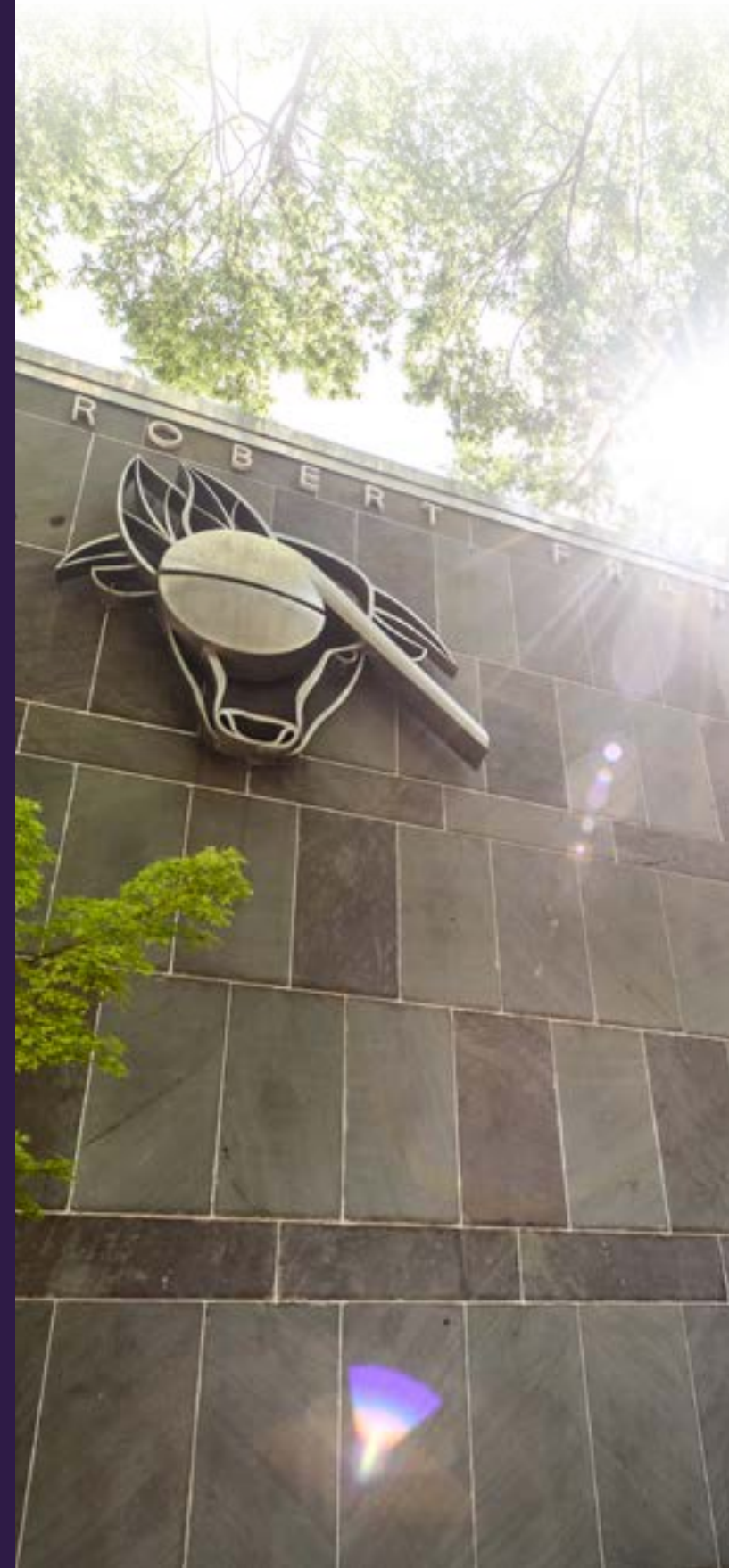


College of  
**AGRICULTURE, FORESTRY  
AND LIFE SCIENCES**

## CONTENTS

- 2 WELCOME
- 3 DEGREE PROGRAMS
- 4 STUDENTS AT A GLANCE
- 6 TEACHING
- 10 STUDENT EXCELLENCE
- 12 CLIMATE-SMART
- 13 MACARTHUR FELLOW
- 14 ELEVATE
- 16 RESEARCH
- 18 FACULTY AND STAFF EXCELLENCE
- 20 SIGNIFICANT GRANTS
- 21 RESEARCH AND EXTENSION  
BY THE NUMBERS
- 22 EXTENSION
- 24 PARTNERSHIPS AND  
COLLABORATIONS
- 26 ALUMNI CONNECTION
- 27 PHILANTHROPY
- 28 A NEW HOME

The College of Agriculture, Forestry and Life Sciences will **create** future leaders and **deliver** research-based discoveries that will **feed** a growing world population, **develop** renewable sources of energy, **ensure** a safe, sustainably packaged food supply and **maintain** a healthy environment.





*Welcome to*  
*the College of*  
**Agriculture, Forestry,  
 and Life Sciences**

**T**he Clemson University College of Agriculture, Forestry, and Life Sciences (CAFLS) represents the land-grant mission and vision of Thomas Green Clemson. The college's interdisciplinary programs in five departments offer **32 undergraduate and graduate degree programs** that prepare students for challenges facing our state, nation, and world. Cutting-edge research is conducted by faculty housed on campus and at the **Experiment Station's six Research and Education Centers (RECs)** across the state. True to our mission, the college's **Cooperative Extension Service** delivers the latest research-based information to South Carolinians through offices located in every county across the state.



# DEGREE PROGRAMS

## Agricultural Sciences

Agricultural Education (B.S., M.Ag.E., Post-B.S. Cert)  
 Agricultural Mechanization & Business (B.S.)  
 Agribusiness (B.S.)  
 Agriculture (M.S., Ph.D.)  
 Applied Economics & Statistics (M.S.)

## Animal and Veterinary Sciences

Animal and Veterinary Science (B.S., M.S., Ph.D.)

## Food, Nutrition, and Packaging Sciences

Food Science and Human Nutrition (B.S.)  
 Packaging Science (B.S., M.S.)  
 Food, Nutrition and Culinary Sciences (M.S.)  
 Food, Nutrition, and Packaging Sciences (Ph.D.)

## Forestry and Environmental Conservation

Environmental and Natural Resources (B.S.)  
 Forest Resource Management (B.S.)  
 Wildlife and Fisheries Biology (B.S., M.W.F.R., M.S., Ph.D.)  
 Forest Resources (M.F.R., M.S., Ph.D.)

