The University of Florida is one of the nation’s leading public land-grant institutions, and the Institute of Food and Agricultural Sciences (UF/IFAS) is the UF enterprise dedicated to agriculture and natural resources. UF/IFAS has three main units, focused on teaching, research and Extension. Altogether, UF/IFAS is a large and complex entity. This publication was created to inform visitors, stakeholders, elected officials, industry personnel, supporters and current or prospective faculty members. It provides a quick overview of the entire UF/IFAS enterprise, its programs and examples of our many success stories.
UF/IFAS SCIENCE
BUILDS A BETTER
WORLD, AND IT
HELPS PRESERVE
THE THINGS WE
ALREADY LOVE.

It starts with the economy. UF/IFAS science developed varieties of blueberries that made Florida a major producer — and employer — in a crop previously dominated by northern states.

UF/IFAS has achieved similar results with strawberries. Now it has experts focused on finding the building blocks for new industries in peaches, pomegranates, olives and even hops.

At the same time, we don’t want to leave behind the things that already make Florida special. UF/IFAS science is the leading hope for the salvation of Florida orange juice.

A village of unemployed gill-net fishermen facing economic ruin turned to UF/IFAS science in 1994 and became one of the Eastern U.S.’s leading clam farming communities.

Florida manatees and panthers continue their slow climb back from the brink of extinction with help from scientists who study everything from their biology to the way humans interact with them.

Farmers, who grow 300 different crops in the state, tell us: “If it weren’t for IFAS, I wouldn’t be in business.”

We play a central role in the development of one of the most important of crops — future leaders. Our 4-H programs serve more than 192,000 children.

When those children grow up, we open the gates of the university as wide as we can through scholarships, online courses, satellite campuses and graduate-level field and lab work at our research and education centers throughout the state.

In Fall 2016, 93 percent of CALS undergraduates were Florida residents — part of our commitment to ensure that as UF/IFAS progresses, our state’s families will reap the benefits.

UF/IFAS is positioning Florida as a leader in efforts to feed the world, as we set up livestock innovation labs in six nations in collaboration with international teams to pursue more sustainable operations. We’re even working on growing plants in space.

UF/IFAS can accomplish all of these things and more, because we operate on the land-grant model of partnership between government, academia and industry.

This partnership helps UF/IFAS address complex challenges effectively and find science-based solutions. We do that by attracting outstanding faculty members whom we provide with the resources needed to do their best work, and with incentives to collaborate on teams that bring multiple perspectives to the search for solutions.

Those teams often include colleagues from across the globe. But they also include experts from across campus, because UF/IFAS enjoys the advantage of in-house expertise that comes from being part of one of only six public land-grant universities in the nation with colleges of agriculture, law, medicine and veterinary medicine all on one central campus.

You’ll find stories of UF/IFAS solutions in these pages. If you face a challenge that isn’t addressed in these pages, let us know.
ABOUT UF/IFAS

THE MISSION OF THE UNIVERSITY OF FLORIDA INSTITUTE OF FOOD AND AGRICULTURAL SCIENCES (UF/IFAS) is to develop knowledge relevant to agricultural, human and natural resources, and to make that knowledge accessible to sustain and enhance the quality of human life.

UF/IFAS is the largest and most comprehensive agriculture and natural resources program found among Florida's public universities. This emphasis comes about because UF is one of the state's two land-grant institutions, along with Florida A&M University. As a land-grant institution, UF receives federal support and operates with a federal mandate to improve the state’s agricultural and natural resources industries.

The full history of our program dates to the 1880s, but the name “Institute of Food and Agricultural Sciences” only dates to 1964 — it was created to inaugurate a new administrative structure established that year, and is still in place today.

The UF/IFAS enterprise is based in Gainesville on the UF main campus, and encompasses 14 academic departments and two schools. The entire enterprise is led by the UF senior vice president for agriculture and natural resources.

As the agriculture and natural resources enterprise in a land-grant institution, UF/IFAS has three main units, focused on teaching, research and Extension. These are, respectively, the UF College of Agricultural and Life Sciences (CALS), UF/IFAS Research, conducted under the auspices of the Florida Agricultural Experiment Station, and UF/IFAS Extension, also known as the Florida Cooperative Extension Service.

CALS offers undergraduate and graduate degree programs in more than 20 disciplines. Nationwide, CALS is one of the largest and most comprehensive colleges of its type.

UF/IFAS Research facilitates all research activities conducted by UF/IFAS faculty and students, on the UF main campus and at 18 off-campus facilities.

UF/IFAS Extension operates offices and other facilities statewide and includes faculty at the state, regional and county levels. UF/IFAS Extension also administers the Florida 4-H Youth Development Program and other statewide programs open to the public.

In addition, UF/IFAS supports the Florida Sea Grant program, the UF/IFAS Global international engagement program, and, along with UF Health, administers the UF College of Veterinary Medicine.
THE AGRICULTURAL AND NATURAL RESOURCES SECTOR REPRESENTS FLORIDA’S SECOND-LARGEST INDUSTRY. The state’s warm, sunny climate and abundant rainfall enable producers to grow crops quickly and potentially take them to market sooner than competitors in colder areas.

Florida is home to about 47,700 farms, which average 200 acres and collectively account for about 9.6 million acres. In addition, there are almost 5 million acres of planted timberland in Florida.

In calendar year 2014, the most recent year assessed, sales revenues from Florida’s agricultural and natural resources sector totaled $127.34 billion and provided 1.6 million full-time and part-time jobs, representing 13.8 percent of total state employment.

Regarding agriculture, Florida produces only small amounts of commodity crops such as wheat and soy. Instead, Florida is known as a specialty crop state, producing about 300 items that come from fields, groves, greenhouses and aquatic sources. Many of these crops can only be produced in specific areas.

