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IMPACT[®]

The University of Florida Institute of Food and Agricultural Sciences

College of Agriculture



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2003
1853

UNIVERSITY OF FLORIDA
Honoring the past, shaping the future

**UF/IFAS: Honoring
the Past, Shaping
the Future**

Perspective



Mike Martin
Vice President for Agriculture
and Natural Resources

In this issue of IMPACT magazine, we celebrate the University of Florida's 150th anniversary. Today, the UF's Institute of Food and Agricultural Sciences (UF/IFAS) is among the top 10 comprehensive, deep science, full-service educational institutions in the United States. We serve not only Florida, but also the nation and indeed the world with cutting-edge programs.

Like many other land-grant institutions, UF/IFAS faces several major challenges for achieving and maintaining world-class status. As we seek to shape our future, we must do so in the context of these challenges.

Core, underpinning values: We must maintain access to our programs for all those we serve or need to serve, and we must also be accessible to them in order to understand their needs. We must strive to remain the peoples university and develop the sort of research and education programs that will truly benefit the people. We must sustain a commitment to excellence in all our research, teaching and extension programs. We must also maintain an integrated approach in these three areas – along with an appropriate international focus.

We must also be committed to diversity. Strength and progress is the product of inclusion. We must strive to widen the circle of those who participate in our programs and benefit from them.

Balance: As we seek to be the peoples university, we must strike the appropriate balance between short-term needs fulfillment and long-term solutions, basic and applied research, public and private partnerships, production of science versus the production of scientists, technical vs. general undergraduate education and proactive vs. reactive programs.

Holistic approach: We must not narrow our vision. We understand and confront complex issues from a systems point of view. In this regard, we will seek to eliminate or at least minimize barriers to interdisciplinary and cross-disciplinary program development and implementation.

Public awareness and support: We must demonstrate to all Floridians that UF/IFAS programs do make a difference in their lives. It must be an ongoing activity that continues day in and day out, year after year. The public does want to know who we are and what we are about. We have an obligation to demonstrate our commitment to them so they can understand how both applied problem-solving work and basic science research touch their lives.

Accountability: The numbers part of the accountability equation is important, but so are outcomes. What our programs have accomplished in all of our mission areas is an important piece of any accountability model. We must continue to document outcomes and how our programs continue to enhance the quality of human life.

Future planning: We must plan our programs in a way that makes sense. Forces that shape our future are external, and many are out of our control. While we must focus on our priorities, we must also be flexible and able to adjust to the rapid change that inevitably will occur.

UF/IFAS is committed to maintaining its profile as a truly outstanding full-service teaching, research and extension enterprise. The tradition of quality, excellence, responsiveness and access that has gone before us deserves our maximum effort. We will continue that tradition!

A handwritten signature in black ink, appearing to read "Mike Martin". The signature is fluid and cursive.

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Winter 2003

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Tracing its roots to 1853, the University of Florida celebrates its 150th anniversary in 2003.

Coordinating Teaching, Research and Extension

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Jimmy Cheek, dean of UF's College of Agricultural and Life Sciences, provides an overview of the college—past, present and future.

Statewide Programs

By offering degree programs in many areas of the state, UF's College of Agricultural and Life Sciences has a unique teaching mission. Page 12

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Richard Jones, dean for research, outlines the importance of effective research programs for Florida's growing economy.

\$54 Billion Economic Impact

Florida agriculture and natural resource industries generate

\$54 billion for the state's economy, and UF/IFAS research is key to the future success of these and other industries. Page 17

24 Extension

Christine Waddill, dean for extension, describes how extension education programs help solve some of the many challenges facing Florida residents during a period of rapid urban growth.

In Every County

With education programs in all 67 Florida counties, the Florida Cooperative Extension Service is the "historic gateway" or "front door" to research-based information from UF/IFAS. Page 25

4-H Youth Development

Now serving more than 250,000 youth across the state, the 4-H Youth Development Program has a long and rich history of helping meet the needs of youth in Florida. Page 32

Florida Sea Grant

Modeled after the land-grant concept, the Florida Sea Grant is the only program of its kind to address marine and coastal needs in the state. Page 37

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On the cover: The facade of Griffin-Floyd Hall on the University of Florida campus includes a decorative frieze and the College of Agriculture name set in stone. The photo insert in the window provides a more complete view of the building, which was constructed in 1912. Originally named after Wilbur Floyd, an assistant dean of the college, the building's name was changed in 1989 when Florida citrus grower Ben Hill Griffin contributed funds for renovation of the structure. The building is now used by UF's College of Arts and Sciences, and the College of the Agricultural and Life Sciences is located in new facilities. (Photo by Thomas Wright)

Photos of historic buildings: top, Tropical Experiment Station in Homestead; middle, Newell Hall at UF in Gainesville; bottom left, Rolfs Hall at UF; bottom center, Dairy barn at UF; bottom right, Floyd Hall.

Historic photos from UF Department of Special Collections, George A. Smathers Libraries and UF/IFAS photo archives.

SESQUICENTENNIAL CELEBRATION!

TRACING ITS ROOTS TO 1853 — WHEN MOST OF THE STATE WAS AN UNINHABITED WILDERNESS — THE UNIVERSITY OF FLORIDA CELEBRATES 150 YEARS OF PROGRESS IN EDUCATION AND RESEARCH IN 2003. IT'S ALL PART OF A YEARLONG CELEBRATION — “HONORING THE PAST, SHAPING THE FUTURE.”

From 70 students 150 years ago to more than 47,000 students today, the history of the University of Florida is impressive by any standard.

The seeds of one of the nation's largest and most comprehensive state universities were planted in 1853 when Florida Governor Thomas Brown signed the first bill providing public funds for the support of higher education, establishing the East Florida Seminary in Ocala.

In 1866, the seminary was moved to Gainesville. But it wasn't Florida's first college-level institution. That distinction belongs to the Florida Agricultural College, which opened its doors in Lake City in 1884.

Probably no federal act has contributed more to the development of higher education in the nation than the Morrill Act of 1862. Also known as the Land-Grant College Act, the Morrill Act provided funding for institutions of higher learning in each state “to teach such branches of learning as are related to agriculture and the mechanical arts.”