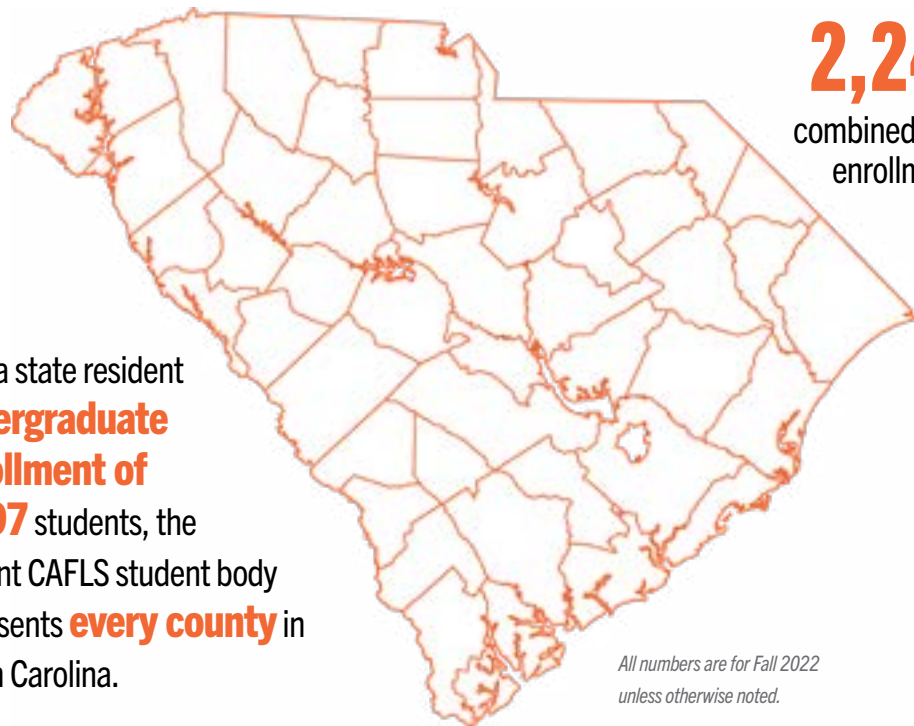
## Plant and Environmental Sciences

Horticulture (B.S.)  
 Plant and Environmental Sciences (B.S., M.S., Ph.D.)  
 Turfgrass (B.S.)  
 Entomology (M.S., Ph.D.)



# STUDENTS AT A GLANCE

With a state resident **undergraduate enrollment of 1,397** students, the current CAFLS student body represents **every county** in South Carolina.



All numbers are for Fall 2022 unless otherwise noted.

**2,240**  
combined CAFLS enrollment

**1,518**  
S.C. residents

**626**  
Students from other states

**96**  
International students

**26**  
Countries represented

## Undergraduate Students

### First Generation

**16.4%** CAFLS  
**15.4%** UNIVERSITY

### Pell Grant Recipients

**16.5%** CAFLS  
**14.5%** UNIVERSITY

### In-State

**75.7%** CAFLS  
**61.2%** UNIVERSITY



## Enrollment by Department 2022-2023

UNDERGRADUATE	1,846	GRADUATE	394
Agricultural Sciences	309	Agricultural Sciences	32
Animal and Veterinary Sciences	498	Animal and Veterinary Sciences	23
Food, Nutrition, and Packaging Sciences	484	Food, Nutrition, and Packaging Sciences	46
Forestry and Environmental Conservation	431	Forestry and Environmental Conservation	177
Plant and Environmental Sciences	124	Plant and Environmental Sciences	116



## Student Success

	Freshman Retention	6-year Graduation
CAFLS	<b>93.3%</b>	<b>86.1%</b>
University	<b>92.4%</b>	<b>85.3%</b>

### GRADUATE ENROLLMENT

**254** Master's  
**140** Doctoral

**144**

Graduate student completions in 2022-2023  
**The most in the last 10 years**



**\$650K**

CAFLS-specific scholarships awarded in 2022-23

**12:1**

Student:Teacher

**42.75%**

Graduate student enrollment 5-year growth

# TEACHING



EVERY  
STUDENT  
THRIVES

Hands-on experiences are at the core of every CAFLS degree. Whether it is early mornings in the Experimental Forest or a co-op at a Fortune 500 company, CAFLS students learn by doing. Entrepreneurship initiatives, study abroad programs, undergraduate research opportunities and internships prepare CAFLS graduates with the skills to tackle the grand challenges facing our world.

CAFLS means experiential.

## Engaging Globally

FLORECE! is a global research project led by **Juan Carlos Melgar**, along with six other faculty members in the Department of Plant and Environmental Sciences (Dara Park, Sarah White, Ksenija Gasic, Guido Schnabel, Sruthi Narayanan and Vidya Suseela). The goal of FLORECE! is to prepare undergraduate students to become globally engaged professionals with world-class research and Extension skills that allow them to identify critical factors that impact the sustainability of agroecosystems. Students have hands-on lab training at Clemson followed by a two-month research internship in Spain. Upon their return, students are encouraged to disseminate their results at scientific and Extension conferences. The third cohort of FLORECE! participants recently presented their work, and the program is recruiting undergraduate students for the 2024 program.



## Awarding Excellence

This year, numerous faculty in the Department of Plant and Environmental Sciences were recognized for their dedication to students' experiences, both inside and outside the classroom. **Sruthi Narayanan, Dara Park and Steven Jeffers** were honored for their teaching excellence with the prestigious Teaching Award of Merit by the society of North American Colleges and Teachers of Agriculture. **Jim Frederick** earned the 2023 Environmental Educator of the Year award for his work overseeing and coordinating youth and community education programs related to ecosystems and natural resources conservation. He also was recognized with the S.C. Environmental Awareness Award — the state's top award for environmental education.

## Paying it Forward

**Vishal Manjunatha's** pursuit of a doctorate in Food, Nutrition and Packaging Sciences means hours in the lab, collaborating with faculty and fellow graduate students. But for students like Manjunatha, graduate teaching assistantships afford the opportunity to share their passions with another group of Tigers. Says one of Manjunatha's students, "The hands-on experience and guidance I have received from working with him and his role in our Creative Inquiry have made me realize I have a passion for microbiology in the food industry." This year, Manjunatha was honored with the Graduate Student Award for Mentoring in Creative Inquiry. CAFLS is proud of the role he and other graduate students play in providing memorable learning opportunities.



## Finding Purpose

As the largest major in CAFLS, **Animal and Veterinary Sciences** is designed around impactful, hands-on experiences. Forty-nine sections of lectures and labs, 75 unique seminars and independent studies, five nearby farms, and numerous clubs and internships provide students with opportunities that prove invaluable to their future careers. In the words of **Sam Talley**, recent AVS alum and cattleman, “I will carry the knowledge and experiences with me forever. Whether it’s my friends in my major, my fellow club members or my professors, I will always remember the people. I will carry the knowledge and experiences with me forever. They have made me a better cattleman. Using these influences, I hope to leave the industry better than when I found it.”

## Taking Initiative

**Jane Arnold**, 2023 graduate in **Agribusiness**, never thought she would enjoy research, but her perceptions changed when she began working with **Felipe Silva and Michael Vassalos** in the Department of Agricultural Sciences. The project won Jane first prize in the CAFLS Undergraduate Research Symposium as part of the College’s Undergraduate Research Initiative. Jane traveled to 21 markets within a 250-mile radius of Clemson, gaining insight into customers’ habits. “It’s rewarding to see how much [students] learn,” Silva said, “and they are motivated to dive deeper.” In Jane’s case, undergraduate research inspired her to enter the master’s program in Applied Economics in CAFLS where she is continuing the research and plans to use the results as part of her thesis.

