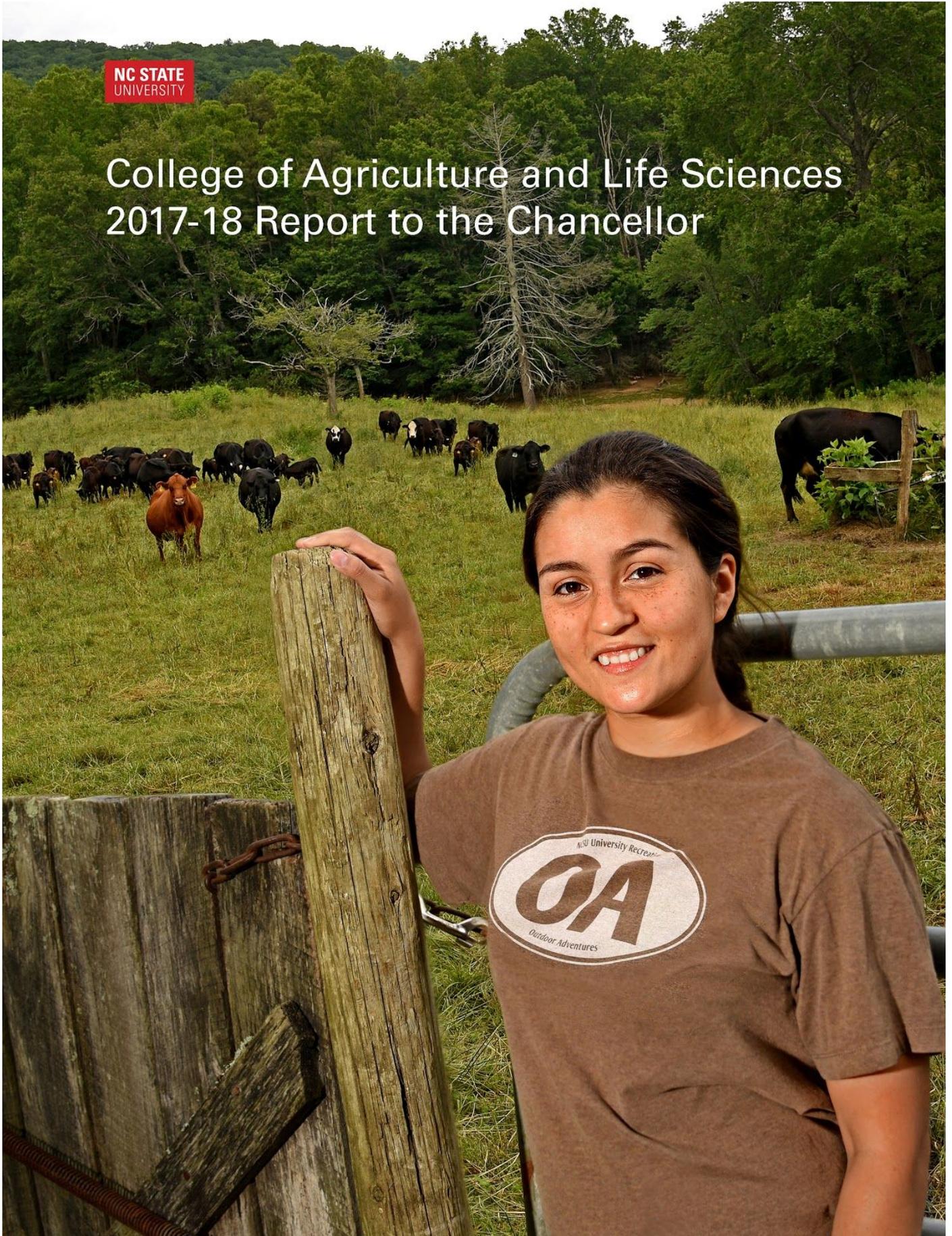


NC STATE
UNIVERSITY

College of Agriculture and Life Sciences 2017-18 Report to the Chancellor



2017-18 Annual Report to the Chancellor College of Agriculture and Life Sciences

In 2017-18, the College of Agriculture and Life Sciences made significant progress in reaching the university's strategic goals of enhancing student success, scholarship and research, organizational excellence and local and global engagement. This report highlights these strategic improvements as well as major changes, achievements and recommendations for the future.

1. Enhance the success of our students through educational innovation

Rural student access and admissions remains an important issue for CALS and NC State, but we are making substantial gains through a multifaceted approach in cooperation with the university. Our efforts range from pre-college activities such as ASPIRE and Nominate a Student to our pathways to admissions: 4-year fall, 4-year spring (STEAM Connection), Agricultural Institute and the CALS PackTrac program. The results have been remarkable: In 2018, we had a greater percentage of Tier 1, or rural, applicants admitted than Tier 3, or urban, applicants. Our alternative pathway programs are providing more students with opportunities to attend NC State.