Citrus remains the state’s signature crop, with a multi-billion dollar economic impact. Florida is the nation’s No. 1 producer of cut cultivated greens, fresh-market tomatoes, grapefruit, oranges, pickling cucumbers, snap beans, squash, sugarcane, sweet corn, tropical foliage plants and watermelon.

Florida is also the nation’s second-largest producer of bell peppers, fresh-market vegetables overall, strawberries and tangerines. Other noteworthy Florida food industries include beef cattle, dairy products, honey and seafood.

In addition, Florida produces many non-food commodities associated with natural resources. The state’s forest products industry currently generates $17.09 billion in total economic impact annually from planted pine grown for paper, pulpwood and lumber. The state is also home to the nation’s second-largest environmental horticulture industry, which generates $21.08 billion in total economic impact annually from greenhouse, nursery and floriculture crops.

Other natural resource-based state industries include honey bee contract pollination services, natural gas and petroleum extraction for fuels and manufacturing, phosphate mining for fertilizers and detergents, sand, gravel and stone mining for construction, and pumping of potable water for bottling.

Although Florida offers ideal growing conditions for many crops, its warm climate is also suitable for numerous pests and pathogens, which pose constant challenges. Some of these organisms are native but many reach Florida from other parts of the world via the state’s robust international trade and tourism activities.

Similarly, environmental issues have impacted producers. Concerns over water quality and availability have prompted many producers to seek ways of increasing the efficiency of their operations, to reduce environmental impact and save money on inputs.

Within UF/IFAS, our teaching, research and Extension efforts are always guided by the needs of Florida’s agricultural and natural resources industries, residents and communities.
COLLEGE OF AGRICULTURAL AND LIFE SCIENCES

THE UF/IFAS EDUCATION MISSION IS FULFILLED BY THE COLLEGE OF AGRICULTURAL AND LIFE SCIENCES, ALSO KNOWN AS CALS. The college seeks to deliver unsurpassed educational programs that prepare students to face critical challenges related to agriculture, food systems, human well-being, natural resources and sustainable communities.

Website: http://cals.ufl.edu

WHO WE ARE

As of fall semester 2016, CALS has 3,975 undergraduates, 1,517 graduate students and 353 teaching faculty members representing 14 departments and two schools. CALS is one of the nation’s largest agricultural colleges and is known for its accomplished faculty and diverse student body.

The college values teaching excellence. CALS has had more faculty members recognized by the U.S. Department of Agriculture with national teaching awards than any other comparable land-grant college. Administrators have established collegewide hubs for educational advancement: the CALS Teaching Resource Center and the Center for Online Learning and Technology (COLT). To support faculty development in teaching and learning, CALS holds a teacher’s college and a teaching enhancement symposium every fall, and supports a teaching retreat and a teaching and advising awards program each spring.

During the fall 2016 semester, about 65 percent of current CALS undergraduates and 57 percent of CALS graduate students were women. Minority students represented about 26 percent of CALS undergraduates and 12 percent of graduate students; international students represented 4 percent of CALS undergraduates and 31 percent of graduate students.

WHAT WE DO

Today, CALS offers 23 undergraduate degree programs and 22 graduate majors at the UF main campus in Gainesville, with several undergraduate majors offered at five locations outside Gainesville, and eight master’s programs and two bachelor’s programs available online.

Many CALS graduates go on to enter professional programs in fields such as medicine, pharmacy, law, dentistry and veterinary medicine. Some earn advanced degrees in agricultural and natural resources disciplines and secure positions in academia or the private sector. Others enter the workforce immediately after earning an undergraduate degree, pursuing careers as research scientists, crop managers, economists, industry executives, Extension agents, teachers, entrepreneurs and more.

Many of the state’s leading business, political and scientific figures are CALS graduates. Notable alumni include Florida Commissioner of Agriculture Adam Putnam, food technologist Charles A. Becker, former state senator J.D. Alexander, and two of the three co-developers of frozen concentrated orange juice.
STATISTICS*

93% of CALS undergraduates are Florida residents.

Worldwide, there are about 34,000 living CALS alumni.

$427,800 in student scholarships awarded in 2015-2016 academic year.

International students represent about 31% of CALS graduate enrollment.

4th largest college at UF.

4th largest college of agriculture and related sciences in the U.S.

328 on-campus faculty CY 2016.

25 off-campus faculty CY 2016.

353 total faculty with teaching appointments of at least 10 percent.

*Data collected fall 2016 unless otherwise noted.

SUCCESS STORY - SAMANTHA BARAOIDAN

Samantha Baraoidan of Hollywood, Fla., arrived at UF/IFAS already committed to a career in wildlife conservation. As a CALS undergraduate, Samantha learned from experiences that went far beyond the classroom — she also completed an honors research thesis and a UF/IFAS Extension internship, and spent a summer studying and interning in Swaziland.

After receiving her Bachelor of Science degree, Samantha took a job with the Florida Fish and Wildlife Conservation Commission, then returned to UF/IFAS in 2016 to begin work on a master’s degree, researching interactions between cattle, coyotes and feral swine on south Florida rangelands.

GOALS

1. Enhance the quality of admitted graduate students through investment in recruiting.
2. Enhance existing and develop new partnerships to broaden the recruiting base for undergraduate students.
3. Develop a lower-division college-wide course on current issues in agriculture, natural resources and related sciences.
4. Invest in assistance for faculty in design/re-design of face-to-face courses to enhance student engagement and learning.
5. Develop new mechanisms for recognizing excellence in teaching.
6. Increase student participation in experiential learning opportunities.
7. Create new opportunities for alumni and professionals to connect to CALS students.
THE UF/IFAS RESEARCH ENTERPRISE, conducted under the auspices of the Florida Agricultural Experiment Station, fulfills the UF/IFAS research mission to encourage innovative study, discover new scientific knowledge and create applications for that knowledge to address challenges facing agriculture, natural resources and interrelated human systems in Florida, our country and our world.