## Making Impacts

Travelling to Brevard, North Carolina, to tag salamanders in the French Broad River? Sounds like a typical day in one of **Cathy Jachowski’s** Creative Inquiry classes. Jachowski, assistant professor of forestry and environmental conservation, researches how freshwater species interact with their environment and respond to broad-scale global changes. Data from this CI project gives researchers information about the water quality and health of the river that they can use to help protect the ecosystem. Jachowski has been a CI mentor since 2017. This year, she was recognized with the Phil and Mary Bradley Faculty Award for Mentoring in Creative Inquiry. Said one of her students, “My experience here at Clemson has been better than I could ever imagine, and it would not have been the same without her guidance and this program.”

## Earning Acclaim

Students in **Food, Nutrition, and Packaging Sciences** excel beyond the classroom, taking their knowledge on the road in annual competitions that test relevant skills and expertise. This year, a team of eight students from Clemson made history by claiming the university’s first national championship in the Institute of Food Technologists Student Association (IFTSA) College Bowl Competition. The well-rounded group consisted of both graduate and undergraduate students from the department and showcased skills needed for future success in their fields. Meanwhile, Packaging Science students tied for third place in this year’s Association of Independent Corrugated Converters Student Design Competition, designing and testing a unique packaging solution to real-life challenges facing industry partners.



# STUDENT EXCELLENCE

The College of Agriculture, Forestry and Life Sciences is all about students! Our students' experiences are second to none, and we are proud of all our students, especially those who excel. Here are just a few examples of our amazing students.



**Tiarra Green**

**OUTSTANDING SENIOR**  
ANIMAL & VETERINARY SCIENCES



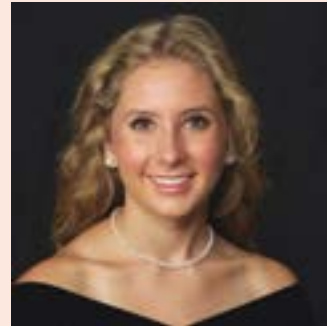
**Laura Lothridge**

**OUTSTANDING JUNIOR**  
HORTICULTURE



**Graci Gotchy**

**OUTSTANDING SOPHOMORE**  
ANIMAL & VETERINARY SCIENCES



**Mary-Clanton Bozard**

**OUTSTANDING FRESHMAN**  
AGRIBUSINESS



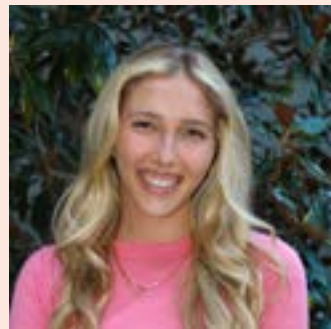
**MARY FEATHERSTONE**

**OUTSTANDING AMBASSADOR**  
HORTICULTURE



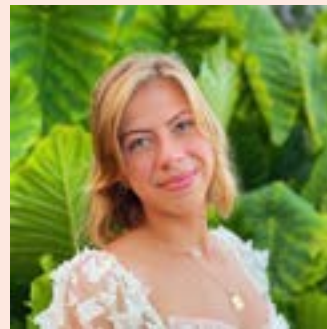
**KINLYN HINSON**

**CULTIVATE.CAFLS FIRST PLACE**  
AGRICULTURAL EDUCATION



**Grace Hassell**

**BLUE KEY ACADEMIC AND LEADERSHIP**  
AGRIBUSINESS



**Elizabeth Hudgens**

**PHI KAPPA PHI CERTIFICATE OF MERIT**  
HORTICULTURE



**Jane Arnold**

**UNDERGRADUATE RESEARCH 1<sup>ST</sup> PLACE**  
*Who is the recurrent farmers' market customer? Evidence from markets in the greater South Carolina region*  
AGRIBUSINESS



**Laura Lothridge**

**UNDERGRADUATE RESEARCH 2<sup>ND</sup> PLACE**  
*The effects of soil temperature on bloom time*  
HORTICULTURE



**Grayson Seymore**

**UNDERGRADUATE RESEARCH 3<sup>RD</sup> PLACE**  
*Yellow Pine sapling identification: Ecological restoration and subjective workload*  
ENVIRONMENTAL & NATURAL RESOURCES



**Sneh Bangar**

**OUTSTANDING GRADUATE STUDENT IN RESEARCH**

GRADUATE RESEARCH ASSISTANT  
DEPARTMENT OF FOOD, NUTRITION AND PACKAGING SCIENCES

RESEARCH TOPIC:  
*Investigating the potential use of starch-based biopolymer films for food packaging*



**Madeleine Bolick**

**OUTSTANDING GRADUATE STUDENT IN TEACHING**

GRADUATE TEACHING ASSISTANT  
DEPARTMENT OF FORESTRY AND ENVIRONMENTAL CONSERVATION

COURSE/S TAUGHT:  
FOR 4340/6340, GIS for Natural Resources



**Brian Lawrence**

**OUTSTANDING GRADUATE STUDENT IN RESEARCH**

GRADUATE RESEARCH ASSISTANT  
DEPARTMENT OF PLANT AND ENVIRONMENTAL SCIENCES

RESEARCH TOPIC:  
*Tree tolerance to abiotic stresses and sustainable management of peach orchards and small fruits in the southeastern region of the United States*



**Vishal Manjunatha**

**OUTSTANDING GRADUATE STUDENT IN TEACHING**

GRADUATE TEACHING ASSISTANT  
DEPARTMENT OF FOOD, NUTRITION AND PACKAGING SCIENCES

COURSE TAUGHT:  
MICR 4071, Food and Dairy Microbiology Laboratory



# Climate-Smart South Carolina

The two land-grant institutions of South Carolina — Clemson University and South Carolina State University — have teamed up with 27 strategic partners to promote climate-smart practices in agriculture across our state. As part of a historic \$70 million grant through the United States Department of Agriculture (USDA), this initiative targets several representative agricultural sectors of South Carolina, including leafy greens, peanuts, beef cattle forages, and forest products.

The initial pilot project is working to increase the acreage and number of farmers using cover crops, prescribed grazing, reduced tillage and other conservation practices that will not only reduce greenhouse gases, but also improve water quality, support biodiversity, and increase the productivity and well-being of our farming and foresting communities. The project provides technical and financial support to farmers participating in the program and places special emphasis on supporting and involving small and underserved producers.

Upon the grant being announced, South Carolina Congressman James E. Clyburn expressed the potential of this program to support small farming families and create opportunities for them to thrive in the state. And U.S. Secretary of Agriculture Tom Vilsack noted the importance of climate-smart agriculture and its contribution to U.S agriculture's global competitiveness.

The Climate-Smart Grown in SC project stands out as the largest federal award in the histories of Clemson and South Carolina State. It was one of only three projects to receive over \$70 million and one of two projects dedicated to a single state. Overall, the USDA is investing up to \$2.8 billion in selected projects, ranging from \$5 million to \$100 million, to promote climate-smart practices in agriculture.



