



College of Agriculture  
and Life Sciences



**2015-16**  
**Report to the Chancellor**

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College of Agriculture and Life Sciences**

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## **2015-16 Report to the Chancellor College of Agriculture and Life Sciences**

2015-16 was a milestone year for the College of Agriculture and Life Sciences, a year of significant progress toward the university's strategic goals of enhancing student success, scholarship and research, organizational excellence and local and global engagement. This report outlines these strategic improvements, summarizes major changes and achievements, and highlights recommendations and concerns for the future.

### Strategic Plan

#### **1. Enhance the success of our students through educational innovation**

Providing access for all qualified students from all regions and backgrounds is one of CALS' primary concerns. In addition, a number of majors within the College have many more jobs than graduates, creating a need to recruit additional students. CALS has developed and begun implementing an innovative plan to increase numbers of students admitted to the College. Key plan components include increased cooperation with community colleges and the Agricultural Institute, development of a spring admission program, awarding freshmen scholarships, and long-term recruitment plans. The new initiatives build upon already strong efforts to enhance rural student access supported by the Joe and Debbie Gordon "Farm to Philanthropy" program and the Golden LEAF Foundation.

CALS also worked to create a more inclusive student body through activities such as the **USC 110 Freshman Advancement Seminar (THINK Faculty Initiative)**, a first-year transition course that provides a supportive learning environment empowering underrepresented minority students with knowledge and skills needed to succeed. Alex Graves revised course materials for USC 110-003 Freshman Advancement Seminar to incorporate critical and creative thinking into all aspects of the course. The focus of the NC State Quality Enhancement Plan, THINK, is to improve students' higher-order thinking competencies, including critical evaluation, creative thinking and reflection on their own thinking. Students scored 84.6-100 percent on the THINK assessment. The Office of Diversity Affairs also held **From Great to Excellent: Student Success Symposium**, funded by the John Deere Co. and including professional development sessions on Perfecting Professional Presence and Developing Your Professional Network; served as co-

sponsor for the **Graduate Women in Science** 95<sup>th</sup> Annual National Conference; and provided **tutoring services** in biology, biochemistry and organic chemistry with funding from the John Deere Co.

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

The North Carolina Plant Sciences Initiative (PSI) is among the College's major efforts to enhance scholarship and research, with the goal of making North Carolina the global leader in plant sciences. In 2015-16, the initiative made significant progress. The North Carolina General Assembly included \$85 million of the \$160.2 million needed for a Plant Sciences Research Complex for Centennial Campus in a bond package approved by voters on March 15. Extension played a vital role in educating voters about the Plant Sciences Initiative and the bond referendum through a campaign involving 53 of the state's 101 local Extension centers and making 21,000 face-to-face contacts as well as 642,000 contacts via social media and other digital outreach.

Just days after the referendum, the NC Farm Bureau Federation pledged \$500,000 to the PSI, which, along with contributions from 40 agricultural organizations, put NC State University over its \$9 million first-phase fund-raising goal. A project manager, Geoffrey Bock, was hired, and four teams of stakeholders came together March 18 to begin driving strategic planning, additional fund development, advocacy, program development and facilities planning.

In another plant-sciences-related effort, the College's Center for Integrated Fungal Research launched an industry-supported consortium, the Plant Soil Microbial Community Consortium, with \$300,000 in commitments over two years from founding members RJR Tobacco, Novozymes and BASF Plant Science. In February, the consortium awarded its first grants to CALS faculty members.

With matching funds from NC State's Distinguished Professors Trust Fund, the North Carolina Agricultural Research Service completed the Bayer CropScience for Soybean Breeding professorship.

Meanwhile, CALS faculty members conducted research that yielded significant impact in 2015-16. For example, Carolina Innovative Food Ingredients, using NC State-developed technologies, produced value-added, food-grade dehydrated and juiced products for human and pet food applications, while YAMCO continued to expand its capacity and market to produce and sell shelf-stable sweet potato purees.

In addition, over 90 percent of the hybrid striped bass raised in the United States this year were produced using improved brood stock from the National Program for Genetic Improvement and Selective Breeding for the Hybrid Striped Bass Industry, which is coordinated by NC State's Benjamin Reading.

To overcome antibiotic resistant traits in about 20 medically important pathogenic bacteria, scientists including John Cavanagh developed several new classes of therapeutics. For example, methicillin-resistant *Staphylococcus aureus* (MRSA) – a dangerous bacterium of particular concern in hospitals, nursing homes and dialysis centers – has been re-sensitized to penicillin, methicillin and oxycillin.

Research on Salmonella's physiology under anaerobic conditions was used to develop a new vaccine strain that could be used in poultry, other farm animals, and humans. In addition, this mutant strain could be engineered to serve as a vaccine vector for delivering epitopes of other disease-causing organisms. The lead principal investigator is Hossni Hassan.

As a starvation relief food product, the Department of Food, Bioprocessing and Nutrition Sciences developed a marketable, shelf-stable enriched flour that is nutritionally similar to white flour and is used as a base for an inexpensive, nutrient-dense food product called Mighty-Mix.