Website: [http://research.ifas.ufl.edu](http://research.ifas.ufl.edu)

WHO WE ARE

The UF/IFAS research enterprise represents the work of 568 faculty members with research appointments, hailing from every academic department and discipline within UF/IFAS. Their studies address significant issues confronting Florida industries, communities and individuals. Many UF/IFAS researchers are internationally renowned for their expertise and scientific achievements, and routinely garner honors and awards.

Research projects are conducted at the UF main campus in Gainesville and at off-campus facilities throughout the state, including 12 research and education centers, six research and demonstration sites, two biological stations, beef cattle units, a demonstration forest and a dairy farm.

Funding for UF/IFAS research activity comes from a variety of sources including federal grants, state appropriations, support from producers, contracts and grants, donations, and licensing revenues from crop cultivars and technologies developed by UF/IFAS personnel.

WHAT WE DO

The UF/IFAS Dean for Research Office provides the leadership and financial support needed to build and maintain impactful research programs, helps enrich graduate and undergraduate research experiences, promotes training and recognition for research personnel, and fosters collaborative interactions between business, agencies and faculty.

Agricultural topics researched at UF/IFAS include pest and disease management, nutrient management, improved crop varieties, biotechnology, livestock reproduction and health, irrigation and food safety. Natural resources topics under study include climate variability, water quality and conservation, energy conservation, land-use issues, wildlife, invasive species, fisheries, forest science, ecotourism, ecology and ecosystem services. In human systems, studies by UF/IFAS researchers investigate global competitiveness, labor-saving technologies, marketing, consumer behavior, financial management, child and family development, human nutrition, agricultural education, sustainable development, communities and economics.

Each spring, the Florida Agricultural Experiment Station Awards Ceremony acknowledges the most outstanding student and faculty research achievements. Also in the spring, the Station publishes a bulletin on the most significant recent research publications.
Every $1 invested in agricultural research and development returns $20 in benefits from increased agricultural productivity.**

Every year since FY 2001, UF/IFAS has ranked 1st or 2nd among U.S. universities in agricultural research and development expenditures.

Our researchers published 1,368 studies in refereed journals this year.

UF/IFAS plant breeders received 15 plant patents this year.

In CY 2016, the UF/IFAS research enterprise included 568 UF/IFAS faculty members with research appointments.


SUCCESS STORY - STRAWBERRY BREEDING

When Vance Whitaker became a UF/IFAS strawberry breeder in 2009, the program was at the strongest point in its 40-year history, thanks to ‘Florida Radiance,’ a variety released by breeder Craig Chandler in 2008 that immediately impressed growers.

Whitaker, an associate professor and statewide Extension specialist with the Gulf Coast Research and Education Center in Balm, was optimistic, believing the program could serve Florida’s $300 million strawberry industry even more effectively. He was right.

Today, UF/IFAS cultivars account for 90 percent of the 180 million plants grown each year on the state’s 10,000 acres of commercial strawberry land. ‘Florida Radiance’ represents 75 percent of the total acreage and a 2014 release, Sweet Sensation® ‘Florida 127,’ already accounts for 15 percent and has earned a reputation for superior flavor.

Beyond Florida, UF/IFAS strawberry cultivars have been licensed for production in 40 countries. These arrangements supply local markets without impacting Florida growers and generate revenue that supports the breeding program’s activities.

Recent achievements include release of ‘Florida Beauty’ in 2016, and Whitaker reports that the team is in the process of releasing additional varieties.

GOALS

1. Research Programs: Expand our global leadership in basic and applied research in agriculture, natural resources and interrelated human systems, to build and maintain programs that conduct impactful research.

2. Research Culture: Enrich the culture of research discovery by supporting faculty, inspiring innovation, promoting synergies between the three main UF/IFAS units and fostering effective communication between faculty and stakeholders.

3. Research People: Build satisfaction and quality of life on the job for faculty and staff by providing training and continuing education opportunities, and by nominating researchers at all career stages for awards, honors and other recognitions.
UF/IFAS EXTENSION IS A STATEWIDE NETWORK OF EXPERTS that fulfills the UF/IFAS outreach mission by partnering with communities to provide high-quality, relevant education and research-based expertise to foster healthy people, healthy environments and healthy communities.

Website: [http://SolutionsForYourLife.ufl.edu](http://SolutionsForYourLife.ufl.edu)

WHO WE ARE

As a land-grant institution, UF needs a statewide presence to serve citizens in every part of Florida. UF/IFAS Extension meets this need, providing science-based information to residents and producers, and relaying concerns and questions to UF/IFAS researchers when appropriate.

Besides operating offices in all 67 Florida counties, UF/IFAS Extension employs state specialists who are appointed to UF/IFAS’ 14 academic departments and two schools, and who are stationed at the UF main campus and 18 off-campus facilities. Furthermore, UF/IFAS Extension reaches clients in Florida and beyond via print and online resources.

UF/IFAS Extension agents form the backbone of the program; 390 are employed statewide. Most agents have positions that are dedicated to one or more broad topics, such as horticultural crops, commercial agriculture, 4-H youth development, family and consumer sciences or natural resources.

In addition, UF/IFAS Extension employs 245 statewide specialists, who provide insightful guidance to producers dealing with high-value crops and other concerns. These specialists address citrus production, livestock, seafood, aquaculture, urban horticulture, family resources, youth development and more.

UF/IFAS Extension is funded by federal, state and county sources and, of course, Extension personnel work in every Florida county. This situation has the effect of keeping UF/IFAS Extension personnel in close contact with local leaders, focusing on local concerns via grassroots engagement.

WHAT WE DO

All UF/IFAS Extension offices disseminate science-based information to clients, helping them solve problems related to agriculture, horticulture, natural resources, water, energy, youth, families and community issues. To accomplish their objectives, UF/IFAS Extension personnel conduct educational events, distribute educational materials and answer questions for callers and visitors.

Many agents travel to producers’ operations to provide on-site advice, and perform another important function by relaying producers’ needs and concerns back to UF/IFAS research faculty for assessment and action.