## Meet Our MacArthur Fellow

Clemson's J. Drew Lanham, a renowned Wildlife Ecology Professor, was named a 2022 MacArthur Fellow by the John D. and Catherine T. MacArthur Foundation.

These \$800,000 stipends, often dubbed “genius grants,” are awarded over five years with no restrictions and recognize exceptional originality and dedication across various fields. Nominated anonymously and chosen by a secretive committee, recipients like Lanham are surprised with the honor.

Lanham, though humbly dismissing the “genius” label, appreciates the Foundation's vision in supporting unique endeavors that make a positive impact. His work combines ornithology, conservation science and storytelling, focusing on the effects of forest management on wildlife. As a poet and advocate for nature, he brings his ecological knowledge and his perspective as a Black man in the South to his work.

Having received his education at Clemson University, Lanham's work has earned recognition and validation as impactful and unique. He believes in the university's role in affecting the world positively and sees the MacArthur Fellowship as proof that his work contributes to this mission.

Lanham emphasizes the importance of connecting scientific facts with emotional bonds to nature, delving into historical and cultural associations with the land, including the painful legacy of slavery. Lanham strives to diversify and sustain engagement with the natural world, addressing racial disparities in outdoor experiences. Lanham's unique ability to bridge science and art has transformed both disciplines.





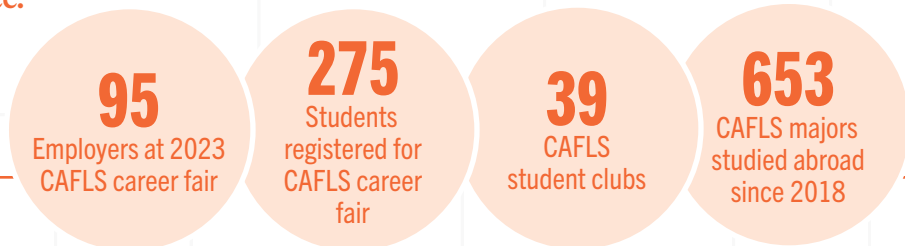


Clemson Elevate provides a blueprint for Clemson to continue its rise in national recognition by focusing attention and investments on three strategic priorities:

- We will deliver** the No. 1 student experience in the nation, core to our mission.
- We will double research** by 2035, working in collaboration with government and industry to advance scientific research and discovery.
- We will transform lives**, impacting the citizens of South Carolina and beyond through measurable health and economic development.

## CAFLS STUDENTS THRIVE.

- Excel in experiential learning.
- Amplify academic success.
- Promote the Clemson Experience.



### CAFLS ADVANTAGE

CAFLS knows that it is essential for students to learn beyond the classroom. The CAFLS Advantage is our commitment to provide students with a broad array of experiential learning opportunities. These hands-on, real-world experiences give students a chance to learn by doing and to build skills that are marketable in the workforce. CAFLS Advantage gives students the chance to travel (both domestically and abroad),

to participate in undergraduate research, to grow students entrepreneurial spirit, to develop leadership skills and to participate in internships. Knowledge gained and skills learned during these experiences will prepare students to tackle the grand challenges facing our world — and will give students **The CAFLS Advantage**.

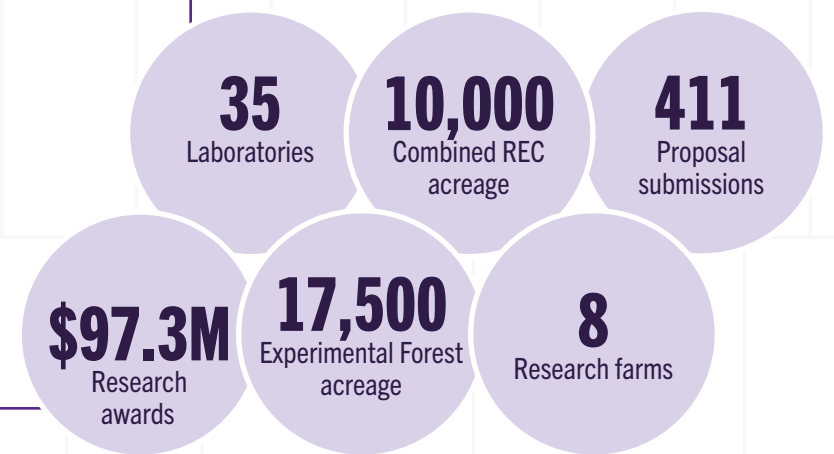
## CAFLS DRIVES DISCOVERY.

- Build an AAU-aligned faculty that leverages existing and emerging research strengths and addresses societal needs.
- Create world-class research infrastructure.
- Leverage the Innovation Campuses and partnerships.

### EXPERIMENT STATION

#### Research and Education Centers

- Baruch Institute of Coastal Ecology and Forest Science
- Coastal Research & Education Center
- Edisto Research & Education Center
- Pee Dee Research & Education Center
- Piedmont Research & Education Center
- Sandhill Research & Education Center



## CAFLS BUILDS COMMUNITY.

- Enhance educational and economic opportunities for South Carolinians.
- Promote agricultural and natural resources excellence and lead animal health issues for the state.
- Improve the health outcomes of South Carolinians.



### COOPERATIVE EXTENSION

- 4-H Youth Development
- Agricultural Education
- Agribusiness
- Agronomy
- Expanded Food and Nutrition Education Program
- Food Systems and Safety
- Forestry and Natural Resources
- Horticulture
- Livestock and Forages
- Rural Health and Nutrition

# RESEARCH



## ◀ Poultry Research

**Khaled Abdelaziz**, Clemson assistant professor of animal and veterinary sciences, and his students are exploring a novel way to protect both human health and **South Carolina's \$1.5 billion poultry industry** from the bacterium *Campylobacter*, a common source of food poisoning. They're studying the use of probiotics — live microorganisms — to enhance poultry's gut health and immune systems, reducing the risk of transmitting *Campylobacter* to humans. The team is focusing on inoculating chicken embryos with probiotics before they hatch. This method has shown promise in boosting chicks' immune systems. Ultimately, this research could help maintain a healthy poultry gut microbiome, improve animal welfare, mitigate diseases and reduce antibiotic use.



## Specialty Crop Big Data

CAFLS researchers **Ksenija Gasic** and **Trevor Rife** are harnessing big data and technology to address challenges facing the **\$36 billion U.S. specialty crop industry**, including declining land availability, labor shortages, pests, diseases, rising costs, supply shortages and the effects of climate change. They aim to create an infrastructure that collects, organizes and combines data from genomics, genetics and breeding to develop new plant varieties with improved genetics, such as disease resistance and cold tolerance. By expanding 25 databases for various specialty crops, the project seeks to provide breeders and scientists with easier access to big data, facilitating research, decision-making and the development of more resilient and productive crop varieties.



**DISCOVERY  
DRIVES  
SUCCESS**

A \$70 million Climate-Smart grant from the USDA represents both the largest single grant awarded in Clemson's history, and the commitment that CAFLS maintains to the citizens of South Carolina. Every day our faculty engage in impactful research involving global food supply and safety, sustainable packaging human and animal nutrition, agricultural systems, environmental conservation, and renewable resources.