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

Water has been called the “most important resource issue for humanity in the 21<sup>st</sup> century.” To address the issue, CALS hosted the “Stewards of the Future: Water for a Growing World” conference in November. Nearly 500 people attended the conference, which covered key topics such as water conservation,

treatment technologies, precision water management, wastewater quality and management, irrigation technologies and developing agricultural products while protecting water resources.

When it comes to feeding a growing world population, plant diseases represent a significant threat. In March, the Emerging Plant Disease and Global Food Security Chancellors Faculty Excellence Program cluster at NC State hosted an international symposium that brought together experts that study emerging plant diseases and their arthropod vectors. These experts included specialists in genetics, biology, epidemiology, climate change, metadata analysis, geospatial analytics and global development policy. Jean Ristaino is cluster leader.

In 2015-16, the College also grew interdisciplinary efforts across the College and University with two grant programs: The **CALS Faculty “Big Ideas” Innovation Program** focuses on creating an organizational culture, process and infrastructure that cultivate strategic partnership and collaborations by generating, developing and sustaining faculty-driven transformative ideas in research, teaching and Extension. The grants provide faculty members with access to seed money to explore ideas. Since its inception in Spring 2015, 13 awards have been made crossing a majority of CALS departments and 8 other colleges, resulting in new interdisciplinary teams exploring innovative research topics.

The **CALS Dean’s Enrichment Grant Program** is designed to spur partnership-driven discovery, learning and engagement by supporting multi-disciplinary teams and integrated missions across the campus and region. The program is a vehicle by which to grow high-potential, synergistic collaborations with other colleges, such as the colleges of Veterinary Medicine (CVM) and Natural Resources (CNR), as well peer institutions such as Virginia Tech. Through a stakeholder funding category, the program has also leveraged nearly \$100,000 in external funding for faculty research and extension partnerships with the private sector and external collaborators. In 2015-16, eight awards were made, bringing the total number of awards over three years to approximately 40.

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

After receiving findings and recommendations from a 12-month study led by the CALS Innovation and Efficiency Committee, College administration announced a **new College organizational structure** to be put in place July 1, 2016. The new structure aligns departments, centers and programs around four interdisciplinary “systems” (Plant, Insect, Microbe and Soil Systems; Animal Systems; Human and Resource Systems; and Food, Biochemical and Engineered Systems). The restructuring also involves the merger of the departments of Entomology and Plant Pathology; Crop Science and Soil Science; and Youth, Family and Consumer Sciences and Agricultural and Extension Education, as well as CALS’ phased divestiture in the Department of Statistics, shared with the College of Sciences.

Dean Linton also announced that Provost Warwick Arden has agreed to join the College in funding 40 new faculty positions over four years. As the first phase of the hiring process, College faculty and administration worked in systems to prioritize funding of 17 faculty and 4 department head positions for 2016-17.

The College continued its efforts to improve CALS Business Operations (CBO), successfully processing more invoices than any other campus unit (11,653 from July through March) and increasing the percentage of invoices paid in 30-45 days to 95 percent. On average, CBO processes over 3,000 accounting services transactions each month. Meanwhile, Contracts and Grants has increased its post-award staff to accommodate the faculty’s needs and to provide better service. Staff are being trained in customer service and lean, efficient processes, and the budget group and the business liaisons continue to reach out to faculty and staff to provide assistance.

Internal and external stakeholders have highlighted the need for stronger College communications, and in October, Richard Campbell joined the College administration in the new position of chief communications officer. His leadership and expertise have had an immediate impact, with the communications staff focusing on telling the story of how the College transforms grand challenges into agricultural and life sciences opportunities.

In the area of **diversity**, CALS strived to enhance organizational excellence through a culture of inclusivity.

Activities included:

- **Opening Doors: A Personal and Professional Journey**, a three-day retreat that allows workshop participants explore a framework that deepens their diversity awareness and enhances their ability to create inclusive organizations. This workshop addresses personal and professional change as part of an understanding differences initiative of multicultural organizational development. All participants indicated that they plan to be an ally for diversity.
- **The Food for Thought Lunch and Learn Series**, which included eight monthly conversations designed to cultivate an environment of learning that enhances diversity awareness and builds cultural competencies for CALS faculty and staff. Each session had approximately 30 participants.
- Two **National Coalition Building Institute (NCBI) Bridges Workshops**, plus a workshop co-sponsored with CVM. Participants learned conflict-resolution skills; effective listening; how to manage dialogue across group lines; and a rationale for creating a welcoming workplace. About 40 people took part.

##### **5. Enhance local and global engagement through focused strategic partnerships.**

NC State's Cooperative Extension Service is nearing completion of a two-year strategic plan to ignite a renewed organizational vision, enhance its ability to deal with relevant and pressing issues, and focus resources into research-based Agricultural, Food and 4-H Youth Development programs that create prosperity for all North Carolinians.

In the past year, Extension:

- Reinvested funds into key positions, including 50+ new county and area agents
- Created integrated program teams to guide efforts in key areas (for example, local foods)
- Maintained a presence in 101 local offices (every county)

With North Carolina's population among the fastest growing in the nation, NC State Extension also focused on meeting the needs of urban centers locally and nationwide. It was a founding member of a

movement to make the issue of urban Extension a priority for the Extension Committee on Organization and Policy (ECOP), the governing body of the national Cooperative Extension system. North Carolina was one of four representatives to participate in a national leadership forum in Washington, D.C., on Urban Extension in April and will now implement an urban Extension pilot program for Wake County and other urban centers across the state.