Category	Tier 1	Tier 2	Tier 3
Accepted fall	47%	47%	46%
Fall admission (no.)	57	229	316
STEAM Connection (no.)	26	71	64
Total (% , no. of applications)	68% (83)	61% (300)	56% (380)

The "Pathways to CALS" are as follows:

- **Fall Freshmen.** The largest number of students come into CALS as freshmen in the fall. This remains the most popular pathway, with 446 incoming freshmen for 2018. However, we expect continued growth in the alternative pathways listed below.
- **Agricultural Institute.** The AGI is for students who desire career-specific training to get ahead or who are considering starting or taking over a small business. There is a process for appropriate AGI students to transfer to the 4-year programs. The Agricultural Institute will welcome approximately 140 students this fall.

- **STEAM (Spring) Connection.** The unique Student Transition Enrollment Advising and Mentoring Connection program combines an optional summer session at NC State with a fall semester of classes at a North Carolina community college or other institution. Students are admitted the spring semester after high school graduation. Instead of community college, Spring Connection students can take a CALS-related internship position, travel abroad in an agriculture-related opportunity, or work full-time. We will have 104 freshmen starting their NC State coursework in the spring 2019 term. Most are attending community college in the fall.
- **CALS PackTrac.** We are partnering with community colleges to provide 1+3 and 2+2 admissions paths to CALS. Through the program, students get personalized advising support and are guaranteed admission to NC State in our high-need majors if they maintain a 3.0 GPA and have 30 transferable hours. We expect about 250 students to come to CALS from other colleges and universities in fall 2018 and spring 2019.

Another CALS Academic Programs effort is the **Nominate a Student** program. It gives teachers, advisors and other stakeholders an easy-to-use process to tell us about students who would be great for CALS. We received over 600 nominations for 233 unique students (many students were nominated more than once). Of those, 57% of the seniors were from Tier 1 and 2 counties, and 68% were applying to our high-need majors.

Applications to CALS were up 11% from the previous year and increased for all CALS programs except for two. Our most popular program continues to be Animal Science with 53% of applications. Acceptance rates for fall averaged 45% for the college and ranged from 34% for Agricultural & Environmental Technology and Agricultural Education to 87% for our newest major, Agroecology and Sustainable Food Systems. Yield averaged 43% and ranged from 32% for Biochemistry to 78% for Agroecology and Sustainable Food Systems. For Spring Connection, 7.4% of applicants were admitted and yield averaged 58% across the college.

2. Enhance scholarship and research by investing in faculty and infrastructure

CALS grew in 2017-18: The college saw a net increase of 22 new faculty members addressing important CALS research areas and growing much stronger networks with other NC State colleges. This includes faculty members

hired in traditional disciplines, plus those hired through both an ongoing, three-year partnership with the NC State Provost and through the Chancellor's Faculty Excellence Program (CFEP).

When it comes to infrastructure, CALS is making headway on creating a world-class plant sciences building on the university's Centennial Campus as well as a Food Processing Innovation Lab at the North Carolina Research Campus in Kannapolis.

Meanwhile, through internal seed funding, CALS continues to invest strategically in team science. This year CALS' two main internal grant programs provided faculty over \$185,000 in seed funding that leveraged an additional \$146,000 in external cost share to advance novel interdisciplinary research. These include the Dean's Enrichment Stakeholder, Academic Innovation, and Conference grant programs (funded 7 projects, totaling \$167,525) and the CALS Faculty Innovation Big Ideas grant program (funded 9 projects, totaling \$18,000).

3. Enhance interdisciplinary scholarship to address the grand challenges of society

With a fast-growing world population, experts say that farmers will need to produce 70% more food and fiber by 2050 than they do today. To meet that challenge, they'll need new science-based technology and practices that enable them to achieve higher yields on less land, using less water, while safeguarding the environment. For CALS researchers, teachers and Extension specialists, this means working together in new ways across disciplines – and training students to do the same.

Examples of CALS' efforts to take an interdisciplinary approach to addressing food and agriculture challenges are the North Carolina Plant Sciences Initiative, the Food Processing Initiative and the Food Animal Initiative. These are highlighted in the [Initiatives](#) section of this report.