The Florida Agricultural College was the first land-grant college in the state and the first school to offer a four-year, post-secondary education. When the Lake City college was opened to women in 1894, 54 enrolled — many more than expected.

The Hatch Act of 1887 provided federal funds to establish agricultural experiment stations at each of the Morrill Act colleges. The Florida Agricultural Experiment Station, the state's oldest research center, was established at the college in 1888.

Foreground: Cadets from the East Florida Seminary in Gainesville during the 1880s.

Background photo: Blueprint of the residence hall of the Florida Agricultural College in Lake City.

In addition to the experiment station and other programs started at the Florida Agricultural College, Peter Henry Rolfs began collecting plants and exchanging specimens with herbariums in 1891. The herbarium he started is now a unit of the Florida Museum of Natural History at UF in Gainesville.

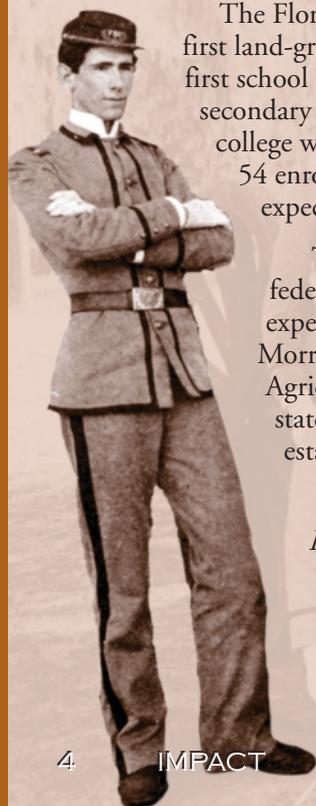
With growing competition between the Florida Agricultural College and other state schools for limited public funds, it soon became apparent that Florida had more schools than it could afford. Without change, none would have been able to achieve a national reputation for excellence, said UF Archivist Carl Van Ness.

“That's when Henry Buckman, a political ally of Governor Napoleon Bonaparte Broward, proposed consolidating the institutions under a single governing board,” Van Ness said. “As a result, the Buckman Act was passed by the Florida Legislature in Spring 1905, creating a Board of Control that later became the Board of Regents. Members were appointed by the governor to oversee consolidation of the state's public institutions of higher education.”

Van Ness said the act authorized four schools: one for men (now the University of Florida), one for women (now Florida State University), one for African-Americans (now Florida A&M University) and one for the deaf and blind (now the Florida School for the Deaf and Blind at St. Augustine).

When all Florida communities were invited to submit proposals for hosting an institution, Gainesville and Lake City emerged as the top contenders for the men's school. Both communities made generous offers of cash, land, water and other concessions. In July 1905, the board selected Gainesville as the new home for the University of the State of Florida. In 1909, the name was shortened to University of Florida. The first woman enrolled in summer sessions at UF in 1909, and gender segregation officially ended in 1947. Integration came to UF in 1958.

Beginning in 1899, traveling exhibitions and lectures — known as Farmers' Institutes — facilitated the





Military-style barracks housed cadets at the East Florida Seminary in Gainesville during the 1880s.



During the early 1900s, Newell Hall became home to the Florida Agricultural Experiment Station at the University of Florida in Gainesville.

extension of information from the experiment station to farmers. With the passage of the federal Smith-Lever Act in 1914, the third component of the university's agricultural program, the Florida Agricultural Extension Service (now the Florida Cooperative Extension Service), was established as the outreach component of the land-grant university.

By the mid-1920s, virtually all Florida counties supported a county extension agent. Women participated in extension work through the home demonstration program. Florida 4-H, extension's youth development program, began in 1909.

Among all UF programs, extension is unique because of its relationship with the boards of county commissioners in Florida's 67 counties. In many respects, the extension service is the "historic gateway" or "front door" to the vast resources of UF.

Recognizing the need for statewide agricultural research and education centers, the legislature established the Citrus Experiment Station (now the Citrus Research and Education Center) at Lake Alfred in 1917. The Everglades Experiment Station (now the Everglades Research and Education Center) at Belle

Glade followed in 1925, and by the 1940s there were more than 13 stations throughout the state. In 1939, the legislature authorized creation of the School of Forestry (now the School of Forest Resources and Conservation) as part of UF's College of Agriculture (now the College of Agricultural and Life Sciences).

In 1964, under the leadership of Provost for Agriculture E.T. York, creation of UF's Institute of Food and Agricultural Sciences (UF/IFAS) was approved by the Florida Board of Control. York also served as interim UF president from 1973 to 1974 and chancellor of the State University System from 1975 to 1980.

The action consolidated into one overall program four previously separate units: the College of Agricultural and Life Sciences, the Florida Agricultural Experiment Station, the Florida Cooperative Extension Service and the School of Forest Resources and Conservation. Today, the UF/IFAS administrative umbrella also includes the Florida Sea Grant Extension Program and programs in the College of Veterinary Medicine.



In 1884, the Florida Agricultural College in Lake City was the first land-grant college in the state and the first school to offer a four-year post secondary education. Pictured above is the Science Building of the Florida Agricultural College.

In 1985, UF was added to the Association of American Universities, a prestigious higher-education organization comprising the top 63 public and private institutions in North America. UF's placement recognized outstanding research and education programs in agriculture and natural resources, engineering, medicine, business and law.

"The growth and development of Florida agriculture into a \$54 billion industry has been due in large part to the success of statewide UF/IFAS teaching, research and extension programs over many decades," said Mike Martin, UF vice president for agriculture and natural resources. "The progress has been truly impressive, and the challenges of the future range from feeding a growing world population to growing plants on a manned mission to the planet Mars."

Martin said Florida has not always been a prolific agricultural producer. In 1821, at the end of some 250 years of Spanish rule, the colony was still importing food from Cuba. Even in 1880, 376 years after the first permanent settlement – and 58 years after statehood – Florida was still only a frontier state, with 23,000 farms and more than 21,000 square miles of wilderness. The state's subtropical climate, erratic rainfall, poor soils and numerous pest problems combined to defeat all but the hardiest farm families.

In the 1920s, citrus growers were fortunate to get 84 boxes of fruit from each acre of grove land. Today, thanks largely to UF research and education programs, Florida citrus groves produce 294 boxes oranges per acre, and citrus industry contributes \$9 billion to the state's economy.