Meanwhile, the College's research arm, the **North Carolina Agricultural Research Service**, continued collaborations with NC State's colleges of Natural Resources, Sciences, Engineering, Humanities and Social Sciences and Veterinary Medicine as well as North Carolina A&T State University's School of Agriculture and Environmental Sciences. The North Carolina Research Campus at Kannapolis connects NC State with the universities of North Carolina at Charlotte, Greensboro and Chapel Hill as well as North Carolina Central University, NCA&TSU, Rowan-Cabarrus Community College and Duke University.

Research partners also included over 80 active commodity organizations; state and federal agriculture and life sciences agencies; agricultural advocacy organizations such as the North Carolina Farm Bureau Federation, the North Carolina State Grange and the North Carolina Biotechnology Center. International partnerships included BecA, IRRI, CIP, NARI, IITA and ICRISAT, while strategic university partnerships based on large funded interdisciplinary grants included the University of California-Davis, Cornell, Purdue, Texas A&M, Michigan State, Oregon State, University of Texas-Austin, and Cold Spring Harbor Laboratory.

A variety of agricultural and life sciences companies are also involved in research partnerships, and the College expanded relationships or developed new relationships with close to 50 prospects (including BASF, Bayer CropScience, Syngenta, Ilender, Alltech, RJR Tobacco and Eastman Chemical). In 2015-16, a memorandum of understanding with AgTech Accelerator was instituted, and P2EP consortium documents were shepherded through legal offices at UNCC and NC State, with consortium memberships being recruited by Mary Ann Lila and Tara Vogelien at the North Carolina Research Campus in Kannapolis.

## Additional Impacts

### A. Initiatives

In addition to the Plant Sciences and Student Access projects discussed previously in this report, CALS pursued these major initiatives:

**Food Manufacturing and Processing Initiative:** This project focuses on creating a favorable environment, educational support and a marketing strategy for the recruitment of new food processing/manufacturing enterprises to the state. It is a partnership between NC State, the North Carolina Department of Commerce, the North Carolina Department of Agriculture and Consumer Services and the Lieutenant Governor's Office.

In 2015-16, Dean Richard Linton chaired a task force appointed by the governor representing all aspects of food manufacturing, from farming to transportation to economic development. In April 2016, the task force made recommended establishing a statewide interdisciplinary and interagency Food Manufacturing Leadership Team and investing in two interagency statewide leadership positions. One of those positions would be a science, technology and policy director for the food manufacturing industry, reporting to NC State and NCDA&CS.

**Leadership Initiative:** In response to stakeholder demand for new opportunities for leadership development, CALS conducted an initiative focusing on personal leadership, organizational leadership and public policy leadership related to the food and agricultural system. Examples of the College's 2015-16 leadership initiatives include:

- **The Warren Leadership Program.** Launched in 2015, the program prepares six to 10 juniors and seniors a year to become food/agricultural public leaders and influencers. They have the opportunity to participate in seminars, travel experiences and summer internships.
- **CALS Proud.** The signature name for College-wide internal leadership programs, CALS Proud includes a program to help staff gain leadership skills and understand their personal

impact/connectivity in the overall strategic plan and a program focusing on first-year faculty experiences such as RPT 101, Dean's New Faculty Bus Tour and mini-leadership sessions.

- **CALS Champions electronic newsletter.** Designed for internal and external stakeholders with a passion and desire to grow in leadership and support to the College's leadership initiatives, the newsletter reaches 200 individuals each quarter.
- **CALS WNR Development.** Through this leadership program conducted in partnership with the General Hugh Shelton Leadership Center, the 2015 recipients of the William Neal Reynolds Professorships will gain skills to increase their impact and influence in the College.
- **Helms Leadership Program.** This program supported two students in Summer 2016 Congressional internships in Washington, D.C.

For 2017, other programs are planned for commodity and agricultural partners, CALS students, high-school agriculture and science teachers, young agriculturists and food and agricultural system leaders in higher education, industry and government.

**Animal Food Products Initiative:** North Carolina is a leading food animal product state, and with the expected increased demand for higher protein diets globally over the next several decades, there is opportunity for the industry to grow. This partnership between CALS and CVM focuses on capitalizing on the industry's strengths and determining the strategic investments and interdisciplinary efforts that will support such growth. This inter-college initiative has great promise for developing innovations that will result in higher-quality products for consumers and greater profitability for the poultry, swine, dairy and beef cattle industries.