Another example is the proposed Center for Excellence in Regulatory Sciences for Agriculture. Key stakeholders -- including the U.S. Department of Agriculture, the U.S. Environmental Protection Agency, international regulatory authorities and national leaders in industry and non-governmental agencies -- have been engaged in the development process. CERSA's three pillars are education, research, and engagement. Dr. Danesha Seth Carley, of

CALS' Department of Horticultural Science, will be the director. Bayer Crop Science has committed \$150,000 to support the proposed center's development. We envision that CERSA will be administered under the umbrella of the [North Carolina Plant Sciences Initiative](#), due to the diversity of disciplines and stakeholders involved in the center's activities.

4. Enhance organizational excellence by creating a culture of constant improvement

Many North Carolina leaders and influencers are unaware of the positive impact that NC State, CALS and Extension have on the state. As a result, we are not top of mind among legislators or industry leaders when it comes to investing new funds in key programs. We Grow NC is a rural-focused campaign to showcase NC State's role in growing North Carolina talent, advancing economic opportunities, and developing and delivering local solutions based on agricultural research and Extension. The six-month TV, radio and digital media project highlights how what we think and do improves our rural communities through discovery, education and outreach.

In another effort to enhance organizational excellence, the CALS Business Operations (CBO) has developed college-level standard operating procedures and formed internal collaborative teams to solve complex business transaction challenges across multiple units and academic departments. The CBO also holds bi-monthly business partner meetings for departmental staff to learn about changes in business processes, receive training and provide feedback on business operations. Recent survey results from FY2018 reveal measurable improvement in CBO customer satisfaction, with a significant majority of respondents now reporting being satisfied or very satisfied with CBO's services.

5. Enhance local and global engagement through focused strategic partnerships

Local, regional, national and international partnerships are critical for CALS and its stakeholders. Here are a few ways that NC State Extension worked in 2017-18 to improve North Carolina lives, land and economy:

- **NC State Hemp Research and Extension:** NC State began planting six varieties of the crop in 2017 at several research stations across the state to help address grower inquiries and explore the feasibility of hemp crops. NC State Extension, in partnership with NCDA&CS and N.C. A&T, is working to build our knowledge of hemp

production and marketing, while helping reduce the risk associated with entering a new venture for farmers.

Read more at <https://go.ncsu.edu/HempResearch>.

- **Reshaping the Landscape: Women Impacting Agriculture:** Extension's Lee County Center launched this new program to highlight the valuable contributions of women to agriculture. A monthly series of articles and videos profiled women in a variety of agriculture-based roles, from Tina Gross, co-owner of Gross Farms and president of the N.C. Agritourism Networking Association, to J.J. Faulk, an agricultural entrepreneur, whose J.J.'s Place store expanded to a second location. Read more at <https://go.ncsu.edu/WomeninAg>.
- **4-H Electric Congress Celebrates its 70th Year.** In 2017, 175 youth and their 4-H leaders and Extension agents gathered to celebrate the 70th anniversary. Together they learn about the safe use of electricity, renewable energy technologies and energy conservation through activities like building solar-powered model cars and soldering circuit boards. Read more at https://go.ncsu.edu/4-H_EC70.
- **Homegrown Educates, Connects North Carolinians.** [Homegrown](http://go.ncsu.edu/Homegrown), a new educational video series from NC State Extension is a digital platform with educational videos on gardening and home horticulture, agriculture and farming practices, and the safe preparation and preservation of local foods. Hands-on video segments are grouped into three categories: In The Garden, In The Kitchen and On The Farm. Visit the series website at <http://go.ncsu.edu/Homegrown>.

In addition to Extension partnerships, CALS also has academic and research collaborations. For example, in September 2017, a new 5-year agreement with the U.S. Geological Survey made NC State the lead institution for the entire southeast for research related to understanding and adapting to climate change. Other institutions participating in **USGS-NCState Southeast Climate Science Center** are Duke University, University of Tennessee - Knoxville, Auburn University, University of South Carolina and University of Florida. This new 2017 authorization provides approximately \$5 million in funding primarily for graduate student education in the Global Change Fellows program available to the 70 faculty affiliates in five NC State colleges.

Meanwhile, CALS' research arm, the North Carolina Agricultural Research Service, interacts with over 80 active commodity organizations; state and federal agriculture and life sciences agencies; agricultural advocacy

organizations such as NC Farm Bureau, NC State Grange, and NC Biotechnology Center; and variety of agricultural and life sciences companies.

NCARS' research partnerships director had meetings and calls with 46 existing and potential industry partners, including major agricultural biotech companies as well as mid-tier companies and startups. Meetings with 20 new prospects led to one new research agreement (White Dog Labs) and three Animal Food & Nutrition Consortium memberships (Phytobiotics, Kay Dee Feed, Amlan/Oil-Dri).