**CAFLS means discovery.**



## Trail Guard and AI Student Work

The Global Tiger Forum, the National Tiger Conservation Authority, and RESOLVE joined forces with Clemson to test a **cutting-edge conservation technology known as TrailGuard AI**. This system, powered by artificial intelligence, deploys hidden cameras capable of detecting tigers and poachers in real-time and transmitting images to park rangers. Since May 2022, TrailGuard AI has been deployed in five tiger reserves across India and Nepal. It has proved to be a game-changer, detecting tigers close to villages and alerting authorities within 30 seconds. **CAFLS postdoctoral researcher Jeremy Dertien** and **Ph.D. candidate Hrishita Negi**, played key roles in this technology's deployment, testing and community training. Tigers are making a comeback in India, but human-tiger conflicts remain a challenge, making TrailGuard AI's success crucial for conservation.

# FACULTY AND STAFF EXCELLENCE

Our talented faculty and staff are our most valuable resource and are the heart of our college, delivering excellence in teaching, research and Extension. In the classroom, lab and field, they are building future leaders in agriculture and natural resources. Through cutting-edge research, they are finding solutions to enhance sustainable agriculture production and natural resource conservation in harmony with the environment. They deliver research-based knowledge that enhances agriculture and natural resources and the quality of life of all South Carolinians. Here are examples of our world-class faculty and staff.



**Elizabeth Leonard**

**OUTSTANDING TECHNICAL STAFF: LAB/OFFICE**  
RESEARCH ASSOCIATE  
PLANT AND ENVIRONMENTAL SCIENCES



**Bob Webb**

**OUTSTANDING TECHNICAL STAFF: FIELD**  
BUILDING & GROUNDS MANAGER  
EDISTO REC



**Charles Davis**

**OUTSTANDING SENIOR EXTENSION AGENT**  
COUNTY EXTENSION AGENT  
COOPERATIVE EXTENSION



**Donna Purvis**

**OUTSTANDING ADMINISTRATIVE STAFF**  
ADMINISTRATIVE COORDINATOR  
COASTAL REC



**Jennifer Arblaster**

**OUTSTANDING PROFESSIONAL STAFF**  
ACCOUNTANT/FISCAL ANALYST  
PIEDMONT REC



**Catherine DiBenedetto**

**OUTSTANDING SENIOR FACULTY**  
ASSOCIATE PROFESSOR  
AGRICULTURAL SCIENCES



**Juan Carlos Melgar**

**OUTSTANDING ADVISOR/MENTOR**  
PLANT & ENVIRONMENTAL SCIENCES



**Rick Boyles**

**OUTSTANDING JUNIOR FACULTY IN RESEARCH**  
ASSISTANT PROFESSOR OF PLANT BREEDING & GENETICS  
PLANT & ENVIRONMENTAL SCIENCES



**Lillie Langlois**

**OUTSTANDING JUNIOR FACULTY IN TEACHING**  
GRADUATE LECTURER  
FORESTRY & ENVIRONMENTAL CONSERVATION



**Michael Marshall**

**OUTSTANDING JUNIOR FACULTY IN EXTENSION**  
ASSISTANT PROFESSOR OF AGRONOMIC  
& FORAGE WEED SCIENCE  
PLANT & ENVIRONMENTAL SCIENCES

**Dil Thavarajah**

**GODLEY-SNELL AWARD FOR EXCELLENCE IN AGRICULTURAL RESEARCH**  
PROFESSOR OF PULSE QUALITY AND NUTRITIONAL BREEDING  
DEPARTMENT OF PLANT AND ENVIRONMENTAL SCIENCES

The Godley-Snell Award, named after W. Cecil Godley and Absalom W. Snell, former directors of the S.C. Agricultural Experiment Station, is the largest annual agricultural research award at the university. It's funded from a fund created upon Dr. Godley's 1986 retirement, expanded in 1988 when Dr. Snell retired. The award fosters agricultural research excellence, recognizing faculty through nominations in spring, with the award presented at a college function.



**Kathy Coleman**

**THE ROWLAND P. ALSTON, SR., '42 AWARD FOR EXCELLENCE IN PUBLIC RELATIONS**  
DIRECTOR OF THE SANDHILL RESEARCH AND EDUCATION CENTER

The Rowland P. Alston, Sr., '42 Award for Excellence in Public Relations recognizes outstanding Clemson University faculty or staff who enhance the university's visibility through agriculture or natural resources programs. The recipient, from any university discipline, receives a \$2,500 stipend and a plaque. The award, funded by Rowland Alston, a retired Extension agent and former host of "Making It Grow," honors his father's memory.



**Paula Agudelo**

**ALUMNI AWARD FOR OUTSTANDING ACHIEVEMENTS IN RESEARCH**  
ASSOCIATE DEAN FOR RESEARCH  
DIRECTOR OF THE S.C. AGRICULTURAL EXPERIMENT STATION

The Outstanding Research Award is presented annually at the May faculty/staff meeting to a faculty member. The award is administered by the Office of University Research Grants Committee. The larger context for Paula Agudelo's work is to contribute knowledge and tactics that enhance soil health and resilience of agriculture.



# SIGNIFICANT GRANTS

## Testing crops' salt-tolerance – Raghupathy Karthikeyan, Jeffrey Adelberg, Sandra Branham, K. Dale Layfield

\$10M

Regional freshwater scarcity is a threat to sustainable agriculture. In many freshwater-scarce regions, there are saline water sources (e.g., inland and coastal brackish groundwater) that could be utilized for irrigating salt tolerant food crops. Karthikeyan is leading a team of researchers in testing a hydroponic controlled-environment agriculture platform to test crops like mustard greens, cucumbers and tomatoes for salt-tolerance. The project also will test salt-gradient solar ponds that utilize evaporation and provide recoverable salt as a commodity, as well as low-grade heat.

## Developing wheat genotypes – Sachin Rustgi & Nishanth Tharayil-Santhaku

\$649,942

To help people with gluten sensitivities or intolerances be better able to digest foods containing wheat, researchers are determining how to manipulate genes to breed for wheat varieties that do not produce these proteins. Sachin Rustgi, a molecular breeder at Clemson University's Pee Dee Research and Education Center near Florence, S.C., is leading a USDA grant-funded study using conventional and genome-editing methods to develop reduced immunogenicity, lysine-rich genotypes for use in developing new wheat varieties.