## **B. Diversity**

Through the Office of Diversity Affairs, CALS strived to convey an atmosphere of inclusiveness among all members of the CALS and University community. Nearly all of the College's diversity programs feed directly into the university and College's strategic plans, so they are highlighted in sections one and four above. In addition, CALS:

- Selected two **CALS Diversity Champions**, Nicole Huff, assistant professor and Extension specialist and director of graduate certificate programs, and Natasha Dillon, graduate services coordinator, physiology graduate program. These champions have strived to make work, classroom, and/or lab environments more inclusive.
- **Dean's Postdoctoral Research Associate:** The Dean's Postdoctoral Fellows Initiative aims to increase diversity among CALS postdoctoral fellows. Melina Florez-Cuadros from the University of Nebraska-Lincoln is the next fellow; she will join the Entomology Department under the direction of Max Scott.
- **Student Diversity Mini-Grant:** Created to encourage student clubs and organizations within CALS to design and implement programs or events that promote and integrate diversity within their organizations, the mini-grant went to SEEDS organization's proposal opening the outreach pipeline by educating the community about our College. The project includes three Victory and Soul Gardens and ecology outreach and workshops on vermicomposting at local elementary and high schools in communities with high numbers of underrepresented students.
- **Enhanced K-12 Science Technology Engineering and Math (STEM) education and science literacy in North Carolina through:**
  - **Middle School Visitation Day (40 Students):** In cooperation with NC MSEN Pre-College Program, William and Ida Friday Institute/College of Education, CALS provided hands-on experience in horticulture to rural students from Warren County Middle School, Warren County STEM Early High School, Vance County, Rocky Mount Middle School. 4-H Youth Specialist Elizabeth Driscoll provided instruction.
  - **(CAALS 3D) Creating Awareness of Agriculture and Life Sciences Disciplines, Degree Programs and Discoveries (25 Students in 2015):** This partnership between CALS and the North Carolina School of Science and Mathematics (NCSSM) targets the most underrepresented minority groups in the CALS student population, allowing targeted NCSSM students to participate in one-week, hands-on experiential research projects in CALS laboratories.

### **C. Instructional program advances**

A new B.S. degree (**Agroecology and Sustainable Food Systems**) has been approved by the Chancellor and submitted to the University of North Carolina General Administration. This will be the College's first-degree program cross-listed between two departments that will share the advising of students enrolled in the degree.

CALS continues to be a leader in agricultural distance education with many popular programs in a number of departments. One of the newest is the successful **Master of Animal Science DE** degree, which is increasing enrollment in the department. CALS is also an active participant in the **AG\*IDEA program**, with many CALS faculty providing courses for students around the country.

The Department of Plant Pathology trains graduate students in cooperation with Bayer CropScience through the **Bayer Graduate Fellowship** and in cooperation with BASF through the **BASF Graduate Internship**. In both programs, students work on research projects while learning industry practices.

In 2015-16, CALS had 331 students enrolled in the Agricultural Institute, 2,444 students in the undergraduate programs and 1,026 students in the graduate program. There were 379 beginning freshmen and 162 new transfer students enrolled in the undergraduate program, 238 new graduate students and 152 beginning and new transfer students in the Agricultural Institute.

For admitted freshmen in 2015, the average SAT total was 1183 and the average weighted high school GPA was 4.38. Fifty-three percent of students were in the top 10 percent of their high school graduating class. CALS incoming freshmen received four of the 39 Park Scholarships. The College also had 67 incoming University Honors students, 179 University Scholars students, 175 CALS Honors students and 10 incoming Jefferson Scholars. The College awarded more than \$1 million in scholarships to more than 350 students during the 2015-16 academic year.

The College awarded 183 associate degrees, 629 bachelor's degrees, 220 master's degrees, and 74 doctoral degrees. Six hundred sixty four students heard a career presentation in one of their classes, 417 attended

one-on-one counseling sessions, 393 participated in an optional professional development workshop, 540 attended the career expo and 3,321 new jobs and internships were posted in ePack.

#### **D. Research**

The **North Carolina Agricultural Research Service** conducted research in 14 CALS departments, with research collaborations with several NC State colleges and UNC system universities. The research service also operated through research and extension centers at Plymouth and Mills River, plus 18 research stations across the state and 10 NC State field lab facilities. In 2015-16, these stations and field labs supported more than 1,200 acres of plot research and hosted over 15,000 participants in field days and other events.

In addition to eight centers, NC State also has several service centers and laboratories, including the Structural Biochemistry Resource; Plant Disease and Insect Clinic; Food Processing Pilot Plant; newly renovated Phytotron, certified BSL-3 high containment facility with a greenhouse; Feed Mill; and Animal Waste Processing Facility.

NCARS employed 294 research scientists (168 FTE); 275 graduate assistants (116 FTE); 83 post docs (76 FTE); 194 technicians and support staff (172 FTE); and 146 researchers (132 FTE research assistants, associates and researchers).

Program impacts included 60 intellectual property disclosures (27 inventions, 18 plant varieties, 11 copyrights, 4 software); 62 patents filed, 39 patents issued, 936 peer-reviewed research publications and grants totaling \$67,147,589 (5/1/2015-4/30/2016). Competitive grants awarded from May 1, 2015, to April 30, 2016, averaged nearly \$400,000 per tenure-track research FTE.

Research expenditures totaled \$135,052,211 from the following sources: Federal, \$5,395,271; State, \$55,806,585; Sponsored, \$60,618,241; Overhead, \$1,129,681; Sales and Service, \$2,989,923; Foundations, \$7,662,665; and Gifts, \$1,449,845. From federal and state expenditures, 78 percent went toward personnel, and 22 percent covered operating costs.