Additionally, UF/IFAS Extension offers training and professional development opportunities to personnel in agriculture and related industries, administers the Florida 4-H Youth Development Program, the Florida Master Naturalist Program and the Florida Master Gardener Program, and maintains a massive online Extension document library, the Electronic Data Information Source (EDIS).
SUCCESS STORY - CHRIS OSMWALT

UF/IFAS Extension multi-county citrus agent Chris Oswalt facilitates a program that helps citrus growers throughout the state minimize their use of irrigation water for freeze protection, a tactic that involves sprinkling trees to establish a coating of ice, providing insulation against the cold. Known as Winter Weather Watch, the program provides current and projected weather data, information on how to use the Florida Automated Weather Network (FAWN) system, and observations on the cold-hardiness of popular citrus varieties under field conditions. On average, participating growers report using about 20 percent less water for freeze protection each winter since becoming involved with the program.

GOALS

1. Increasing the sustainability, profitability and competitiveness of Florida’s agricultural and natural resources industries.
2. Enhancing and protecting water quality, quantity and supply.
3. Enhancing and conserving Florida’s natural resources and environmental quality.
4. Producing and conserving traditional and alternative forms of energy.
5. Empowering individuals and families to lead healthy, successful lives.
6. Strengthening urban and rural communities.
7. Preparing youth to be responsible, successful adults.

STATISTICS*

390 Extension agents.
245 Academic faculty with Extension appointments.
33,549 volunteers, who gave 1.23 million hours.

24.3 million client connections made.
84% of clients surveyed said UF/IFAS Extension solved their problem.

UF/IFAS Extension received $77.4 million in funding in FY 2016.
Of that funding, 6.2% came from federal sources, 52.9% from state sources and 40.8% from county sources.

*All data collected CY 2015 unless otherwise noted.
UF/IFAS POINTS OF PRIDE

FOR MORE THAN A CENTURY, UNIVERSITY OF FLORIDA AGRICULTURAL AND NATURAL RESOURCES EXPERTS HAVE SERVED THE STATE by educating future producers, professionals, leaders and scientists, by conducting innovative research to address the most promising opportunities and serious production challenges facing Florida, and by conducting Extension programs to bring the latest science-based information to producers and communicate their needs back to researchers. In recent decades, the licensing of technology and crop cultivars has become a noteworthy activity as well, bringing UF/IFAS innovations to the marketplace.

Some of the most important UF/IFAS achievements in teaching, research, Extension and technology transfer include:

TEACHING

- Among all U.S. universities, CALS has the largest doctoral program in agriculture and related sciences.
- To engage high school students, CALS co-sponsors the Florida Youth Institute, a weeklong summer residential program that engages youth with current agricultural and natural resources issues.
- Lassie Goodbread Black, the first woman enrolled full-time at UF, was admitted in 1925 to the College of Agriculture, predecessor of today’s CALS.
- The Challenge 2050 Project enables UF students to develop leadership abilities while seeking interdisciplinary solutions to the challenges posed by global population increases.
- In fall 2006, CALS began offering one of the nation’s first undergraduate degree programs in organic agriculture.
- To help faculty harness digital technology for teaching, CALS has launched the Center for Online Learning and Technology (COLT), which assists with online programs and courses.
- In 1970, Carlton Davis became an assistant professor with the Department of Food and Resource Economics; he was one of UF’s first African-American faculty members.
- In 1999, UF/IFAS established the nation’s first Doctor of Plant Medicine program, an interdisciplinary professional doctorate focused on plant health.

RESEARCH

- During the past 10 years, UF/IFAS plant breeders have released 283 new varieties for commercialization as landscape ornamentals, groundcovers, forages and food crops.
- Entomologist Nan-Yao Su and Dow AgroSciences experts developed the Sentricon® subterranean termite colony elimination system, which exploits the insects’ feeding behavior.
- UF/IFAS food scientists determined the folic acid requirements for pregnant women, a discovery that led to food fortification and marketing of new supplements to prevent birth defects associated with folic acid deficiencies.
- UF/IFAS entomologists conducted the first comprehensive studies of mosquito feeding patterns in the Southeast, leading to improved mosquito control programs statewide.
- Florida Sea Grant agents and specialists developed and demonstrated an improved harvesting method for natural sea sponges that improved the chances that cut “stumps” left behind on the sea floor would regenerate; the method is now required by state law.
- UF/IFAS agricultural engineers developed the raised-bed plastic mulch system, which is used extensively worldwide to conserve resources and protect crops from weeds, pests and soilborne diseases.
- UF/IFAS researchers developed a decision-support tool that helps the Florida Fish and Wildlife Conservation Commission analyze boat traffic in Florida’s waterways. The resulting data are used in evaluating requests to establish no-wake zones and other safety measures. The tool saves taxpayers $1.5 million annually.
EXTENSION

• The Citrus Health Management Areas program helps citrus growers fight citrus greening by coordinating their management practices to maximize effectiveness.
• UF/IFAS Extension specialists operate one of the few food safety programs for the nation’s fruit and vegetable juice industry, reaching 75 to 80 percent of all North American juice producers.
• EDIS, the UF/IFAS Extension online library, is the largest free resource of its type, with about 7,000 documents available on demand.
• The Tropical Aquaculture Laboratory in Ruskin helps producers breed popular ornamental fish, reducing collection pressures in the wild.
• Quick action by UF/IFAS Extension personnel, in cooperation with the Florida Department of Agriculture and Consumer Services, helped stop a 2015 outbreak of the Oriental fruit fly in Miami-Dade County; by February 2016 the pest was declared eradicated.
• UF/IFAS Extension administers the Florida 4-H Youth Development Program, which has more than 192,000 participants and 13,000 volunteers statewide.
• To discourage youth smoking, a Gilchrist County 4-H club helped establish a local ordinance requiring stores to keep candy-flavored tobacco items out of sight.
• In 2013, a multistate beef cattle Extension team that included UF/IFAS’ Cliff Lamb received a national award from USDA for helping ranchers improve calving rates.