## Optimizing water use – Vidya Samadi & Jose Oscar Payero

\$300,000

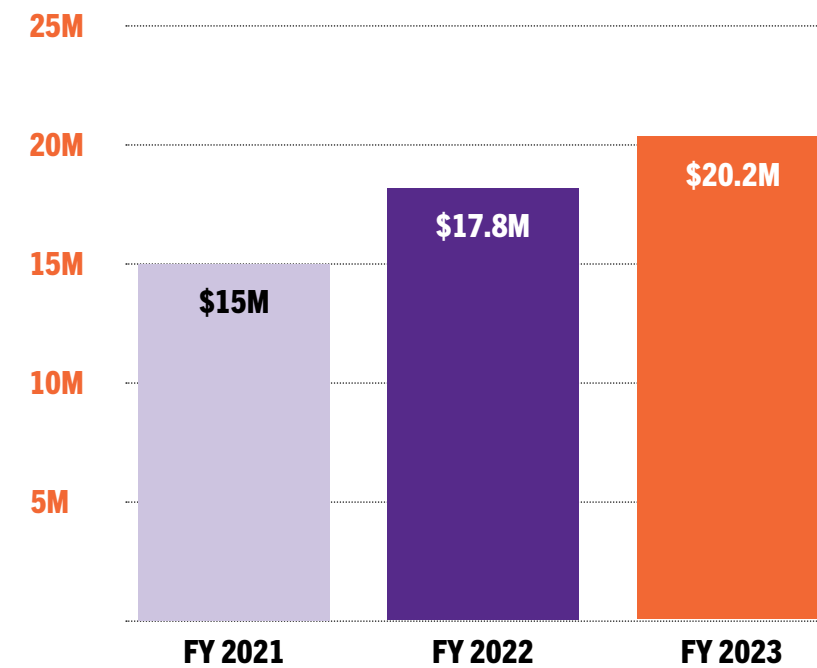
To aid farmers in determining a crop's optimal water use needs, Vidya Samadi and her fellow researchers are leveraging existing field-based big data to pilot and develop an open-source, reproducible irrigation scheduling software that will adapt to the spatial and temporal variabilities of conditions in the field. The software will be tested on cotton at Clemson University's Edisto Research and Education Center, with implications for multiple types of crops across regions by considering variations in climate, irrigation and soil conditions.

## Exploring regenerative practices – Vidya Suseela

\$1,191,850

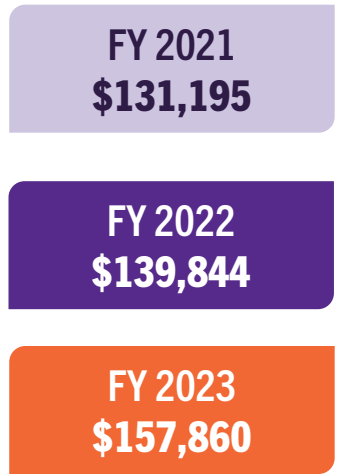
Soil organic carbon is critical for sustainable food production as it improves nutrient and water retention and enhances soil biological activity. Soils in many ecosystems are depleted in soil organic carbon due to intensive management practices, but regenerative practices such as using diverse plant mixtures can potentially enhance soil organic carbon in managed ecosystems. Vidya Suseela's research will use multifactor lab, greenhouse, multisite field experiments and advanced analytical techniques to obtain a molecular-level understanding of soil organic carbon dynamics.

## Annual Research Expenditures



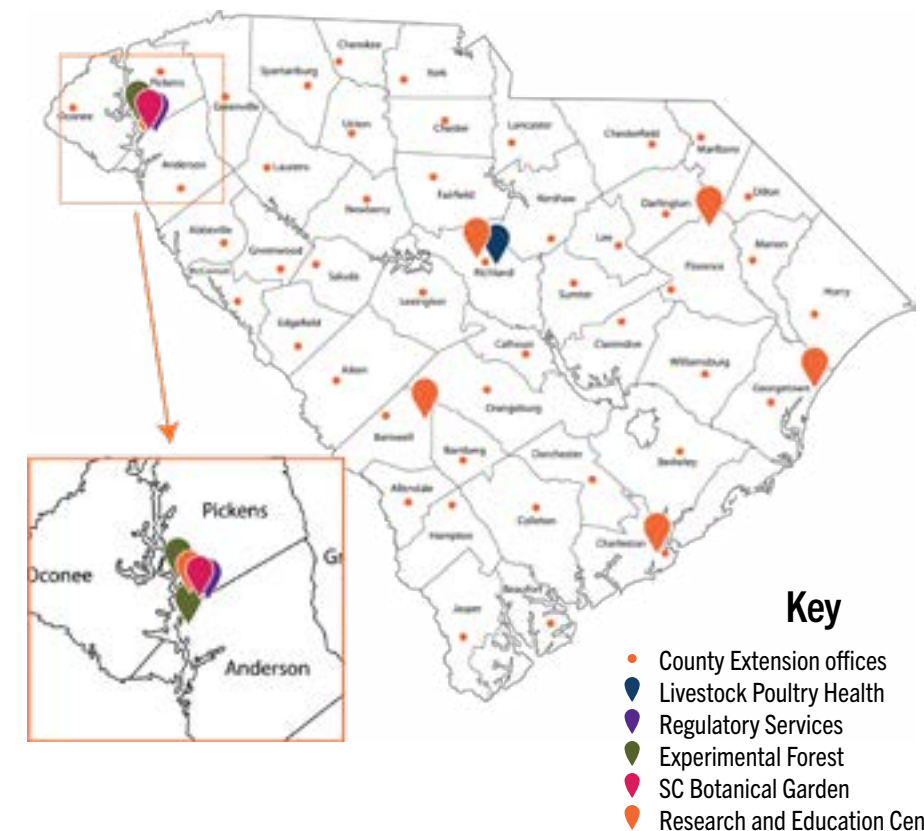
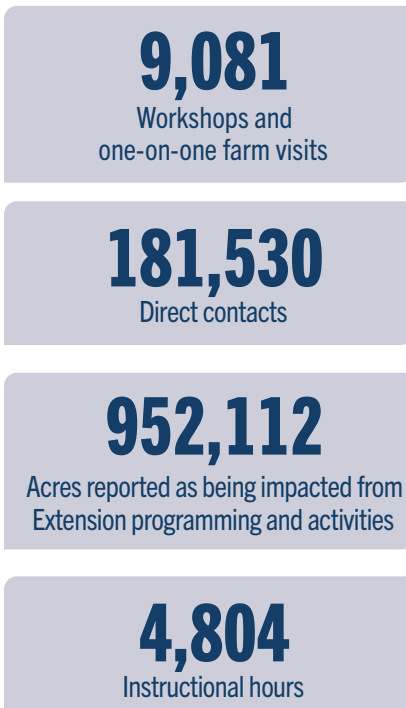
## Research Expenditures

PER T/TT FACULTY, PER YEAR



## LOCAL. EVERYWHERE.

### Extension Impacts



# EXTENSION



**SERVICE  
BUILDS  
COMMUNITY**

Our Cooperative Extension Service is committed to helping improve the quality of life of all South Carolinians. With offices in all 46 counties, Extension is an unbiased, research-based source of information designed to strengthen families and communities, improve stewardship of natural resources and the environment, strengthen connections between people and their food, and expose South Carolina youth to opportunities in agriculture, science, technology, engineering and math.