The CALS Grant Proposal Developer:

- contributed to the submission of 24 faculty-led proposals (April 1, 2015 - March 31, 2016, see below);
- managed the Dean's "The Big Ideas Grant Program" (funded seven projects for a total of \$12,500);
- oversaw the Dean's Enrichment Grant Program for stakeholder grants, CALS-CVM Cross College grants, Bridge and Equipment grants (funded 8 grants with total CALS investment of \$515,373 and leveraged cost-share from CVM and stakeholders of \$261,467).
- worked with the Plants for Human Health Institute to create and manage PHHI Seed Funding.

Lead PI	Agency	Request	Amount Awarded	Status
Burrack, Hannah	USDA Specialty Crop	\$7,332,000	\$6,800,000	Funded
Payne, Gary	USDA National Needs Fellows	\$ 238,500	\$238,500	Funded
Long, Terri	NSF BBSRC	\$ 520,000	\$513,651	Funded
Ristaino, Jean	USDA AFRI	\$3,980,000		Non-Funded
Sophia Kathariou	USDA AFRI	\$ 998,000		Non-Funded
Bloom, Dara	USDA AFRI, Food Security	\$ 3,954,000		Non-Funded
Bloom Dara	USDA AFRI - Childhood Obesity	\$ 3,000,000		Non-Funded
Quesada, Lina	NSF BREAD	\$ 1,133,000		Non-Funded
Doherty, Colleen	NSF Plant Genome	\$ 1,732,000		Non-Funded
Zering, Kelly***	DOE -Biotech Research Center	\$12,457,000		Non-Funded
Chris Reberg-Horton	USDA Organic Research & Extension	\$1,000,000		Pending
Suijin Hu Organics	USDA Organic Transitions	\$ 500,000		Pending
Schroeder-Moreno	USDA AFRI	\$ 300,000		Pending
Ristaino, Jean	NSF/USDA FEWS	\$2,991,000		Pending
Louws, Frank	USDA, SCRI	\$ 6,800,000		Pending
Hanley-Bowdoin, Linda	GATES Foundation	\$ 2,007,000		Pending
Reading, Ben	USDA FFAR Foundation	\$ 300,000		Pending
Rojas-Pierce, Marcella	NSF MRI	\$ 540,000		Pending
Jennings, Katie	USDA Multi-State Crop	\$298,000		Pending
Fernandez, Gina	USDA Multi-State Crop	\$335,000		Pending
Bruce, Jackie	USDA	\$720,000		Pending
Walgenbach, Jim	USDA, SCRI	\$9,855,000		Pending
Ristaino, Jean	USAID BHEARD	\$1,390,200		Pending
	<b>Total Requests</b>	<b>\$62,380,700</b>	<b>Total Funded</b>	<b>\$7,552,151</b>
			<b>Total Pending</b>	<b>\$27,036,200</b>

\*Only listed are those grants in which the proposal developer had a significant management/development role.

\*\*Two large USDA grants, which are pending, have been notified of intent to fund by the agency. Award announcements expected 7/2016.

\*\*\* Proposal developer partnered with PDU on this large Center proposal.

\*\*\*\* Does not include internal grants such as Chancellor's Faculty Excellence or RISF's supported by the proposal developer.

**Major grants** for which NC State is the lead institution included:

- Hannah Burrack. \$6.8M USDA SCRI. Nationwide collaboration. Spotted Wing Drosophila
- Jim Walgenbach. Pending \$9.8M USDA-SCRI. Brown Marmorated Stink Bug
- Linda Hanley-Bowdoin. \$1M NSF PIRE. Work in East Africa
- Craig Layman. Chancellor's Excellence Cluster. 3 NSF awards for \$750,000
- Terri Long and Ross Sozzani. \$513,000 NSF-BBSRC. Plant cell differentiation
- Ross Sozzani. \$750,000 5-year NSF Career Award
- Frank Louws. Pending \$7M USDA. Grafted tomato project
- Sue Carson and Gary Payne. USDA-NIFA. \$500,000+ for student training in interdisciplinary fields

NCARS and CALS Development continued to work with the NC Sweet-Potato Commission to achieve \$1.52 million toward a \$2 million goal in the Covington Endowment. The College also initiated collaborative and integrated research effort to solve the sweet potato black rot problem.

A recent article published in PLOS ONE reported on an evaluation of 33 universities belonging to the National Association of University Fisheries and Wildlife to determine research productivity and impact, based on performance metrics. NC State ranked second to UC-Davis.

#### **E. Extension**

In the area of ***Agriculture & Natural Resources (ANR)/Community & Rural Development (CRD)***, Extension helped growers make research-based decisions about varieties; fertility; seeding practices; insect, disease, and weed management; marketing; and other factors. Surveys found that the information presented at grower meetings resulted in changes to management practices on over 440,217 acres in the counties of Beaufort, Hyde, Tyrrell, and Washington alone. These growers estimated that by implementing these practices they increased their economic returns by \$21.85 per acre for a total economic value of \$13,416,179.