TECHNOLOGY TRANSFER

• In 1969, UF/IFAS released the Florunner peanut, a high-yielding variety that dominated Southeastern peanut production for two decades.
• Sweet Sensation®, a UF/IFAS strawberry variety released in 2014, already accounts for 15 percent of the state’s commercial strawberry acreage.
• Longtime UF/IFAS tomato breeder Jay Scott developed the Tasti-Lee® tomato, a traditionally bred premium tomato licensed by UF and now sold worldwide.
• In 1980, UF/IFAS released the disease-resistant Centennial soybean; it became the most widely grown soybean in the Southeast.
• The UF/IFAS coleus breeding program has so far produced 55 commercially released cultivars that collectively represent 25 million coleus plants sold.
• Florida’s $70 million blueberry industry was built almost entirely on cultivars bred and released by UF/IFAS.
• UF/IFAS’ Lonnie Ingram developed a genetically modified E. coli bacterium capable of producing glucose from biomass, a key step in fuel ethanol production.
• Virtually all of Florida’s 4 million acres of planted pine use cultivars developed by UF/IFAS researchers and their collaborators.
SUPPORTED BY UF/IFAS, FLORIDA SEA GRANT IS PART OF THE NATIONAL SEA GRANT COLLEGE PROGRAM, a partnership between land-grant universities and the federal government’s National Oceanic and Atmospheric Administration. Much like its counterparts in other coastal states, Florida Sea Grant supports specialized academic and Extension faculty positions that enhance UF/IFAS’ broad missions. Florida Sea Grant funds competitive and university-based research, supports graduate student education and conducts a variety of outreach programs in marine fisheries, aquaculture, waterway planning and climate-change effects on coastal environments.

Issues of special concern to Florida Sea Grant include estuarine water quality, shellfish aquaculture, sustainable fisheries and the effects of sea-level rise on Florida’s coastal communities.

Success story
Cedar Key, a fishing village on the Levy County coast, faced economic calamity when state voters approved a ban on certain commercial-fishing nets. With support from Florida Sea Grant and the enthusiastic participation of local residents, the community launched a clam farming industry that has grown to the point where it now supports 600 jobs and produces about 90 percent of all hard clams cultured in Florida.

SUPPORTED JOINTLY BY UF/IFAS AND UF HEALTH, THE COLLEGE OF VETERINARY MEDICINE opened its doors in 1976 and remains the only veterinary medical degree program in Florida. The college includes the UF Veterinary Hospitals, which offer state-of-the-art health care to large and small animals from cattle and horses to pets and exotic species. Extension and food-animal services provide crucial resources to local cattle ranches, dairy farms, horse enthusiasts and managers of wildlife and aquatic animals.

Veterinary medical school faculty members with UF/IFAS appointments have played a role in several important initiatives to improve animal health care in Florida, notably the Master Hoof Care Program for dairy cattle, which was co-developed at UF and has been adopted worldwide. This instructional program teaches dairy workers proper hoof-trimming practices to prevent foot disorders.

Success story
After earning both a master’s degree in dairy nutrition and a Doctor of Veterinary Medicine degree in 1999, Charlie Chase departed UF and worked at California veterinary practices specializing in dairy cows. In 2008, he moved to New Zealand, pursuing private practice initially, then moved on to positions in New Zealand with Elanco Animal Health and then Zinpro Corporation, a livestock nutrition and pharmaceuticals firm.
FLORIDA IS HOME TO A DIVERSE POPULATION, WITH MORE INTERNATIONAL TOURISM AND TRADE THAN MANY U.S. STATES. This situation creates both opportunities and challenges for Florida’s agricultural and natural resources industries. The challenges include the arrival of invasive pests and emerging diseases; the opportunities range from international scientific collaboration to the opening of new markets abroad.

Although UF faculty members have pursued international work since the early 20th century, the first centralized UF/IFAS effort began in 1965, eventually giving rise to UF/IFAS Global, one of the most comprehensive international programs among U.S. land-grant universities. The program assists UF/IFAS faculty and students who wish to conduct agricultural teaching, research and/or Extension activities in other countries. UF/IFAS Global also assists foreign university students and scientists who wish to pursue agricultural studies and academic projects in Florida or abroad.

By leveraging its expertise and connections, UF/IFAS Global has established an impressive record for attracting and participating in large grants. In May 2015, UF/IFAS Global secured a five-year, $13.7 million grant to strengthen human and institutional capacity and improve food security in Haiti. It also participates in the recently funded $49 million Feed the Future Innovation Lab for Livestock Systems project.

NUMEROUS PAST AND PRESENT UF/IFAS FACULTY MEMBERS have developed crop varieties, technologies and scientific applications that were successfully commercialized. Today, the process of taking these scientific advances to the marketplace is known as technology transfer, and it represents an important aspect of the UF/IFAS commitment to foster “healthy people, healthy environments and healthy economies” throughout the state.

All technologies developed by UF/IFAS personnel during the normal course of business are communicated to the campuswide Office of Technology Licensing (OTL), which is tasked with evaluating and licensing intellectual property. The office files patent applications and other legal documents, offers licensing agreements and negotiates contracts with potential licensing partners. Once a technology is licensed, OTL personnel handle record keeping and oversight related to the contract, and distribute fees and royalties that licensees remit to UF.

The most successful technology associated with UF/IFAS is the Sentricon® subterranean termite colony elimination system, developed by UF/IFAS entomologist Nan-Yao Su and colleagues with Dow AgroSciences. Since reaching the market in 1995, Sentricon® has generated $29 million in royalties for UF, making it the most valuable licensed UF/IFAS technology and third-most valuable technology developed anywhere at UF.
THE ANNUAL BUDGET FOR UF/IFAS TOTALS MORE THAN $416 MILLION.