While CALS partnerships focus largely on North Carolina, they also touch people throughout the world. In March 2018, for example, a workshop funded by Novo Nordisk Foundation drew 32 scientists from NC State and three other universities to the Novo Nordisk Conference Center at Favrholm Campus in Hillerød, Denmark. In South America, a new agreement between NC State and PINIA (equivalent to the USDA) in Peru will foster faculty exchange. One additional MOU with CONCYTEC (equivalent of the US National Science Foundation) for capacity building and research is also in the works.

Another international effort to advance plant sciences brought a delegation of scientific leadership and researchers from VIB, a leading plant science and entrepreneurial research institute in Belgium, to Raleigh in October.

A. Initiatives

In 2017-18, CALS continued to press forward with efforts to make a difference on issues important to our stakeholders. In addition to the [Student Access Initiative](#) outlined earlier, the college has four transformative initiatives:

The **North Carolina Plant Sciences Initiative** aims to make our state the world's leading hub for plant sciences. To realize that potential, CALS has partnered with the university, government, and agricultural and bioscience industries. In August 2017, Stephen Briggs was selected to serve as the launch director. Then in September, the NC Plant Sciences Initiative Task Force Proceedings were made available to the public at

<http://go.ncsu.edu/PSITaskForcesReport>. The report captures the collective work of the four NC PSI task forces – governance; scientific focus; advocacy and fund development; and workforce development and public awareness. Three of these task forces have completed their work, while one, advocacy and resource development, continues fundraising efforts. By July 2018, the building project remained on budget and on time for a September 2019 groundbreaking.

The North Carolina Food Processing Initiative is a partner-driven project at NC State to grow North Carolina's food manufacturing economy. The initiative got a boost in 2017, when Golden LEAF Foundation gave a grant of \$2.2 million to buy equipment for the North Carolina Food Innovation Lab at the North Carolina Research Campus in Kannapolis. In July 2018, Bill Aimutis came on board as lab director. Aimutis is a research-and-development expert with more than 30 years of experience in corporate and academic settings.

The Food Animal Initiative builds on North Carolina's leadership in livestock and poultry production to advance the sciences and technology farmers need to meet a growing worldwide demand for meat. CALS has partnered with the College of Veterinary Medicine in this effort. In 2017-18, those working on the initiative identified 170 faculty members across the university with scholarly interest in food animals. Faculty workshops were held in January and June 2018 to determine the initiative's priorities.

The Leadership Initiative is building the next generation of leaders in agriculture and life sciences. CALS offers leadership learning opportunities for a wide range of stakeholders -- faculty and staff members, students, farmers, commodity group leaders, agribusiness executives and others. In addition to the established CALS Proud I and II program for staff, the CALS Leadership Office implemented several new programs:

- **Fall Student Leaders Workshop and \$1,000 Student Leaders Challenge:** Through a half-day workshop, officers from 23 CALS student clubs and other organizations received training related to leadership styles, goal setting, philanthropy and more.
- **Lunch and Learn Seminars:** CALS Leadership Program partnered with CALS Personnel and Extension Organizational Development to offer hourly seminars each month.

- **Agricultural Leadership Learning Institute (ALLI) for Faculty:** Through a 2017-18 trial run for this new program, Crop and Soil Sciences faculty participated in eight 1.5-2 hour sessions on such leadership topics as communication, time management, conflict management and teamwork.
- **Agricultural Leadership Learning Institute (ALLI) for Graduate Students:** This inaugural program is designed to provide professional and leadership development skills for nominated Ph.D. students in CALS. Each month, they took part in a 3-hour session.

B. Diversity and Inclusion

In 2017-18, CALS' Office of Diversity and Inclusion developed a strategic plan to engage and respond intentionally to the social and demographic changes transforming our state, nation and world. The strategic plan was developed to integrate efforts at achieving inclusive excellence into the core aspects of the college – its academic priorities, leadership, community engagement and organizational cultures.

The diversity and inclusion plan provides a foundation to create a college culture of inclusion aimed at equity and social advocacy, respecting and valuing diverse backgrounds, promoting opportunities for students to pursue work that addresses concerns within science and society, engaging with our communities and promoting an inclusive culture that involves leadership, faculty and staff.

The Office of Diversity and Inclusion held or participated in more than 25 events on topics related to diversity, inclusion and cultural competency. Especially noteworthy, CALS served as an academic co-sponsor for the 2018 National Minorities in Agriculture, Natural Resources, and Related Sciences (MANRRS) Conference in Greensboro. Our contributions to this year's conference resulted in the best-attended MANRRS conference in 33 years.