Row crops and forages cover almost a third of Florida's total land area, generating about \$1.5 billion in farm income. In the 1920s, farmers harvested a few hundred pounds of peanuts per acre. Today's average yield is 2,500 pounds per acre.

Developed in the 1920s, the 505,000-acre Everglades Agricultural Area now produces vegetables as well as rice, sugarcane and sod in one of the nation's most unique and productive regions.

Revenue from Florida tomato production now exceeds \$400 million annually, and strawberry production generates \$167 million in farm income.

Spanish range cattle, imported more than 400 years ago, formed the genetic base for today's cattle industry in Florida. Modern breeds developed by UF researchers have dramatically improved carcass quality and beef production efficiency. Florida's livestock production – beef cattle, dairy cows and poultry – now generates more than \$1.3 billion annually.

From the 1800s to the early 1900s, Florida forests were heavily exploited for construction, shipbuilding and railroad expansion, leaving the state with the challenge of restoring forests. Modern production and conservation practices are key to sustaining a forest-products industry with an annual economic impact of more than \$8 billion.

The history of Florida's environmental horticulture industry dates back to 1881, when the first ornamental plant nursery was established in Manatee County. Today's statewide industry, which has grown rapidly since the late 1940s, includes landscape plants, flowers, foliage and turfgrass. Florida's environmental horticulture industry is now the nation's second largest.

Tropical fruit production in the Homestead area dates back to the 1800s, and the industry now covers 16,000 acres in nine South Florida counties. Avocado, banana, carambola, mamey sapote, lime, longan, lychee, mango and papaya production has a \$137 million economic impact.

Researchers evaluate the effectiveness of an experimental mechanical tomato harvesting system during a field day in the 1970s. (Photo by Chuck Woods.)

Background photo: Extension agents and U.S. Department of Agriculture personnel demonstrate the use of pesticides on livestock to help rid the state of destructive screwworms flies in 1948.



Aquaculture, a relatively new industry, is another fast-growing segment of Florida agriculture. Production of alligators, aquatic plants, catfish, clams, crawfish, eels, sturgeon, tilapia and tropical fish annually generates more than \$43 million in farm income. Other new enterprises such as hydroponic farming – growing plants in soilless media – generate about \$20 million in farm income.

In 2002, agricultural and natural resource industries contributed more than \$54 billion to Florida's economy. One out of every four jobs in the state is related to agriculture and natural resources – Florida's second largest (after tourism) and most economically stable industries.

UF's new strategic plan, unveiled by UF President Charles Young in August 2002, is to become one of the top 10 public research universities – and one of the top 20 universities overall – in the nation. This will be accomplished by strengthening UF's core programs, including the Institute of Food and Agricultural Sciences.

"This is clearly a time when the University of Florida must develop increased capability to meet the changing needs of the state it serves," the plan states. "To do so, it must realize its potential as a major player in American and international higher education and research."

-Chuck Woods

FOR MORE INFORMATION ON UF'S 150TH ANNIVERSARY, PLEASE VISIT THE FOLLOWING WEB SITE: WWW.UFL.EDU/150

Top left: The Tropical Experiment Station in Homestead was established in 1929; Top right: Florida's forest products were moved to sawmills by rail cars during the late 1800s and early 1900s because of the lack of roads; Bottom left: During the 1800s, tropical fruits such as avocados and citrus were harvested and packed by hand for delivery to northern markets in non-refrigerated rail cars and boats; Bottom right: During the 1950s, 4-H agents at Camp Cloverleaf provided lessons in horticulture for 4-H members from the Seminole Tribe.



UF/IFAS Timeline



1853

The state-funded East Florida Seminary was established in Ocala where classes were held until 1861 and the beginning of the Civil War.



1787

Northwest Ordinance is passed, authorizing the sale of public land for support of education, thus establishing the land-grant principle.



1862

First Morrill Act is passed and signed by President Abraham Lincoln, donating public lands to the several states, the sale of which is for the “endowment, support, and maintenance of at least one college where the leading object shall be, without excluding other scientific and classical studies and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life.”

1866

The East Florida Seminary moved from Ocala to Gainesville, taking over the Gainesville Academy that had been established in 1856.

1870

Florida Legislature passed an act establishing the Florida Agricultural College and appointed a Board of Trustees.

1872

State legislature amended the act of 1870 and stipulated that the State Superintendent of Public Instruction “by virtue of the office” was president of the college.



Jonathan Gibbs, an African-American and former Florida secretary of state, was appointed superintendent of public instruction. Until his death some 19 months later, Gibbs was president of the Florida Agricultural College, which had not been built.

1873

1890

The Second Morrill Act is passed, providing further endowment for colleges. Part of this funding is to be used for institutions for black students, leading to the creation of 17 historically black land-grant colleges.



1888

The Agricultural Experiment Station was established as a division of the Florida Agricultural College

1887

The Hatch Act is passed, mandating the creation of agricultural experiment stations for scientific research.



1884

The first classes of the Florida Agricultural College met on the first Monday in October. Students totaled 31. The institution was the first in the state to be called a “college.”

1883

After years of debate, the trustees selected Lake City as the new site for the college.



1877

The legislature appointed a new board of trustees for the college with the authority to move the college.

1875

The first building was built in Eau Gallie (which merged with the city of Melbourne in 1969), but the college did not have faculty or students. Because of the way the location was selected, it was called the “carpetbagger’s college” and never opened for classes.



1894

The Florida Agricultural College opened to female students.

1903

Florida Legislature approved the name change of the college in Lake City to the University of Florida.

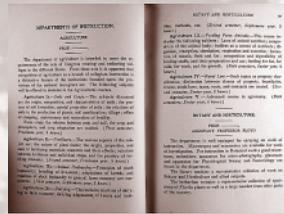


1906

The college was moved to Gainesville to become part of the new University of Florida. Agriculture was listed in the first catalog as a "school."

1905

Florida Legislature approved the Buckman Act to establish the University of Florida in Gainesville and remove the university from Lake City.



1907

Nelson Amendment to the Morrill Acts of 1862 and 1890 is passed, providing further increased appropriations to land-grant institutions.

1908

Benefits of Second Morrill Act and the Nelson Amendment extended to Puerto Rico.