In its first year, the North Carolina AgVentures grant program, funded by the state Tobacco Trust Fund Commission, awarded 23 farmer grants and invested \$240,000 in N.C. communities. Grant impacts resulted in 72 new jobs and 100 sustained jobs; 11,114 acres of protected farm land, and to date, \$188,000 of new income. Twenty-five new grants totaling \$240,000 were recently awarded. Local agents are pleased Extension has access to this seed money to implement innovative ideas and are seeing new clients come to Extension through this funding and education partnership.

USDA's Stronger Economies Together initiative, facilitated by CRD specialists, has resulted in the creation of regional economic development plans for six counties. Due to planning efforts, these regions have leveraged over \$1 million to implement programs benefiting both the local agriculture and food-manufacturing industries. CRD is facilitating the development of such regional plans for nine more counties.

In 2015, USDA's Agricultural Marketing Service Technical Assistance project resulted in close to \$800,000 in Farmers Market Promotion and Local Food Promotion grants to eight attendees of grant-writing workshops conducted by CRD specialists.

In the area of **4-H / Family and Consumer Sciences**, faculty members in the Department of Youth, Family and Community Sciences employed research-based programming that helps N.C. families manage resources, practice good nutrition, develop healthy relationships and support sustainable communities. Among its impactful programs is Juntos, which helps Latino youth (6-12 grades) and their parents increase knowledge, skills and resources needed to succeed in middle and high school and to open doors to college. In 2015, the White House Initiative on Educational Excellence for Hispanics recognized the Juntos Program Team – Andrew Behnke, Cintia Aguilar and Diana Urieta – with the Bright Spot in Hispanic Education Award. NC State also worked in partnership with North Carolina A&T State University to offer 4-H, the largest youth development organization in North Carolina, growing confident, capable and caring children with the life skills to succeed in today's world. 4-H engages 239,000 participants and 20,500 youth and adult volunteers annually. NC State opened a \$1.5 million learning center complex at Millstone 4-H Camp in Richmond County in April 2016.

With nearly one in five North Carolinians experiencing food insecurity, NC State's "More in My Basket" program reduced hunger through outreach efforts that connect residents to the Supplemental Nutrition Assistance Program (SNAP), a federal food assistance program. The program helped 28,447 North Carolinians apply for SNAP benefits, which could generate a potential economic impact of \$281,919 per year.

In the area of **Marketing & Communications**, the Extension Service received formal approval in 2015 to launch an organization-wide rebranding initiative, transitioning our name and brand to NC State Extension. The team has finalized a strategic brand platform, standards and guidelines, website assets, a marketing toolkit and other resources for employees, which will be available upon launch. We plan to initiate the launch by transitioning a selection of our websites in advance of November 2016's Extension State Conference.

To facilitate a dialogue with employees and equip them with the tools and knowledge they need to represent the organization in a compelling, consistent way, Extension made bolstering internal communications a priority for 2016. While a new marketing toolkit page will be rolled out with the brand updates in 2016, Extension created a short-term one-stop directory for our current Marketing Resources. It also hired a new video educator, Simone Keith, to foster visual literacy and help employees leverage video tools and technology to better tell Extension's story. Extension now shares brief director's update videos each month, which address timely topics for employees.

#### **F. Faculty Honors, Awards and Recognitions**

**CALS Administration: Sylvia Blankenship**, NC State University Innovator of the Year

**North Carolina Cooperative Extension: Danelle Barco**, Mid-Career Service Award and Bernadette Watts Professional Development Award; **Paige Burns**, Achievement Award and North Carolina State Grange Search for Excellence Outstanding Program Initiative Award and Team Award; **Eileen Coite**, National Association of County Agricultural Agents Distinguished Service Award; **Aimee Colf**, North Carolina State Grange Search for Excellence South Central District Team Award; **Tiffanee Conrad**, North Carolina State Grange Search for Excellence Team Award; **Tommy Grandy**, Epsilon Sigma Phi Excellence in Teamwork;

**Olivia Jones**, Outstanding Young Agent; **Susan Kelly**, North Carolina State Grange Search for Excellence Team Award; **Joanna Lelekas**, North Carolina Association of Cooperative Extension Specialists Outstanding Subject Matter Award (Individual); **Cameron Lowe**, Epsilon Sigma Phi Excellence in Teamwork

**Agricultural and Extension Education:** **Jackie Bruce**, Association of Leadership Educators Distinguished Leadership and Service Award and CALS Outstanding Graduate Instructor Award; **Lisa Guion Jones**, American Council on Education Fellow; **Mark Kistler**, American Association for Agricultural Education Fellow; **Jay Jayaratne**, American Association for Agricultural Education Southern Region Distinguished Extension Educator; **Gary Moore**, UNC Board of Governors Award for Excellence in Teaching Nomination; Distinguished Teaching Award, American Association for Agricultural Education Southern Region; **Joy Morgan**, Teaching Award of Merit, North American Colleges and Teachers of Agriculture

**Agricultural and Resource Economics:** **Blake Brown**, Farm Credit 100 Fresh Perspectives; **Ted Feitshans**, American Agricultural Law Association Excellence in Agricultural Law Award