This funding supports faculty and staff salaries, new construction, facilities operations and maintenance, temporary personnel, equipment and supplies, Extension activities and many other expenses.

Although UF is a public university, funding for UF/IFAS comes from numerous public and private sources, including federal and state agencies, state appropriations, county governments, grants and contracts, proceeds from the Florida lottery and gifts.

State funding, allocated by the Florida Legislature, annually provides about $190 million that includes proceeds from student tuition. Some of the monies are earmarked for specific purposes, such as construction projects or new faculty hires, but most support our ongoing teaching, research and Extension missions.

Grants and contracts are the second-largest source of funding, and accounted for more than $153 million in FY 2016. Grants are secured by individual faculty members or teams of faculty, who apply for funding from various public and private entities, including the National Science Foundation and the U.S. Department of Agriculture. Contracts often come from industry or non-profit organizations and provide funding for specific research studies requested by the funding sources.

We are proud to partner with Florida county governments, which provide more than $30 million in funding each year, primarily for support of UF/IFAS Extension county offices. This arrangement helps keep UF/IFAS Extension operating in all 67 Florida counties, benefiting citizens across the entire state.
In FY 2016, expenditures by UF/IFAS totaled $416.2 million; the graph above shows the sources of these funds.

In FY 2016, expenditures by UF/IFAS totaled $416.2 million; the graph above shows how these funds were spent.
UF/IFAS PARTNERSHIPS

ALTHOUGH THE UNIVERSITY OF FLORIDA INSTITUTE OF FOOD AND AGRICULTURAL SCIENCES IS A VAST AND COMPLEX ENTITY, IT DOES NOT OPERATE IN ISOLATION.

Quite the contrary, partnerships are crucial to UF/IFAS operations at every level. Our personnel interact constantly with producers, elected officials and representatives of academia, government agencies and non-profit organizations.

Virtually every commodity group in Florida maintains contact with UF/IFAS researchers and Extension personnel who focus on their respective industries. Producers often participate in studies by allowing experiments on their acreage, and by providing data and anecdotal observations that help scientists assess challenges and potential solutions.

Elected officials at the county, state and federal levels are important UF/IFAS allies, helping to secure needed funding. The Florida Legislature appropriates about $190 million in funding to UF/IFAS each year, which includes proceeds from student tuition. Florida’s county governments provide more than $30 million each year in total financial support for UF/IFAS Extension. The federal Farm Bill, renewed approximately every five years, provides “specialty crops” research funding crucial to Florida, as well as other funding for research and Extension.

In academia, UF/IFAS faculty members often collaborate with colleagues at other public and private universities, including Florida A&M, the state’s other land-grant institution. These collaborations often result in new insights, published papers and patentable discoveries.

Within Florida, state agencies that regularly engage in collaborations and other activities supporting UF/IFAS include the Florida Department of Agriculture and Consumer Services, the state’s five water management districts, the Florida Fish and Wildlife Conservation Commission and the state Department of Environmental Protection. At the federal level, UF/IFAS projects often receive financial support from the U.S. Department of Agriculture, particularly its National Institute of Food and Agriculture, the U.S. Environmental Protection Agency, National Oceanic and Atmospheric Administration, U.S. Department of Energy, U.S. Department of Commerce and the U.S. Forest Service.

Non-profit organizations support critical initiatives where extra funding is needed, often in connection with specific commodities or industries, health care, veterinary medicine, environmental quality, natural resources and wildlife issues.

GIVING TO UF/IFAS

PHILANTHROPY HELPS UF/IFAS REACH NEW HEIGHTS OF EXCELLENCE.

The UF/IFAS Office of Advancement, in collaboration with the University of Florida Foundation, fosters essential relationships and secures private support to advance the UF/IFAS land-grant mission.

The UF/IFAS Office of Advancement has roots extending back a half-century, and was originally known as Special Help for Agricultural Research and Education (SHARE). This was one of the first fundraising programs on campus and benefited UF/IFAS by facilitating gifts supporting initiatives ranging from student scholarships to new scientific instruments to additional Extension personnel.

Altogether, gifts and pledges to UF/IFAS accounted for more than $20 million in FY 2016. Additionally, UF/IFAS has an endowment portfolio topping $112 million, which provides ongoing support for important administrative and faculty positions.

Charitable giving has special meaning for UF/IFAS, because so many of our donors are alumni and current or former UF/IFAS employees who have chosen to give back to help UF/IFAS achieve its many goals.

Donors can choose to support UF/IFAS in several ways, including gifts of cash, real estate, securities, life income gifts and charitable bequests.

UF/IFAS is now embarking upon its greatest challenge to date — a $250 million goal as part of the University of Florida Capital Campaign. These gifts will enable UF/IFAS to improve access to education through scholarships, support world-class faculty and continue finding solutions to global challenges.

For more information about making charitable gifts to UF/IFAS, please visit http://give.ifas.ufl.edu.
UF/IFAS FACILITIES

BECAUSE THE UF/IFAS ENTERPRISE SERVES THE ENTIRE STATE OF FLORIDA,
UF/IFAS has facilities statewide, making it easier for faculty and staff members to reach local communities, producers and residents.

As of January 2017, UF/IFAS facilities include 1,269 buildings totaling 3,754,611 gross square feet of space. Statewide, 28,068 acres are dedicated to UF/IFAS activities.

Roughly one-fourth of UF/IFAS building space is on the UF main campus in Gainesville in Alachua County, including some 350 buildings that represent almost 970,000 square feet. The UF main campus is home to UF/IFAS’ 14 academic departments and two schools, in addition to many UF/IFAS administrators’ offices, including the senior vice president’s office and administrative offices of the College of Agricultural and Life Sciences, UF/IFAS Research and UF/IFAS Extension in McCarty Hall.