1910

The School of Agriculture became the College of Agriculture.



1914

The Smith-Lever Act is passed, providing federal support for land-grant institutions to offer educational programs to enhance the application of useful and practical information beyond their campuses through cooperative extension efforts with states and local communities.

2003 and Beyond

UF/IFAS initiatives for shaping the future:

- Water quality and management
- Managing human impacts on natural and coastal ecosystems
- Global competitiveness
- Human resource development and management
- Society-ready graduates
- Public policy analysis
- Plant, animal and human protection from pests and diseases
- Food technology: safety, nutrition and new product development

2000

Legislative oversight group conducts another study of IFAS. Concludes that IFAS mission serves the state. UF/IFAS develops knowledge in agricultural, human and natural resources and the life sciences and makes that knowledge accessible to sustain and enhance the quality of human life.

1990's

IFAS expands formal teaching programs to grant degrees to place-bound students in North, Central and South Florida. College of Natural Resources and the Environment formed and administered through the Vice President for Agriculture and Natural Resources. IFAS begins research center consolidation.

1980's

IFAS undergoes four legislatively mandated reviews of its organization and statewide programs. Legislative committee and Board of Regents conclude IFAS is effective in serving the needs of Florida's food, agriculture, and human and natural resource industries.

1970's

Planning and establishment of the College of Veterinary Medicine

1964

IFAS was approved as the unifying administrative umbrella for UF's programs in agriculture, forestry and related programs.



1946

The University of Florida became coeducational.



1939

Florida Legislature created the School of Forestry at the University of Florida.



1917

Florida Legislature established the first agricultural research and education center at Lake Alfred.

ESTABLISHING IFAS



People advised me not to leave the U.S. Department of Agriculture as administrator of the federal extension service to become provost for agriculture at the University of Florida. They pointed out that the university's agricultural programs were poorly organized and badly

fractured. Coordination among the teaching, research and extension functions was poor. Instead of having a single department in a given discipline, for example, there were separate departments for teaching (in the College of Agriculture) and research (in the Agricultural Experiment Station), with extension personnel organized independently of either. Furthermore, there was a large network of research centers throughout the state that were part of the Agricultural Experiment Station, but there was little relationship between the work of these centers and the departments on campus.

The issue of structure was very high on my list of priorities after arriving in Gainesville. I found that the provost was responsible for the College of Agriculture, the Agricultural Experiment Station and the Cooperative Extension Service. Each of these entities had separate budgets and appropriations from the legislature, and the head of each organization pretty much worked independently. The provost had no responsibility for the budgets of each organization and could exert influence on the direction of these programs only by power of persuasion.

I found many able people willing to consider ideas for modifying our organizational structure and operating procedures. I shall always be grateful to the faculty and administrators for their willingness to consider change and for their support in implementing such change.

One of the great strengths of land-grant university agricultural programs has been that, in one organization, there are the three complementary functions of teaching, research and extension. If the maximum advantage from this is to be realized, there is the need to organize them so they can truly complement one another. The obvious administrative structure would place personnel concerned with all three functions in a single department, facilitating interaction. Indeed, a single faculty member might be involved in carrying out all three functions. Many would contend that the better teachers or extension specialists are those who also have some research responsibilities.

We spent a lot of time examining organizational issues and invited input from many people, both within and outside the university. Eventually we came up with a proposed organizational structure in which the College of Agriculture, the Agricultural Experiment Station and the Cooperative Extension Service would become integral parts of a single, larger organization, which we proposed to call the Institute of Food and Agricultural Sciences (IFAS).

The heads or directors of each of the three major functions in IFAS would be given the title of dean. These three deans would report to the provost (now vice president for agriculture and natural resources), who would be the chief administrator of the integrated organization.

There would be a single department for each discipline or commodity under the leadership of a chairperson or head. Where there had been separate appropriations in the past for the experiment station, extension and the college, it was proposed that these would be consolidated. The plan greatly simplified the existing structure and mode of operation.

The Board of Control, which was then governing board for the state's universities, readily approved the plan. The legislature, in turn, provided its approval by changing the appropriation entities in accord with the plan.

Additional steps were taken to achieve better coordination of agricultural programs within the university. The personnel at the research centers across the state were given academic appointments in their respective disciplinary departments. Department chairs were given the responsibility to help hire such personnel as well as evaluate them for tenure and promotion. Moreover, many of the research centers became "research and education" centers, with extension specialists and faculty teaching College of Agriculture courses located there.

There seemed to be genuine enthusiasm for the IFAS concept among most university faculty and staff. This enthusiasm appeared to radiate out to the people throughout the state. Because of this, making these adjustments was not nearly as difficult as many thought it might be. I think that most people realized there was a significant need for change and supported efforts to implement it. IFAS soon became recognized throughout the state and nation for its effective organizational structure. A number of other state land-grant universities have also developed organizational structures for their agricultural programs, modeled in large measure after IFAS.

— E. T. York, chancellor emeritus, State University System

Background photo: E. T. York speaks to a group of faculty and students early in his career at the University of Florida.



In 1884, Florida Agricultural College, the state's first land-grant college, opened in Lake City and served a state with an agrarian society and economy.

Today, more than a century later, nearly 4,000 students are enrolled in the

UF's College of Agricultural and Life Sciences. The college, carrying out the teaching mission of UF's Institute of Food and Agricultural Sciences, is dedicated to developing society-ready graduates equipped to meet the demands of today's increasingly complex job markets and changing societal needs. The curricula are designed to prepare students for entry into careers or to continue their education through graduate or professional education.

Students in the college – now the fourth largest at UF and the nation's sixth largest agricultural and life sciences college – are receiving an education that prepares them for their last job as well as their first. Today's academic programs represent diverse aspects of natural resources and the agricultural and life sciences. Participation in international programs helps broaden and prepare students to be leaders in international issues. Employment opportunities are plentiful in most fields, and graduate and professional school opportunities are exceptional.

We will maintain our commitment to undergraduate education, slightly expanding undergraduate enrollment

Students in UF's College of Agricultural and Life Sciences come from increasingly diverse backgrounds. (Photo by Thomas Wright) Background photo: Dean Cheek stands in front of the UF Century Tower.



and continuing to emphasize the quality of the undergraduate teaching and advising. We also will increase graduate enrollment from 882 to 1,200 in the next few years.