**Animal Science:** **William L. Flowers**, William Neal Reynolds Distinguished Professor, NC State University; **Matt Poore**, North Carolina State Grange Search for Excellence Outstanding Program Initiative Award and North Carolina Association of Cooperative Extension Specialists Award for Outstanding Subject Matter (Individual)

**Applied Ecology:** **W. Gregory Cope** and **Ken H. Pollock**, William Neal Reynolds Distinguished Professor, NC State University

**Biological and Agricultural Engineering:** **John Classen**, College of Engineering Outstanding Faculty Mentoring Citation; **Barbara Doll**, Sea Grant Regional Outstanding Outreach Award; **William F. Hunt III**, William Neal Reynolds Distinguished Professor, NC State University; **Lingjuan Wang-Li**, NC State University Faculty Scholar; **Wenqiao Yuan**, American Society of Agricultural and Biological Engineers Rain Bird Engineering Concept of the Year

**Center for Environmental Farming Systems: Sarah Blacklin**, Farm Credit 100 Fresh Perspectives –  
Mentoring and Volunteerism

**Crop Science: David L. Jordan**, William Neal Reynolds Distinguished Professor, NC State University; **Bob Patterson**, Green Brick Award, NC State University Campus Environmental Sustainability Team; **Michelle Schroeder-Moreno**, NC State University Campus Environmental Sustainability Team Green Brick Award, City of Raleigh Legacy Environmental Award, Fulbright Scholar; **Grady Miller**, Turfgrass Producers International Turfgrass Educator Award of Excellence; **Thomas Stalker**, Peanut Research and Education Award

**Entomology: David Tarpy**, NC State University Faculty Scholar

**Food, Bioprocessing and Nutrition Sciences: Ken Swartzel**, National Academy of Engineering member; **Rodolphe Barrangou**, NC State University Faculty Scholar, Todd R. Klaenhammer Distinguished Scholar, Warren Alpert Prize and Gairdner Award; **Allen Foegeding**, Institute of Food Technologists Nicolas Appert Award; **Todd Klaenhammer**, NC State University Innovator of the Year; **Lee-Ann Jaykus**, NC State University Outstanding Graduate Faculty Mentor Award

**Horticultural Science: Lucy Bradley**, Outstanding Extension Faculty/Staff Award; **Jeanine Davis**, American Society for Horticultural Science Fellow; **Elizabeth Driscoll**, North Carolina Association of Cooperative Extension Specialists Award; **Randy Gardner**, 2015 All-America Selections Breeders Cup Award; **Lee Ivy**, CALS Teaching Award of Merit; **Katie Jennings**, Outstanding Educator Award; **Julia Kornegay**, Outstanding International Horticulturalist; **Dilip Panthee**, Distinguished Alumni Award; **Michael Parker**, Henry M. Covington Extension Award; **Penelope Perkins-Veazie**, Outstanding Researcher Award; **Thomas Ranney**, JC Raulston Distinguished Professor of Horticultural Science at NC State University, American Society for Horticultural Science Fellow and Outstanding Ornamentals Publication Award; **Anne Spafford**, Outstanding Faculty Adviser Award; **Tessa Thraves**, North Carolina Association of Cooperative Extension Specialists Award for Outstanding Subject Matter (Individual); **G. Craig Yencho**, Outstanding Global Engagement Award and William Neal Reynolds Distinguished Professor, NC State University

**Molecular and Structural Biochemistry:** **Dennis T. Brown**, William Neal Reynolds Distinguished Professor, NC State University

**Plant and Microbial Biology:** **Jose Alonso**, 2015 World's Most Influential Scientific Minds and Thomson Reuters Highly Cited Researcher; **Jenny Xiang**, Journal of Systematics and Evolution Outstanding Paper Award; **Ross Sozzani**, National Science Foundation Faculty Early Career Development Award

**Plant Pathology:** **Jean Ristaino**, American Phytopathology Society Excellence in International Agriculture award; **Eric Davis**, American Phytopathology Society Fellow; **Peter Balint-Kurti**, American Phytopathology Society Ruth Allen Award

**Prestige Department of Poultry Science:** **John Brake**, NC State University Global Engagement Award and Biovet Research Award; **Edgar Oviedo**, National Chicken Council Broiler Research Award

**Soil Science:** **Owen Duckworth**, Research Triangle Institute Fellow

**Youth, Family and Consumer Sciences:** **Kimberly Allen**, Gertrude Cox Award for Innovative Excellence in Teaching and Learning with Technology and DELTA Fellow; **Andrew Behnke**, NC State University Faculty Scholar, Outstanding Extension Program Award, and Bright Spot in Hispanic Education, White House Initiative on Educational Excellence for Hispanics; **Carolyn Bird**, Dean Don Felker Financial Management Award, Southern Region; **Benjamin Chapman**, Larry Beuchat Young Researcher Award; **Harriet Edwards**, National Search for Excellence in Educational Technologies; **Emily Foley**, Pride of the Wolfpack; **Autumn Guin**, CALS Innovation Fair Award; **Annie Hardison-Moody**, Opal Mann Green Engagement and Scholarship Award; **Lorelei Jones**, Opal Mann Green Engagement and Scholarship Award; **Sarah Kirby**, Housing Impact Award, Green Building Award and Educational Technology Award; **Ben Silliman**, Sustained Excellence in Evaluation; **Diane Urieta**, Deborah S. Moore Memorial Service Award