C. Instructional Program Advances

CALS is working to increase the number of enrolled graduate students. While CALS' **graduate programs** saw a 15.4% increase in applications this year, admissions are on the same level as last year. The limitation appears to be funding and faculty numbers. The North Carolina Agricultural Research Service and NC State Extension provided

funding to add first-year assistantships. Nine MS assistantships (\$171,000) and 6 PhD assistantships (\$126,000) were awarded in the 2017-18 fiscal year. This is in addition to traditional graduate student funding. As of Spring 2018, the college provided \$7.93 million to support 376 students with assistantships.

For 2018-19 we also have created a new funding program, **CALS Assistantship Assistance Program (CAAP)**, which is intended to help faculty bring in and support the best graduate students and support faculty research, extension and academic programs. The program will fund the first or last semester (MS) or year (PhD) of a student's program to allow faculty to bring in another student on the same external funds. It also provides bridge funding for one semester (MS) or one year (PhD) for currently enrolled students as a safety net for faculty.

Meanwhile, we are creating a national **Foundation for Food and Agriculture (FFAR) Fellows program**. It's a three-year interdisciplinary program that will enhance graduation student success. In fall 2017, CALS received a \$5.5 million grant to combine cutting-edge food and agriculture-related research with innovative professional development designed to help PhD students be career-ready upon graduation. FFAR is providing 50% of the funding, which is matched by industry. The first cohort of 17 students, from 14 universities in the U.S. and Canada, has been selected and will be on campus in August 2018 for the first professional development residential session.

D. Research

The North Carolina Agricultural Research Station continues to have a broad and deep impact in our state and beyond. NCARS has 301 research scientists (175 FTE), 255 graduate assistants (107 FTE), 105 post docs (92 FTE); 209 technicians and support staff (190 FTE); and 150 research assistants and associates as well as researchers (137 FT). In addition, eight NC State University centers operate under the NCARS umbrella.

NCARS faculty members used the state's 18 agricultural research stations across the state and 10 NC State field lab facilities to support over 1,200 acres of research. We also hosted 22,000 attendees at field days and other events.

In all, NCARS faculty had 67 IP disclosures; filed 84 patents; were issued 32 patents; produced 926 peer-reviewed research publications; and won grants totaling \$65,974,249. Competitive awards per research scientist FTE was

\$376,996 for the year. From May 1, 2017, to April 30, 2018, research expenditures totaled \$135,803,445.

Sponsored research grants increased significantly.

CALS faculty published over 950 peer-reviewed journal articles and conference proceedings, with most appearing in disciplinary journals. High-profile papers in top journals covered discoveries ranging from timing of DNA replication in the entire corn genome and novel quantitative disease resistance to carrot genome assembly, species biomass contributions in microbial communities, and the genetic basis for leaf shape in cotton. Here are some recent problem-solving contributions CALS faculty have made:

- **Developing new varieties of ornamental landscape plants:** Efforts in the Department of Horticultural Science contribute almost \$4 million in retail value to NC's largest crop commodity, ornamental landscape plants.
- **Commercial turfgrass cultivar released:** NC State scientists combined conventional breeding methods with modern genomic tools to improve germplasm in five turfgrass species. To date, over 5,000 mutants have been generated, and a trial with 80 advanced lines is under evaluation. A new bermudagrass ("TifTuf") released in 2015 became commercially available in 2017.
- **Turkey growers treat blackhead disease without drugs or antibiotics:** Cases of blackhead disease in poultry have reached epidemic proportions over the last 30 years. NC State research has uncovered a link between gut health and blackhead disease in turkeys and identified a subpopulation of turkeys resistant to the disease. Insights gained from this research have given growers ways to treat the disease without drugs or antibiotics.
- **Sensor technology to improve water use efficiency on farms:** NC State researchers are exploring the use of fiber-optics-distributed temperature sensing to monitor environmental processes on farms. This technology could lead to improved drought resiliency and profitability of ag production systems by reducing water, energy, and fertilizer use and improving yield.
- **Protecting human health from urban pests.** CALS researchers have made groundbreaking discoveries in cockroach and bedbug behavior, leading to new insight in strategies for pest control. Innovative pest management interventions have shown positive correlations in reducing asthma morbidity in children.

Recent NC State work has revealed that homes infested with bedbugs have over 20 times more histamine levels than in uninfested areas, greatly raising the potential for skin reactions and respiratory problems. Dr. Coby Schal, who leads this research group, and his collaborator were recently awarded the 2018 US Housing and Urban Development Secretary's Award for Healthy Homes for their research innovation.