Off-campus but still within Alachua County, UF/IFAS has several other facilities, including the Fisheries and Aquatic Sciences Program complex, the UF/IFAS Extension Alachua County office, a research forest, a dairy research farm and teaching facilities for the beef cattle and equine programs.

Outside of Alachua County, UF/IFAS operates facilities on more than 20,000 acres throughout Florida, including 18 research sites; the total number of UF/IFAS buildings outside Alachua County is about 750.
IN RECOGNITION OF THEIR OUTSTANDING SCIENTIFIC EXPERTISE AND ACADMIC PERFORMANCE, UF/IFAS FACULTY MEMBERS FREQUENTLY RECEIVE AWARDS AND HONORS FOR THEIR TEACHING, RESEARCH AND EXTENSION EFFORTS, AS INDIVIDUALS OR AS MEMBERS OF PROJECT TEAMS.
The following is a selection of prestigious national recognitions received by UF/IFAS personnel since 2012.

UF/IFAS CALS

In November 2016, two College of Agricultural and Life Sciences faculty members were honored by the Association of Public & Land-grant Universities (APLU) as recipients of U.S. Department of Agriculture (USDA) 2016 Excellence in College and University Teaching Awards for Food and Agricultural Sciences.
The awards program is conducted nationwide each year; awards are presented during the annual APLU meeting. The program celebrates faculty members for their teaching abilities, service, scholarship and use of innovative teaching methods.

Eric McLamore, an associate professor with the UF/IFAS Department of Agricultural and Biological Engineering, received one of two national awards in the New Teacher category. Nicole Stedman, a professor with the UF/IFAS Department of Agricultural Education and Communication, received one of six regional awards.

Nationwide, this program recognizes about 10 faculty members per year. Along with McLamore and Stedman, 12 other CALS faculty members have received these awards since 2004.

UF/IFAS RESEARCH

Since 2007, the USDA, through its National Institute of Food and Agriculture (NIFA), has sponsored one of the nation’s most prestigious annual awards competitions involving university research, the NIFA Partnership Awards Program.

Teams led by UF/IFAS personnel have received NIFA Partnership Awards four times in recent years.

2016 – The Pine Integrated Network: Education, Mitigation, and Adaptation Project, also known as PINEMAP, received a NIFA Partnership Award for outstanding performance integrating and fulfilling the land-grant teaching, research and Extension missions while helping secure the Southeastern planted-pine industry.

2014 – The Southeast Climate Extension project received a NIFA Partnership Award recognizing it as an outstanding multistate effort; the project provides Southeastern farmers with decision-making tools related to weather and climate.

2013 – The Beef Reproduction Task Force received a NIFA Partnership Award as an outstanding multistate effort. The Task Force focuses on improving calving rates, a factor critical to the success of beef cattle operations; seven universities are involved.

2012 – Two UF/IFAS faculty members received a NIFA Partnership Award for innovative programs and projects, honoring their work creating a yearlong, graduate-level course, “Nutrition Education Program Planning, Development, Implementation and Evaluation.”

UF/IFAS EXTENSION

Each year, APLU honors outstanding performance by Extension personnel across the country. One of its two main recognitions is the National Extension Diversity Award, which honors exemplary efforts to promote inclusiveness, diversity and equity in agricultural and natural resources industries.
The sole nationwide recipient of the 2014 National Extension Diversity Award was Cesar Asuaje, a UF/IFAS Extension regional specialized agent based in Palm Beach County, who focuses on Spanish-language education for farm workers, particularly in the area of farm safety and worker protection.

During three decades as an Extension professional, Asuaje developed, delivered and evaluated numerous educational materials on safe handling and use of agricultural chemicals. He also helped more than 400 Spanish-speaking farm workers obtain certification as pesticide applicators, enabling them to earn more money on the job.
TWO OF THE HIGHEST HONORS A SCIENTIST CAN RECEIVE ARE INDUCTION INTO THE NATIONAL ACADEMY OF SCIENCES (NAS) OR ELECTION AS A FELLOW OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE (AAAS). Both of these non-profit organizations promote scholarship and recognize outstanding scientific achievement.

The National Academy of Sciences (NAS) was created by legislation that President Abraham Lincoln signed in 1863, less than one year after he signed the Morrill Act to create the land-grant university system. Total membership in NAS is approximately 2,250 and a maximum of 84 new members are elected annually; candidates may only be nominated by current members and are evaluated on the basis of significant, sustained research achievement.

Among currently active UF/IFAS faculty members, including emeritus faculty, those inducted into NAS include:

- Linda Bartoshuk  
  Food Science and Human Nutrition  
  Inducted 2003
- Robert Cousins  
  Food Science and Human Nutrition  
  Inducted 2000
- Lonnie Ingram  
  Microbiology and Cell Science  
  Inducted 2001
- James Jones  
  Agricultural and Biological Engineering  
  Inducted 2012 (National Academy of Engineering)
- Harry Klee  
  Horticultural Sciences  
  Inducted 2012
- Pedro Sanchez  
  Soil and Water Sciences  
  Inducted 2012

Formed in 1848, the American Association for the Advancement of Science (AAAS) is the world’s largest general scientific society. Fellows are nominated and elected by the AAAS general membership; approximately 400 Fellows are elected each year.

Among currently active UF/IFAS faculty members, including emeritus faculty, those elected as AAAS Fellows include:

- Bryony Bonning  
  Entomology and Nematology  
  Elected 2010
- Ken Boote  
  Agronomy  
  Elected 2010
- Robert Cousins  
  Food Science and Human Nutrition  
  Elected 2014
- Peter Hansen  
  Animal Sciences  
  Elected 2007
- Andrew Hanson  
  Horticultural Sciences  
  Elected 2014
- Marjorie Hoy  
  Entomology and Nematology  
  Elected 1990
- James Jones  
  Agricultural and Biological Engineering  
  Elected 2012
- Harry Klee  
  Horticultural Sciences  
  Elected 2009
- Karen Koch  
  Horticultural Sciences  
  Elected 2012
- Lena Ma  
  Soil and Water Sciences  
  Elected 2011
- P.K. Nair  
  School of Forest Resources and Conservation  
  Elected 2002
- Daryl Pring  
  Plant Pathology  
  Elected 2008
- Ramesh Reddy  
  Soil and Water Sciences  
  Elected 2001
- Pedro Sanchez  
  Soil and Water Sciences  
  Elected 2005
- Thomas Walker  
  Entomology and Nematology  
  Elected 1964
- Frank White  
  Plant Pathology  
  Elected 2015
EVERY DAY, UF/IFAS ENCOURAGES THE STATE’S PRODUCERS AND RESIDENTS TO USE RESOURCES WISELY, IN THE INTERESTS OF GOOD STEWARDSHIP.