## **G. Student Honors**

**Agricultural and Extension Education:** **Kevin Curry**, graduate teaching assistant award and one of five distinguished research papers from the American Association for Agricultural Education (Southern Region); **Alyssa Degreenia**, North American Colleges and Teachers of Agriculture Graduate Student Teaching Award; **Michelle Shooter**, North Carolina Farm Bureau Young Farmers & Ranchers Excellence in Agriculture Award

**Animal Science:** **Jeremy Howard** and **Jiyano Gui**, graduate research awards; **Kayla Brooks**, graduate teaching award

**Entomology:** **Zach DeVries**, Lillian and Alex Feir Graduate Student Travel Award in Insect Physiology, Biochemistry or Molecular Biology; **Meredith Spence**, NSF Fellowship for “Dog Heartworm Disease: Examining the Consequences of Land Use on Vector Diversity and Parasite Transmission”; **Fallon Fowler**, NSF Fellowship for “Mitigating Climate Change by Consortium Building: Benefits of Dung Beetle Diversity”; **Jamora Hamilton**, NSF Fellowship for “Role of Gut Microbes in Aggregation Behavior, Colony Recognition, and Fidelity in Cockroaches”; **Angela Sierras** and **Michael Fisher**, Pi Chi Omega, the national fraternity of pest management professionals, award for outstanding students in urban and industrial entomology; **Johanna Elsenshoen**, **Sophia Webster** and **Jennifer Baltzegar**, Entomological Society of America Debate Team National Champions; **Meredith Spence**, **Gabe Zilnik**, **Keith Bayless**, **Colin Funaro** and **Damian D’Ambrosio**, 2016 North Central Branch Linnaean Games Champions

**Horticultural Science:** **Christina Cash**, Norma Childers Outstanding Graduate Student Award and second place, Warren Barham PhD Graduate Student Paper Competition, American Society of Horticultural Science Southern Region

**Physiology:** **Nick McCrory**, Warren-Wolfpack Club Fellowship

**Plant Pathology:** **Soyeon Cha**, 3rd place in the Bayer poster competition; **Kara Levin**, Beacon of Enlightenment PhD Scholarship

## **H. Fundraising**

FY16 was a good year for the College Advancement team. New commitments totaled \$39.9 million as of June 30, including \$471,300 in conditional Plant Sciences Initiative pledges. Included in the total are a \$7.5 million planned gift for the JC Raulston Arboretum, the \$3 million commitment from the Golden Leaf Foundation for PSI planning, \$2.8 million of additional funding from Cadee Chronaki, \$1 million from the Braswell family and \$1 million from the Windell Talley family. The monthly gift receipts report, which shows cash from gifts and old pledges, is up to \$32 million this fiscal year, a new cash income record. In addition, CALS, as of June 30, had commitments of \$191.4 million toward the university's comprehensive campaign.

## **I. Administration**

College leadership changes in 2015-16 included the promotion of Sylvia Blankenship to senior associate dean for administration and the appointments of Richard Bonanno as associate dean and director for the North Carolina Cooperative Extension Service, Richard Campbell as chief communications officer, and Joyce Munro as director of budgets and planning.

In addition, several interim appointments were made: John Dole, interim associate dean and director for academic programs; Alex Graves, interim director of diversity; Wayne Buhler, interim head, Department of Horticultural Sciences; Stu Maxwell, interim head, Department of Molecular and Structural Biochemistry; and Garry Grabow, interim head, Department of Biological and Agricultural Engineering.

## **J. Recommendations and Concerns for the Future**

Among the College's major concerns are:

- the need to balance stakeholders' demands with the reality of diminished human and capital resources due to budget cuts,
- the need to address concerns related to student access and balanced student representation for degree programs
- and the need to conduct leading-edge research in outdated buildings on campus, field labs and research stations.

Years of budget reductions and reversions have left an increasing number of gaps in research areas for which the College has implicit and explicit agreements with the state and stakeholders, including areas with significant economic potential to the state. Furthermore, the College needs additional funds for:

- equipment replacement and purchases
- attracting outstanding graduate students
- hiring research technicians (The transfer of costs to commodity groups has caused concern among these stakeholders.)

Because of low salaries, Extension struggles to recruit new faculty, and salary compression causes the College to lose productive mid- and senior-career faculty to other institutions or companies.

In addition, NCARS needs the ability to carry over a portion of state funds across fiscal years to bank funding for large purchases critical to the research effort, including laboratory and research station equipment, supplies, and startup funding. Also, flexibility to spend against the promise of federal funding would improve budget management.

There are also ongoing maintenance and upkeep issues on NC State research stations, field labs, Phytotron and other College facilities. NC State collects full overhead yet the College's research budget pays for communications technologies, utilities, compliance and other expenses normally covered by F&A, as described in university policy. The solution could be reduced overhead charges or NC State coverage of these expenses.