- **Genomic tools to enhance health-promoting qualities of fruits and vegetables:** By developing genomic resources for fruit and vegetable crops and using these tools to identify DNA markers associated with genes controlling phytonutrient accumulation, CALS researchers have improved health-promoting qualities of fruits and vegetables. Our researchers also have dramatically enhanced understanding of the blueberry genome by completing the first chromosome-scale genome assembly for the blueberry crop.

To support CALS researchers as they seek to solve such problems, NCARS has a grant proposal developer as well as two CALS Advancement liaisons for fundraising. In 2017-18, the proposal developer managed the submission of 19 faculty proposals totaling over \$38 million in sponsored research funding requests; helped 15 other faculty members; assisted junior faculty in developing funding strategies, identifying funding sources, and developing and writing their first major competitive grant. Four junior faculty members submitted DOD/DARPA and NIH Early Investigator programs, and overall CALS faculty submitted nine NIH proposals, up from three the previous year.

Meanwhile, CALS Advancement liaisons to NCARS raised a total of \$3.2 million for research, faculty and student support. Primary focus areas were:

- **NC Plant Sciences Initiative:** In the first year of tracking Golden LEAF Foundation metrics, gifts of \$7,996,138 for the PSI were reported in calendar year 2017. Additional gifts outside those counted for Golden LEAF include a \$50,000 in-kind gift of controlled environment equipment, \$625,000 in Oracle cloud credits, and \$101,057 Novo Nordisk Foundation support for a faculty workshop.
- **NCALS Research Foundation Endowment Initiative:** CALS Advancement is also working to raise an additional \$675,000 to build the research foundation's endowment to \$1.2 million in support of competitive awards for interdisciplinary research projects led by CALS faculty members.

- **Stuber Challenge:** This \$2.5 million initiative, designed to increase support for NC State's plant breeding program, was launched in response to a challenge from Charlie and Marilyn Stuber based on their 2016 gift to fund a plant breeding professorship.

E. Extension

North Carolina is growing – fast. To address the needs of an increasingly diverse and dynamic population, we provide trusted tools and resources for a wide range of topics, from healthy eating, local foods and home gardening to agricultural production, pest management and youth development. NC State Extension offers more than 13,000 educational programs, offices in all 100 counties and a network of 50+ websites serving over 2 million visitors each year.

County centers are staffed by 594 NC State professionals, with an additional 218 Extension faculty working on the NC State campus. Roughly 60% of CALS' research faculty have Extension appointments.

In 2017, Extension increased our annual economic impact in North Carolina to nearly \$300 million. Extension provided face-to-face services to 1.9 million North Carolinians through 13,000+ educational programs statewide, improved the health and well-being of ~115,000 NC citizens through food and nutrition programs and prepared more than 263,000 youth – the leaders of tomorrow – to be responsible, engaged citizens through our 4-H efforts.

Extension agents' overall impact in key program areas in 2017-18 included the following:

- In agriculture, 205 county agents made 681,580 face-to-face contacts, while 225,219 producers adopted Extension's best management practices, resulting in \$116.5 million increase in net income.
- In food and nutrition, agents made 319,048 face-to-face contacts. They helped nearly 28,000 people boost their physical activity and another 49,000 people increase their consumption of fresh fruits and vegetables.
- Our 4-H youth development programs enriched the lives of more than 263,000 young people (including 12,000 youth at our three statewide camps), helping them develop life skills and gain deeper knowledge on a

range of subjects, including science, technology, engineering and math (155,837). We also equipped 3,740 teachers to deliver quality, research-driven STEM lessons to their students.

Extension's statewide network of centers and diverse partnerships managed the following successes for North Carolina's rural communities:

- Extension provided educational services to nearly 5 million North Carolinians from Tier 1 and 2 counties (our state's most economically-challenged and often rural regions)
- 32,000 producers in rural communities adopted Extension best management practices, adding \$115.3 million in net income (Practices ranged from business management and marketing to pest control and production.)

View Extension's full annual report at <https://go.ncsu.edu/ExtensionImpacts>.

F. Faculty Honors, Awards and Recognition

CALS faculty members are highly respected, recognized and honored around the world and at home in North Carolina. Of special note is **Dr. Rodolphe Barrangou's** election to the National Academy of Sciences and his receipt of its 2017 National Academy of Sciences Award in Molecular Biology. Barrangou is the Todd R. Klaenhammer Distinguished Scholar in Probiotics Research and associate professor in the NC State Department of Food, Bioprocessing and Nutrition Sciences. Meanwhile, six faculty members -- John Beghin, Mike Boyette, MaryAnne Drake, Roderick Rejesus, David Shew and Steven Washburn -- were named fellows of their respective national or international professional societies.