**CAFLS means community.**



## EELI

A professional development opportunity dedicated to fulfilling Extension's mission, the Extension Emerging Leadership Initiative was created to develop leaders who exemplify professionalism and integrity and inspire others. As it prepares for its fourth cohort, the program has 42 graduates from Clemson Cooperative Extension Service, the College of Agriculture, Forestry and Life Sciences and S.C. State University 1890 Research and Extension, many of whom have obtained advanced leadership roles, mentor others and serve in various impactful capacities.



## Rural Health & Nutrition

The Clemson Extension Rural Health and Nutrition team brings programming on chronic disease prevention and management, family wellness and women's health to the people — with a personal touch. With agents in several S.C. counties, and more coming, these programs are free to the public and focused on health across the lifespan. The Rural Health and Nutrition team regularly conducts programs designed to enhance healthy lifestyles such as WalkSC, Yoga for Everybody, Know Diabetes by Heart and Stirring Up Healthy Cooking.



Clemson's mission as a land-grant university is to educate rural and urban S.C. — and beyond — and the Clemson Extension Home & Garden Information Center delivers unbiased, research-based information by phone, email and at [hgic.clemson.edu](http://hgic.clemson.edu).

There were more than **6.5 million pageviews** last year of the website, which contains over **850 fact sheets** on plant-related topics, nutrition and food safety. Designed

to complement Clemson's network of professionals and volunteers, HGIC also answered more than **10,000 calls** and **6,500 emails** in FY22-23.

During a survey that concluded this year,

- ▶ 97% of users indicated they learned new information.
- ▶ 88% plan to implement one or more recommendations.
- ▶ 31% of those surveyed had not previously sought help from Clemson Extension.

# PARTNERSHIPS AND COLLABORATIONS

## Precision Ag & CU-CAT

Precision agriculture aims to **improve crop yields, optimize resource utilization** (such as fertilizers and irrigation), **reduce labor requirements** and **enhance crop quality** through advanced sensors and data analysis. CAFLS research and Extension support for precision agriculture can be found across the college.

Whether it is autonomous aerial and ground-based vehicles, or precision equipment and robotics, faculty of the **Department of Agricultural Sciences** are committed to facilitating technological advancements for agricultural production. More specifically, departmental research and Extension efforts have resulted in impressive technological advancements such as the development of unmanned aerial

vehicles (UAV) to collect aerial imagery and estimate standing forage crop height and crop density. Researchers also have developed ground-based autonomous vehicles to apply pesticide, engage in variable-depth soil sampling and harvest crops.

Likewise, the college's new **Clemson University Center for Agricultural Technology (CU-CAT)** acts as a hub for researchers and external parties to work together on developing and testing new technologies. For instance, soil compaction is a major problem that affects plant growth and development, resulting in yield losses of up to 50% on some localized, high-traffic areas of South Carolina farms, such as end-rows. Kendall Kirk, Clemson Cooperative Extension Service precision agriculture engineer and director of CU-CAT, and Dan Anco, Clemson Extension peanut specialist, are working with Martin Crouch, Michelin Agriculture account executive, and Steve Rosen, Michelin Agriculture field engineer, to determine if low-pressure tires can help increase yields in cotton and peanut rotations.



## Sonoco FRESH Initiative

The Sonoco FRESH initiative is a multi-disciplinary hub for innovation and research to address the safety, security and sustainability of food. Faculty and student research under the FRESH initiative focus on food production, handling, processing, packaging, transportation, distribution, wholesale, retail, consumer behavior and subsequent recycling and recovery.

FRESH partners with Sonoco (a global provider of a variety of consumer packaging, industrial products, protective packaging, and displays and packaging supply chain services) and RXO (a leading provider of asset-light transportation solutions) to award research grants that address how packaging can help achieve sustainability goals, such as the reduction of food waste. Likewise, every fall the university hosts the Sonoco FRESH Summit — a space for students, researchers, government representatives, industry leaders and policy experts to explore collaborations, solutions and innovative thinking for sustainable food and packaging.

## The National Bobwhite and Grassland Initiative

The National Bobwhite and Grassland Initiative (NBGI) is a range-wide restoration initiative comprised of a broad coalition of experts in bobwhite quail and grassland conservation. The **Department of Forestry and Environmental Conservation (FEC)** has world-class research, teaching and outreach programs in natural resources conservation and is committed to creating work and learning spaces that attract and celebrate a diverse community of scholars across a broad spectrum of cultural identities.

NBGI Director John Morgan believes collaborative habitat restoration with public and private partners stands at the center of the NBGI's storied history across 25 states. NBGI's bobwhite focal area program — the Coordinated Implementation Program, or CIP — is a science-based initiative designed to demonstrate conclusively that populations of bobwhites and other species can be recovered when the proper amount and arrangement of habitat is provided on a landscape scale.

“Science is the guiding light of those efforts designed to minimize the costs of restoration and management while maximizing conservation outcomes measured in numbers of northern bobwhite and grassland birds,” says Morgan. “The Coordinated Implementation Program represents one the nation's few adaptive management frameworks deploying a ‘learn while doing’ approach.”





# ONCE A TIGER, ALWAYS A TIGER

The CAFLS Alumni group was formed more than 25 years ago to provide events and support for the over 15,000 living CAFLS Alumni. You will always have a home at Clemson! We want to help you remember your many experiences and traditions. We invite you to join us at one of our many CAFLS alumni events that take place throughout the year both on and off-campus.

## OUTSTANDING ALUMNI

CAFLS Alumni Board is excited to recognize several of Clemson's outstanding alumni each year for their outstanding service to the College, Clemson and their profession.



**Edgar Woods**

**DISTINGUISHED SERVICE**  
AGRIBUSINESS, 1983

**Andrew Hurley**

**PROFESSIONAL ACHIEVEMENT**  
PACKAGING SCIENCE, B.S. 2006, M.S. 2008  
RHETORIC, COMMUNICATION AND  
INFORMATION DESIGN, Ph.D. 2011

**Mallory Maher**

**YOUNG ALUMNI**  
WILDLIFE AND FISHERIES BIOLOGY, B.S. 2012  
AGRICULTURAL EDUCATION, MagEd 2015  
WILDLIFE AND FISHERIES BIOLOGY, M.S. 2023

**Don Still**

**PROFESSIONAL ACHIEVEMENT**  
AGRICULTURAL EDUCATION, B.S. 1957



**RONNIE SUMMERS**

**PRESIDENT**  
CAFLS ALUMNI BOARD

"Growing up in a family of Clemson Tigers with agriculture in their blood, there never was a question where my college days would be spent. Clemson was the place for me to further my education. Never would I have thought an opportunity to serve the Clemson **CAFLS Alumni Association board** would be in my future 42 years after graduation. What a blessing!"

## SEE YOU SOON

**CAFLS Alumni Golf Tournament**  
Spring annually at Clemson's Walker Course

**CAFLS Alumni Football Tailgate**  
Football season annually

**Clays for CAFLS**  
Late fall annually

### Come see us at these Trade Shows and Expos!

PackExpo • Sunbelt Ag Expo • IPPE • SEWEE • National FFA Convention and Expo • SC Farm Bureau Convention

### WE'D LOVE TO STAY CONNECTED!

Visit our Alumni website to update your information, get details on upcoming events and meet up with us at trade shows and expos.