The 21st century will be characterized by major discoveries in the life sciences including fundamental discoveries in molecular and cellular biology and genetics. These discoveries will revolutionize our understanding of plants, animals, microorganisms and ecosystems, and enrich the core knowledge base of the college for both faculty and students. These discoveries also will continue to cause significant curricula modifications within the college. As a part of these discoveries, our faculty and students will continue to share knowledge and technology that will improve various aspects of our lives and the environment.

As Latin American, African, Asian and other countries with soils and climates similar to those in Florida take on greater political and economic importance, our college and its graduates will be leaders in providing the talent, technology and leadership critical to our global well-being.

A growing, comprehensive distance education program will continue to play an increasingly important role in the future. Courses are delivered by a variety of technologies, including interactive video and the Internet. Master's degrees currently being offered via distance-education technology include agribusiness management, soil and water science and agricultural education and communications. Bachelor's degrees are offered at off-campus locations in Fort Lauderdale, Fort Pierce, Pensacola, Homestead, Apopka and Plant City. These courses are taught by IFAS faculty located at the areas' research and education centers or delivered by distance education.

Our college is one of the leading colleges of its kind in the country. We are known for excellence in academic programs, and we have nationally and internationally recognized professors who are dedicated to innovative teaching and advising.

We will maintain our commitment to quality in teaching and advising and continue to hire superior new faculty. As the quality of our students and faculty continues to grow, we will improve and update the infrastructure to support teaching and advising. Internships and practical, experiential and clinical learning will become more fully integrated into the curricula. I am confident that we will continue to meet each new challenge and opportunity with our collective wisdom, energy and determination.

– Dean Jimmy Cheek

UF's COLLEGE of AGRICULTURAL and LIFE SCIENCES Goes STATEWIDE

The University of Florida's College of Agricultural and Life Sciences is unlike any other teaching program in the state. The college, the only one of its kind in Florida, has a unique statewide mission that extends coast to coast. It provides students with the knowledge and expertise essential for rewarding careers in agriculture, natural resources and food and life sciences as well as productive citizenship.

Although the college's roots can be traced to the 1884 opening of the Florida

Teaching

Agricultural College in Lake City, the first proposal to establish an agricultural institution in the state was made in the early 1820s, before the United States had completed the purchase of Florida. In 1821, an expert in tropical crops addressed Congress on the potential for agriculture in Florida.

The foundation for what became the College of Agricultural and Life Sciences was established in 1862, when President Abraham Lincoln signed the Morrill Act, often referred to as the land-grant act.

In 1905, the Florida Legislature passed the Buckman Act, consolidating higher learning in the state by establishing the Florida Female College (later Florida State University) in Tallahassee and the University of the State of Florida (shortened to University of Florida in 1909) in Gainesville. In 1906, the Florida Agricultural College was moved to Gainesville to provide the foundation for the new university.

Research and instruction were separated at the university, which included a school of agriculture with two faculty members. In 1909, the school became the College of Agriculture and the number of faculty had doubled – to four. A departmental structure also was established in 1909. The first departments were agronomy, horticulture and animal science.

“Today, the College of Agricultural and Life Sciences enrolls nearly 4,000 students who accurately reflect the state's population mix,” said Jimmy Cheek, dean for academic programs and the College of Agricultural and Life Sciences. Women outnumber men, and minorities constitute 22 percent of the student body. More than 70 percent of

In the 1950s, students use surveying techniques to plant pine seedlings.

Background photo: Students attend a horse anatomy lecture at the Florida Agricultural College during the 1880s.





Students participate in an entomology workshop during the 1960s.



students are from urban areas and 8 percent are international students – adding a global perspective and enriching the college’s cultural and intellectual atmosphere.

As Florida grew and agriculture became increasingly important to the state’s economy and lifestyle, demand for agricultural instruction increased and the college was expanded. The Department of Forestry was created in 1935, and in 1937 the Florida Legislature made it the School of Forestry. Harold Newins was appointed its first director. In 1972, it was renamed the School of Forest Resources and Conservation.

By 1940, there were nine departments and 30 professors as well as additional instructors and graduate assistants. By 1989 the college included the School of Forest Resources and Conservation, 16 departments, more than 200 faculty and 1,250 students. From 1994

Stacy Strickland, left, Bob McGovern, George Agrios and Osmond Baron examine a squash plant heavily infected with a fungal disease. Strickland and Baron are students in the college’s new Doctor of Plant Medicine program. McGovern is the new director of the DPM program, and Agrios is the former director. (Photo by Eric Zamora)



Environmental horticulture Professor Dave Clark teaches students in the UF/IFAS distance education classroom at McCarty Hall while 26 other students in Fort Lauderdale, Fort Pierce and Milton view the class over the interactive television network. (Photo by Thomas Wright)

Background photo: Faculty demonstrate grafting techniques on young citrus trees during the 1930s.

to 2001, the college's undergraduate program experienced rapid growth and majors swelled from 49 to 230 – a 369 percent increase.

In fall 2001, more than 3,700 undergraduate and graduate students were enrolled in the UF college. The teaching has expanded enrollment beyond the main campus through its Academic Partnership Program, which offers courses to students at locations throughout the state. The college uses on-site instruction, interactive video conferencing, videotape and the Internet to offer courses leading to bachelor's degrees, professional master's degrees and teacher certification. Through the college, the University of Florida also has joint academic programs with Florida Agricultural and Mechanical University in Tallahassee.

The College of Agricultural and Life Sciences also provides many of the courses taken by undergraduates in other colleges throughout the university to meet their degree requirements. These include classes in human nutrition, wildlife ecology and microbiology and cell science. The Department of Microbiology and Cell Science has the largest undergraduate microbiology program in the country. It is the third largest major at UF overall and is the largest science major at the university.

Graduate enrollment has grown from 658 in the fall of 1989 to 882 in the fall of 2002, a 34 percent increase. In the next few years, the college will increase graduate enrollment to 1,200 students.

Continued development of additional professional master's degrees, certificate programs, minors at the graduate level and other innovations – including combined bachelor's and master's degree programs – will continue to be developed.