2017-18 award winners, by their units and departments, are:

Agricultural and Human Sciences: Dara Bloom, Outstanding Subject Matter Program Developed by a Team Award, NC Association of Cooperative Extension Professionals; Lorelei Jones and Annie Hardison-Moody, Priester Award for Outstanding Community Program, National Health Outreach Conference; Travis Park, NC State Outstanding

Teacher Award; Barbara Kirby, Distinguished Alumna, Virginia Tech College of Agricultural and Life Sciences; Joy Morgan, NC State New Adviser Award; Koralalage Jayaratne, CALS Outstanding Graduate Instructor Award

Agricultural and Resource Economics: John Beghin, Research Discovery Award, European Association of Agricultural Economists, and Fellow, Agricultural and Applied Economics Association; Barry Goodwin, NC State Holladay Medal; Julianne Treme, NACTA Educator Award; Roderick Rejesus, Agricultural and Resource Economics Review (ARER) Fellows Award

Animal Science: Sung Woo Kim, American Feed Industry Association Award in Non-Ruminant Nutrition Research, American Society of Animal Science (ASAS); Lori Stroud, Honorary State FFA Degree; Matthew Poore, NC State Alumni Outstanding Extension and Outreach Award, NC State Outstanding Extension Service Award and Academy of Outstanding Faculty Engaged in Extension, and Merit Award, ASAS Southern Section; Daniel Poole, ASAS Young Animal Scientist Award, Southern Section, and NACTA Educator Award; Shannon Pratt Phillips, Outstanding Educator Award, Equine Science Society; William Flowers, ASAS Distinguished Teacher Award; Paul Siciliano, ASAS Equine Science Award and NACTA Educator Award; Steven Washburn, Fellow, American Dairy Science Association, and Fellow, ASAS

Biological and Agricultural Engineering: Mike Boyette, Fellow, American Society of Agricultural and Biological Engineers (ASABE); Garey Fox, ADS/Hancor Soil & Water Engineering Award, ASABE; Wenqiao (Wayne) Yuan, Alexander von Humboldt Foundation Fellowship; Natalie Nelson, Teaching Fellow, American Society of Civil Engineers ExCEED, and 2018 Class of ASABE New Faces of Engineering for Professionals; Barbara Doll, Mid-Atlantic Sea Grant Award for Outstanding Outreach; Francois Birgand, NC State University Faculty Scholar

Center for Integrated Pest Management: Frank Louws, American Phytopathological Society (APS), Excellence in Regulatory Affairs and Crop Security

Crop and Soil Sciences: Susana Milla-Lewis, NC State University Faculty Scholar

Entomology and Plant Pathology: Rick Brandenburg, President-Elect, American Peanut Research and Education Society; Lena Quesada, APS Hewett Early Career Award; Jean Ristaino, Fulbright Scholar; Anna Whitfield, APS Syngenta Award; Steven Frank, Friends of Southern IPM Bright Idea and NC State University Faculty Scholar; Hannah Burrack, NC State University Faculty Scholar; Coby Schal, NC State Research Leadership Academy, Academy of Outstanding Faculty Mentors and Outstanding Graduate Faculty Mentor Award in the Biological and Life Sciences; Dominic Reisig, NC Association of Cooperative Extension Specialists Award and State Grange Search for Excellence; James Walgenbach, Outstanding Extension Service Award and Academy of Outstanding Faculty Engaged in Extension; David Shew, Fellow, APS; Frank Louws, APS Excellence in Extension

Food, Bioprocessing and Nutrition Sciences: Natalie Cooke, Outstanding New Faculty Advisor Award, National Academic Advising Association, and CALS Outstanding Faculty Advisor; Suzie Goodell, USDA Excellence in College & University Teaching in Food & Ag Sciences; Lee-Ann Jaykus, USDA NIFA Partnership Award; Clinton Stevenson, NACTA Educator Award and APLU Innovative Teaching Award; Van-Den Truong, National Research Impact Award, National Sweetpotato Collaborators Group; MaryAnne Drake, Fellow, Institute of Food Technologists

Horticultural Science: Lucy Bradley, Extension Materials Award: Bulletin; Extension Materials Award: website; and Extension Materials Award, Book; and Distinguished Achievement Award, Human Issues in Horticulture, American Society for Horticultural Science (ASHS); Thomas Ranney, Luther Burbank Award, ASHS, and Direct Gardening Association Green Thumb Award for *Hydrangea arborescens* 'NCHA5' Invincibelle Wee White; Gina Fernandez, Julian C. Miller Distinguished Research Award and Blue Ribbon Extension Publication Award, ASHS; Brian Jackson, 40 Under 40, Greenhouse Production News, and Award of Merit, International Society for Horticultural Science