[clemson.edu/cafls/alumni](http://clemson.edu/cafls/alumni)



## Thank You!



We appreciate our  
Academic Cornerstone donors  
**MICKY & AMY SCOTT**

### Dollars Raised

**\$ 1.5M**  
CAFLS facilities

**\$10,683.50**  
Faculty awards, chairs,  
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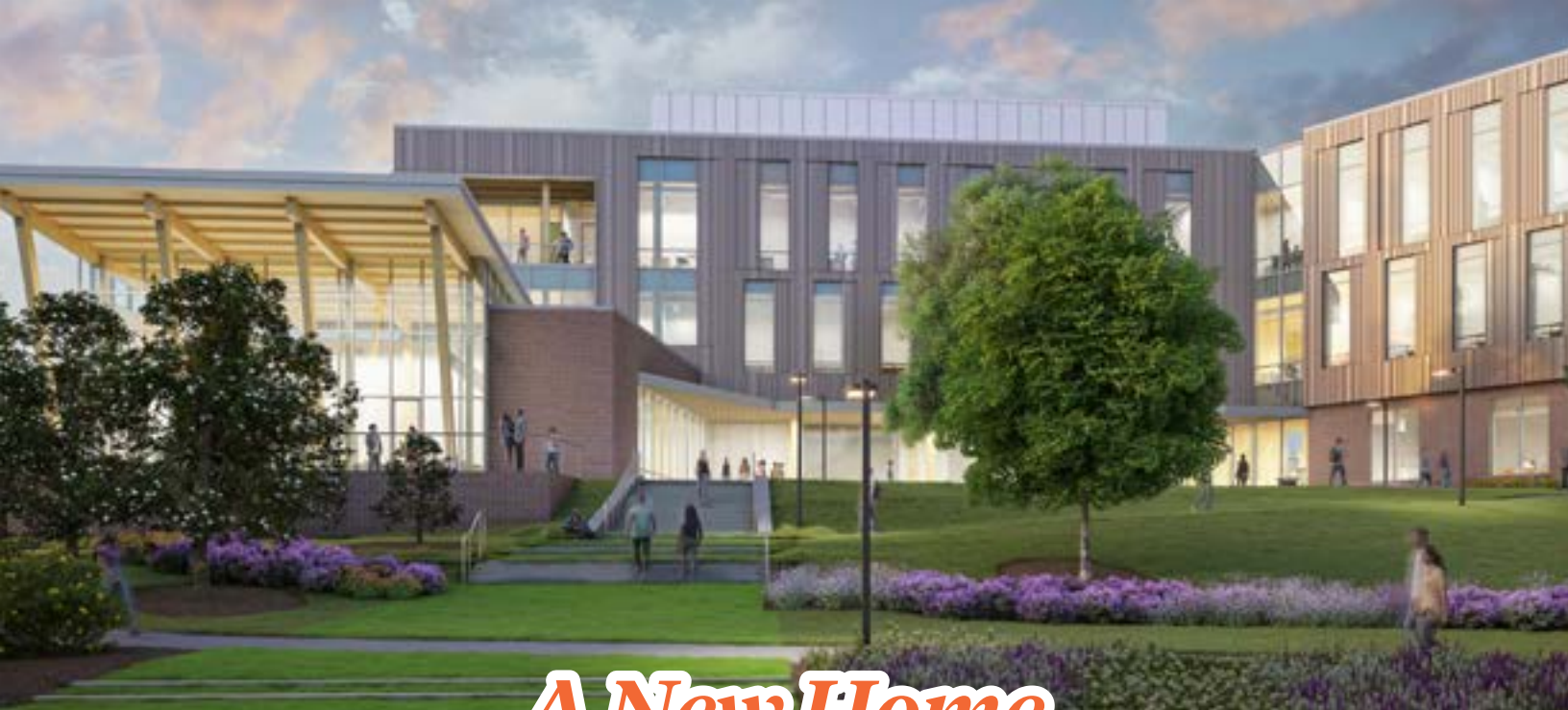
# PHILANTHROPY

## Andy's Cottage



Andy Quattlebaum was passionate about the intrinsic value of the natural world. He found solace in outdoor activities like boating, camping and rock climbing, always appreciating the beauty of Mother Nature. Andy followed in his family's footsteps when he chose to attend Clemson University. Tragically, he passed away in 2019 at age 22. To honor his memory, the Quattlebaum family established the Andy Quattlebaum and Blackwell Family Foundation. Their generous and impactful donation of \$2.7 million supports the creation of Andy's Cottage at the Belle W. Baruch Institute

of Coastal Ecology and Forest Science, providing housing for students and researchers. The family also initiated the Andy Quattlebaum Endowed Presidential Scholarship, providing full-tuition support to students. Through these generous contributions, Andy's legacy lives on, impacting Clemson students, conservation efforts and community enrichment, and mirroring the Quattlebaum Family's commitment to preserving and enhancing the environment for future generations.



# A New Home for Forestry & Environmental Conservation

There has never been a more important time to establish a new Forestry and Environmental Conservation (FEC) building on Clemson's campus. The need for such a facility is driven by the escalating environmental and natural resource-based challenges facing our world today and the urgent demand for trained professionals to address these problems.

Industries and consumers worldwide have become increasingly worried about preserving the environment, and sustainable forestry and natural resource practices are a vital part of this effort. Carbon dioxide emissions are a significant factor in climate change, which is why forests play such a crucial role in mitigating its effects. They absorb carbon dioxide from the atmosphere, provide habitat for countless species and support biodiversity. However, significant human development threatens our ecosystems, and opportunities for enhanced forested ecosystems can play a major role in carbon dioxide sequestration and storage.

More than **90,000 people in S.C.** owe their employment to the forestry industry. The forestry industry is ranked number one in jobs, number two in labor income and number three in direct economic output in the state. Natural resource-based sectors **contribute nearly \$57 billion annually** to the state economy, and economic activities are increasing 15 percent per year. The forests in S.C. do more than nourish us, however. They also provide vital environmental services, such as water and air cleanliness, and promote biodiversity.

The Department of Forestry and Environmental Conservation within CAFLS plays a vital role in supporting natural resources and promoting healthy ecosystems in S.C., the nation and beyond. Through our teaching, research and outreach programs, we aim to nurture a diverse group of students and faculty.



**“The new building will allow the department to provide exceptional learning experiences for its students and exceptional research facilities for its faculty — both are essential as we continue to serve and contribute to the expanding forestry and natural resources economic sector of the state.”**

**TODD PETTY, CHAIR**  
DEPARTMENT OF FORESTRY AND ENVIRONMENTAL CONSERVATION

## OUR PSA PARTNERS

“Thank you to our PSA partners for all their contributions to Clemson University and the citizens of South Carolina”

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INTERIM DEAN



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*College of*  
**AGRICULTURE, FORESTRY  
AND LIFE SCIENCES**

[CLEMSON.EDU/CAFLS](http://CLEMSON.EDU/CAFLS)

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