College of Agricultural and Life Sciences interdisciplinary programs are becoming increasingly important. Curricula now include interdisciplinary programs in plant molecular and cellular biology, animal molecular and cell biology and turfgrass science. There is also a doctorate degree in plant medicine, which is the first professional doctorate in the college.

“While enhancing the quality of graduate-student experiences is a priority, the college will maintain its commitment to undergraduate education, slightly expanding undergraduate enrollment,” Cheek said. “The college's tradition of individual attention helps ensure the success of students and the future of the college.”

Junior and senior students with a 3.5 grade point average or higher may participate in the college's Upper Division Honors Program. The program was

University of Florida students Sharyl Brantley, left, and Lindsay Burnette check their net for a dragonfly during an insect field biology class at the Natural Area Teaching Laboratory in Gainesville. (Photo by Milt Putnam)





"Although it's not always evident at the time you are teaching, you can have an impact on these students for the rest of their lives" says Gail Kauwell, professor in the food science and human nutrition department. (Photo by Milt Putnam)

teaching and advising excellence. Faculty members are encouraged to continually develop and improve teaching and advising abilities through professional development. The college takes great pride in the fact that tenure-accruing faculty teach almost all courses and many of the laboratories.

The college has an active alumni and friends association that sponsors TailGator, hosts events throughout the state, provides an annual scholarship and serves as a support group for the college and IFAS. Alumni and friends provide approximately \$10 million a year to IFAS.

"The college will continue its mission into the 21st century, working to improve agriculture and the environment as well as embracing the challenges of an increasingly international society," Cheek said. "As Floridians seek to find new and innovative ways to deal with the pressures and issues pertaining to our environment and natural resources, students and faculty in the college will provide the leadership necessary to ensure the state remains at the forefront of agricultural practice and conservation."

– Patrick Hughes

implemented in fall 1998, complementing the UF honors program for freshmen and sophomores. The program challenges high-achieving students to strengthen their education by going beyond the regular requirements of their major. Students completing the program are awarded a medal and named College of Agricultural and Life Sciences Honors Scholars.

Each major within the college sponsors a professional society or club. The societies provide significant professional and leadership development experiences for students as well as the opportunity to volunteer and serve the community, university, college and academic unit. College of Agricultural and Life Sciences Ambassadors, a select group of students who represents the college, IFAS and UF at various events, are annually selected via a competitive interview.

Faculty members have been recognized nationally, regionally and at UF for



Rick Weldon, associate professor in the food and resource economics department, advises student Lei Smith on career choices. (Photo by Milt Putnam)



“To invent, discover and develop applications of knowledge.”

Each day, the Florida Agricultural Experiment Station – the research component of the University of Florida’s Institute of Food and Agricultural

Sciences – strives to fulfill that mission. Since its inception with the passage of the Hatch Act in 1887, the experiment station has contributed enormously to Florida’s economic and social welfare.

Most of Florida’s agricultural industry in some way owes its success to research conducted through the experiment station. This is significant because Florida’s agricultural industry is huge – a \$6 billion to \$7 billion enterprise that generates more than \$50 billion for the state’s economy. More than 30 commodities generate over \$10 million in farm-gate receipts annually. This leads to a demand for problem-solving through research.

UF/IFAS researchers have developed new crop varieties – for citrus, strawberry, tomato, blueberry, sugarcane, tropical fruit, peanut and more – with traits enhanced for productivity or quality. Researchers also have discovered more efficient production techniques, better protection from pests and more environmentally friendly processes.

In addition, UF/IFAS scientists have identified essential plant micronutrients and the causes of many plant diseases, and found that microsprinklers can be used for cold protection. They have developed technologies such as drip irrigation and plastic mulch for vegetable production, as well as mathematical plant growth models.

Florida’s cattle industry has benefited from UF/IFAS research. The introduction of Brahman genetics into Florida cattle relieved heat stress and led to a 50 percent increase in productivity. Today more than 90 percent of Florida cattle contain Brahman genetics. In addition, the development of new grasses adapted to Florida over the past 50 years has increased the carrying capacity of Florida’s pastures more than tenfold.

The natural resource industry has reaped rewards from the work of UF/IFAS scientists who first

demonstrated the economic return of forest fertilization and increased tree growth 25 percent with genetic improvement, as well as developed pest-resistant trees, site quality indices and best management practices. Researchers also demonstrated the relationship between landscape design and biodiversity, which underpins current natural resource management in Florida and the United States.

UF/IFAS researchers also have made a major impact in human sciences. Studying the role of folic acid in fetal development led to new recommendations for higher levels in the diet of pregnant women, which has resulted in decreased fetal abnormalities. Studying the role of the environment in child development has produced important information about conditions needed for our young people to succeed.

Foodborne illness is a serious issue that costs the United States an estimated \$1 billion to \$10 billion annually. Through their research on produce and aquatic food safety, UF/IFAS scientists are working toward achieving safer food supplies and improving food-handling practices. They conduct surveillance studies to better understand mechanisms of contamination and improve food-handling to reduce incidence of foodborne illnesses.

In the end, citizens statewide gain from UF/IFAS research. Results consistently show a 30 to 60 percent annual return to the taxpayer from funds invested in agricultural research. This is realized in higher quality products that cost less. For example, the cost of food has steadily declined to the point that the consumer now spends less than 12¢ out of each dollar for food, and half of that is spent in restaurants.

Four hundred fifty UF/IFAS research faculty members work with industry, nonprofit organizations and government agencies to solve many of Florida’s critical agricultural, human and natural resource challenges. In 2002, our research faculty received more than \$66 million in grants and contracts – the highest amount ever. Each year they publish more than 500 refereed scientific journal articles, present their research locally, nationally and internationally, and participate in extension programs, including field days, to share their results with the users.

In the future, UF/IFAS will continue to invest significantly in research, and Florida citizens will continue to benefit from higher quality food, an enhanced natural resource system and an increased quality of life – all at a lower cost.

– Dean Richard Jones

UF/IFAS RESEARCH Supports FLORIDA'S \$54 Billion AGRICULTURAL and NATURAL RESOURCES INDUSTRIES

In today's knowledge-based economy, research is more important than ever, and the University of Florida's Institute of Food and Agricultural Sciences performs a vital role in solving a variety of social, economic and environmental problems in one of the country's fastest growing states.