Molecular and Structural Biochemistry: Jose (Trino) Ascencio-Ibanez, NC State Outstanding Global Engagement Award; Charles Hardin, Alumni Distinguished Undergraduate Professor Award

North Carolina Cooperative Extension: James Hamilton, Outstanding North Carolina Cooperative Extension Educator, Carolina Farm Stewardship Association

Plant and Microbial Biology: Jose Alonso, NC State Alumni Outstanding Research Award; Linda Hanley-Bowdoin, NC State Outstanding Global Engagement Award

Prestige Poultry Science: Elaine Bohorquez, CALS Outstanding Graduate Instructor; Matthew Livingston, Student Research Award – Physiology, Southern Poultry Science Society; Edgar Oviedo, NC State Outstanding Global Engagement Award; Lynn Worley-Davis, Honorary State FFA Degree and CALS Outstanding Contributions to Teaching and Advising

G. Fundraising

2017-18 has been a successful fundraising year for CALS. The College Advancement team continues to sustain a consistent level of performance, despite a leadership transition and multiple vacant positions:

- FY18 commitments total \$41.11 million. CALS also has commitments of \$320.8 million toward its \$400 million comprehensive campaign goal.
- This total includes a \$2.2 million commitment from the Golden LEAF Foundation for NC Food Innovation Lab equipment, a \$2.9 million bequest for horticulture scholarships and a \$1.2 million bequest for plant breeding.

Successes include:

- Total of \$19.4 million in support for distinguished professorships, named facilities, student scholarships and other bequests.
- The direct coordination of or planning assistance for 80 events, with more than 7,000 attendees in Raleigh and surrounding areas. These events include the Randleigh Dairy Heritage Museum Dedication and Dairy Education Center and Creamery Groundbreaking, the Talley Turkey Unit dedication, the NC Plant Sciences Initiative Stakeholder Celebration, and the 26th Annual CALS Tailgate, which drew over 1,200 people.

H. Administration: Achievements and Staff Changes

2017-18 saw significant change for CALS Administration. Harry Daniels was appointed Senior Associate Dean for Administration, and Sonia Murphy was named the new Assistant Dean for Advancement. Natalie Hummel is the new Assistant Director of the Agricultural Research Service. Sheri Schwab became the Interim Vice Provost for Institutional Equity and Diversity, leaving her role as Extension's Director of County Operation. In addition, new department heads were hired for one third of the college's 12 departments: K.P. Sandeep, Food, Bioprocessing and Nutrition Sciences; Derek Aday, Applied Ecology; Robert Franks, Department of Plant and Microbial Biology; and Frank Louws, Horticultural Science.

I. Recommendations and Concerns for the Future

The recruitment and retention of new faculty is a continued driver of our efforts. Poor quality facilities and equipment (both on-campus and at our outlying facilities), requires us to be creative and resourceful in using our limited and decreasing state support for research, teaching and Extension. Other concerns include:

- CALS needs budget flexibility to carry over a portion of state funds across fiscal years to bank funding for large purchases critical to research, including lab and research station equipment, supplies and startup funding. Budget management could also be improved with flexibility to spend against the promise of federal funding.
- The current structure of the Graduate Student Support Plan is a significant hurdle to the recruitment of international graduate students. Limited funds to attract outstanding graduate students hinders research.
- CALS has many outdated research buildings on campus, field labs and research stations. The cost of renovations has increased dramatically and adds significantly to startup packages for new faculty. A better plan is needed.
- CALS is unable to spend against federal funds based on commitment of dollars (prior to allocations). Most peer institutions allow spending based on federal commitments and do not delay spending based on allocation dates.

- Years of budget reductions and reversions have left NCARS with an increasing number of gaps in research areas in which we have implicit and explicit agreements with state government and stakeholders to cover, including research areas associated with significant economic potential in North Carolina.
- The Office of Sponsored Programs and Regulatory Compliance Services is challenged to complete negotiations on sponsored research agreements, especially master agreements, in a timely manner. Although lag times occur on both sides of negotiations, timely communication and completion of agreements is critical to developing new relationships and sponsored research activities.
- Faculty salaries remain low when compared to our peer institutions. Even within the college, there are significant imbalances created by salary compression and the mixture of 9- and 12-month appointments. We are hoping to develop a better plan relative to 9- and 12-month appointments to help with recruitment, retention, and equity.