In that same spirit, UF/IFAS planning, construction and day-to-day operations are carried out with a commitment to good stewardship of every dollar used to support our facilities across Florida.

The UF/IFAS Facilities Planning & Operations (FPO) office plays a key role in this effort to maximize the benefits derived from funding. By following practices including proactive efforts to address deferred maintenance, monitoring utility usage and responding to requests and concerns from UF/IFAS personnel, the FPO office can prevent large and costly problems from developing over time.

Technological advances have enabled the FPO office to reduce costs in significant ways, including the use of innovative building-design strategies to cut overall utility demands. When a new laboratory is in the design stage, FPO will make arrangements to install instruments with unusually heavy utility demands in close proximity to each other, to centralize any special infrastructure required.

For example, many scientific laboratories are furnished with one or more powerful ventilation systems known as fume hoods, which are installed above work benches where scientists use chemicals that emit unpleasant or toxic fumes. Fume hoods were traditionally installed within the laboratory proper, and consequently they handled air from the entire workspace. This arrangement needlessly used electricity to vent air that was safe to breathe, along with fumes coming from the work bench directly below the fume hood.

An innovative practice adopted by UF/IFAS involves placing fume hoods in a separate room adjoining a laboratory, or multiple laboratories, with motion-triggered controls that activate the system only when someone is working in the room. This simple approach can result in significant financial savings over time, especially when this building practice is replicated across campus.

With funding concerns ever-present in the minds of UF/IFAS administrators, it’s a certainty that other innovative stewardship practices will be put to use as they become available.

Count on UF/IFAS to lead the nation’s universities in efforts to stretch finances and provide outstanding support to faculty and staff, enabling them to focus on our primary task — serving Florida’s producers, residents and communities.
**UF/IFAS CENTERS & INSTITUTES**

**SOME SCIENTIFIC CHALLENGES ARE TOO LARGE AND COMPLEX TO BE ADDRESSED EFFECTIVELY BY ONE PERSON.** These challenges require teams of experts who share a common interest in the subject matter and work together to seek solutions.

To foster such collaborations, within a single discipline or across multiple disciplines, UF encourages the formation of specialized units known as centers and institutes.

Centers are college-wide or university-wide units that provide services to a particular population; they are often based in a single academic department.

Institutes provide services to a more broadly defined population and involve two or more academic units; for this reason, institutes are likely to involve larger numbers of faculty than centers do.

The centers and institutes within UF/IFAS afford our faculty and our collaborators new opportunities to assess issues from all angles and develop practical solutions built on consensus.

**UNIVERSITY-WIDE INSTITUTES LED BY UF/IFAS**

- Florida Climate Institute
- University of Florida Water Institute

**INSTITUTE SERVING UF/IFAS**

- UF/IFAS Institute for Sustainable Food Systems

**CENTERS SERVING UF/IFAS**

- Center for Agricultural and Natural Resource Law
- Center for Aquatic and Invasive Plants
- Center for Food Distribution and Retailing
- Center for Landscape Conservation and Ecology
- Center for Nutritional Sciences
- Center for Public Issues Education in Agriculture and Natural Resources
- Center for Remote Sensing
- Center for Sustainable and Organic Food Systems
- Florida Center for Renewable Chemicals and Fuels
- International Agricultural Trade and Policy Center
- UF/IFAS Plant Innovation Center
THE UNIVERSITY OF FLORIDA INSTITUTE OF FOOD AND AGRICULTURAL SCIENCES (UF/IFAS) is a proud part of the nation’s land-grant university system, which was created in 1862 to provide access to higher education for people of average means. As part of its land-grant mission, UF/IFAS operates facilities throughout Florida, including 14 academic departments and two schools based at the UF main campus in Gainesville, 18 off-campus research facilities and UF/IFAS Extension offices in every county.

UF/IFAS Statewide Operations

12 Research and Education Centers
- Citrus REC - Lake Alfred
- Everglades REC - Belle Glade
- Florida Medical Entomology Laboratory - Vero Beach
- Fort Lauderdale REC - Fort Lauderdale
- Gulf Coast REC - Balm, Plant City
- Indian River REC - Fort Pierce
- Mid-Florida REC - Apopka
- North Florida REC - Marianna, Quincy
- Range Cattle REC - Ona
- Southwest Florida REC - Immokalee
- Tropical REC - Homestead
- West Florida REC - Jay, Milton

6 Research and Demonstration Sites
- Hastings Agricultural Extension Center - Hastings
- Nature Coast Biological Station - Cedar Key
- Ordway-Swisher Biological Station - Melrose
- Plant Science Research and Education Unit - Citra
- Suwannee Valley Agricultural Extension Center - Live Oak
- Tropical Aquaculture Laboratory - Ruskin

Legend
- Research and Education Centers
- Research and Demonstration Sites
★ UF/IFAS Extension County Offices
★ UF Main Campus

4-H Camps
- Timpoochee - Niceville
- Cherry Lake - Madison
- Cloverleaf - Lake Placid

An Equal Opportunity Institution. Information about alternate formats is available from UF/IFAS Communications, University of Florida, P.O. Box 110810, Gainesville, FL 32611-0810.

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