In fact, it would be difficult to find any area of the state that has not benefited from UF/IFAS research programs.

"UF faculty and staff, which include some of the nation's top scientists, have an impressive track record in research on important issues, including agriculture, biotechnology, food safety, global competitiveness, medical entomology, pest management and water quality as well as invasive plants and animals, plant diseases and natural resources," said Richard Jones, dean for research and director for the Florida Agricultural Experiment Station.

Currently, UF/IFAS has more than 700 research projects on UF's main campus as well as at 13 research and education centers throughout the state. Research is conducted by the Florida Agricultural Experiment Station, which is the research component of IFAS.

Today, more than \$100 million a year from state, federal and private sources fund UF/IFAS research programs, generating knowledge in agriculture, human

The Citrus Experiment Station (now the Citrus Research and Education Center) was established at Lake Alfred in 1917. It was the first permanent branch experiment station. Background photo: Early research laboratory at the Citrus Experiment Station.





Beginning in 1923, research at Hastings has provided farmers with new potato varieties to increase yields and reduce crop losses from pests and disease. Background photo: Laboratory beakers for isolating chemicals such as sugars and starches.

and natural resources, and life sciences. Results help sustain and enhance the quality of life for millions of people throughout Florida and beyond.

This research is fundamental to the UF/IFAS mission: to help Florida realize its maximum potential for agricultural and natural resource development and to find solutions for social, economic, environmental and cultural problems in Florida. Research accomplishes this by applying biological, physical, economic and social sciences to issues associated with Florida's agricultural and natural-resource-based industries.

The foundation for UF/IFAS research is found in the federal Hatch Act of 1887, which established agricultural experiment stations at land-grant colleges. Land-grant colleges were established by the Morrill Act in 1862, which provided public land for the establishment of agricultural colleges, including a provision to foster agriculture through scientific research.

It wasn't until after the Civil War that many southern states could take advantage of the Morrill Act. In 1884, Florida, then still essentially a frontier state, established the Florida Agricultural College in Lake City. By 1888, the college included the new Florida Agricultural Experiment Station.



Rudolf Scheffrahn, left, professor of entomology, and Mark Weinberg, general manager of Cobra Termite Control in Lauderhill, Fla., measure the concentration of gas being used to fumigate a home. In tests at UF's Fort Lauderdale Research and Education Center, they found that methyl bromide – a fumigant used to control insect pests – will decontaminate buildings containing deadly bacterial spores such as anthrax. (Photo by Eric Zamora)

During this early period, researchers at the Florida Agricultural College sought to improve dairy cows by breeding native cows with a purebred Jersey bull.

In 1906, the experiment station was relocated to the new University of Florida campus in Gainesville. Research took place on a 40-acre farm and farms belonging to cooperating farmers in the region.

In 1917, the first permanent branch station – the Citrus Experiment Station at Lake Alfred – was authorized. By 1920 the first experimental orange groves were planted. By the end of the century, the station was the world's largest and most respected citrus research center.

In 1924, the Everglades Experiment Station was established in Belle Glade amid challenges. The center had to be rebuilt three times in its first decade because of damage from extreme weather conditions. By the 1930s, it became a leading research center for vegetables and sugar.

Work at other early stations included potato research at Hastings, vegetable research at Sanford,

tomato research at Bradenton and tropical and vegetable research at Homestead. By 1950, 19 branch stations were established and working closely with county extension agents.

From 1915 until 1938, the dean of the College of Agriculture also served as director of the experiment station and extension. In 1938, the post of provost for agriculture was created to administer both research and extension. From 1906 through 1943, Peter Rolfs and Wilmon Newell served as station directors. Newell helped expand the experiment station's staff and programs into the 1920s and throughout the Great Depression. After Newell's 1943 retirement, the station director and provost for agriculture positions were separated, and Harold Mowry became director.

The 1920s saw many notable achievements as a result of research. Experiment station veterinarians issued recommendations for control of coccidiosis, a serious disease affecting baby chicks. Scientists also began studying salt sickness in cattle. After eight years of research, UF's agronomy department made the first successful cross between two different peanut varieties.

Lynn Bailey, right, professor in the food science and human nutrition department, conducts research on the amount of folate needed in diets of pregnant women. She is discussing proper nutrition with Kathy Hutson, one of her study participants. (Photo by Thomas Wright)





Sally Williams, left, associate professor in the animal sciences department, and doctoral student Mohamed Shafit Hussain apply sodium-lactate and sodium-diacetate treatments to turkey fillets to extend their shelf life. Williams says the poultry industry is keenly interested in their research findings. (UF/IFAS file photo)

technologist initiated research on milk processing and identified the need for mineral supplements in the cattle diets – outlining a program for the control of the most serious cattle disease at that time.

At the same time, the impact of UF research was felt in Florida's citrus industry; in the 1930s, acreage devoted to citrus production doubled and orange production tripled.

In the 1940s, researchers, working in conjunction with the Florida Citrus Commission and the U.S. Department of Agriculture, developed a process for producing orange concentrate that retained 90 percent of its vitamin C. The army requested 25,000 gallons of concentrate, and a pilot plant for frozen orange-juice concentrate was established at UF.

Though the issue would become more prominent in later decades, as early as the 1920s, researchers recommended that insecticides should be used as a temporary way to control insect pests. They said use of natural predators could be an effective alternative to pesticides.

In the 1930s, researchers discovered typhoid and paratyphoid bacteria caused leukemia in chickens. The disease had baffled scientists since 1845. A dairy

Research on grapes has allowed Florida growers to produce varieties that thrive in the state's harsh climate. Today, some of these varieties have resulted in the production of award-winning wines. Background photo: Florida's environmental horticulture industry, which has grown rapidly since the 1940s, includes landscape plants, flowers, foliage and turfgrass. The industry is now the nation's second largest. Photo circa 1940s.



Nan-Yao Su, professor of entomology at UF's Ft. Lauderdale Research and Education Center, holds a piece of wood used in a new electronic monitoring system that detects termite feeding activity by subterranean termites. When termites feed on the wood and break the circuit, the electronic sensor warns pest control operators about the pest before it invades homes and other structures. He said tests on the sensor have been more than 98 percent accurate. Su also helped develop the Sentricon Termite Colony Elimination System® which is marketed worldwide by Dow AgroSciences. (Photo by Eric Zamora)



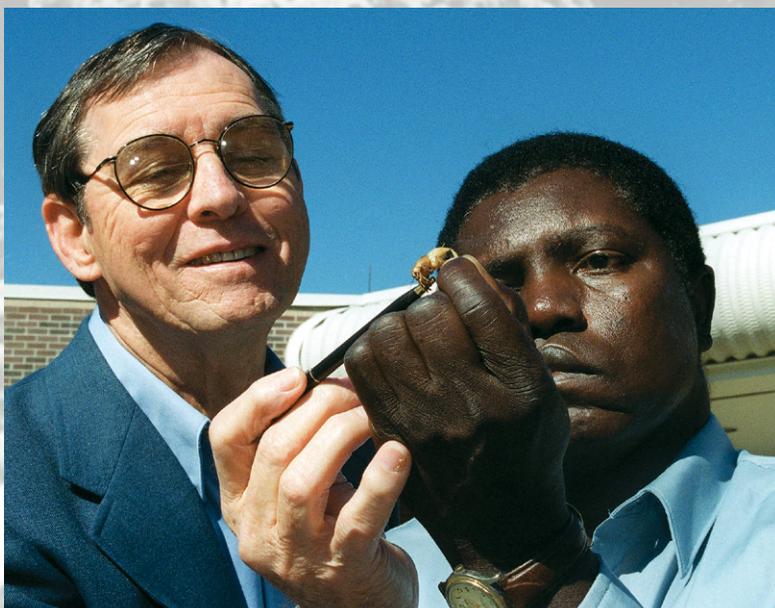
Also in the 1940s, research at the Austin Cary Memorial Forest near Gainesville and the Welaka State Preserve, now called the Welaka State Forest, used fertilizer treatments to enhance productivity of nutrient-deficient forests. UF/IFAS faculty built upon the research, making forest fertilization a common practice on millions of acres in Florida and the South.

After World War II, the importance of research grew along with Florida's population and economy. Research on pesticides was a key part of the agricultural revolution. Research also helped agribusiness improve other aspects of production and marketing.

In the 1950s, researchers discovered a cure for the serious citrus disease called yellow spot. Work also began on cross breeding cattle as researchers developed the practical concept of hybrid vigor and established the value of crossbreeding. Scientists also showed poultry producers how to improve feed, reducing the amount needed to produce weight gain. Egg production was improved by controlling the amounts of protein and important minerals in feed.

Researchers showed that tulips refrigerated for 60 days at 40 degrees Fahrenheit would flower in Florida. Previously, tulips in Florida did not flower.

In the 1950s, researchers worked with USDA to perform the first field test of sterile male screwworms. A pilot test of sterile male screwworm flies was released on



Grover Smart, left, professor in the entomology and nematology department and Martin Adjei, assistant professor of agronomy at the Range Cattle Research and Education Center in Ona, examine a mole cricket, one of the most troublesome agricultural pests in the Southeast. UF scientists imported the mole cricket nematode parasite from South America to control the mole cricket. The patented organism could end the 30-year battle against the pest. (Photo by Tara Piasio)



Advances in greenhouse and shade-house construction have allowed farmers to grow new varieties of flowers and foliage plants for the ornamentals market. Background photo: Newell Hall, with the experimental horticulture gardens in foreground, during the early 1900s.

2,000 square miles near Orlando. The pest, which severely affected Florida's cattle industry, was eradicated in the 1960s because of the sterile-release program.

Studies initiated on irrigation in the 1950s demonstrated that new irrigation strategies increased yields. The research led to the development of micro-sprinkler or microirrigation systems, the most economical and efficient irrigation systems used today.

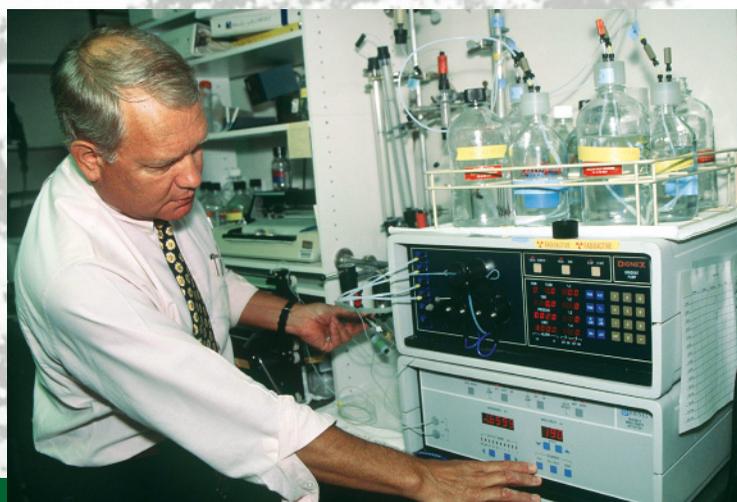
In the 1950s, forestry researchers examined soil-site relationships, allowing foresters to predict tree growth on different types of Florida land. The research developed indexes that have guided growth as well as yield projections in forest management.

In the 1960s, research on container-grown nursery plants attributed the problems of poor growth and crinkling of leaves to a lack of copper in the soil.

Robert Cousins, eminent scholar in the food science and human nutrition department, uses high performance liquid chromatography to examine proteins from biological samples. Cousins is studying zinc levels and their effects on the nutrition of the elderly and others. (Photo by Thomas Wright)

Adding copper improved plant appearance and marketability.

When some citrus growers lost as much as 70 percent of their crops because of a mysterious condition known as spreading decline, researchers discovered a burrowing nematode was the cause and developed a control program that had an enormous impact. Minimum tillage research began in the 1960s, helping farmers reduce energy costs and preserve the environment by reducing run-off, erosion and pesticide use.



Research on food irradiation in the late 1960s and early 1970s established its effects on the quality and shelf life of fresh fruits and vegetables.

In 1979, results from a study indicated that most pumping systems in Florida were operating at 70 percent efficiency, which meant substantial energy savings could be achieved through improvements in equipment, timing systems and related hardware.

Research also showed that reducing the amount of phosphorus in the diet of hens improved eggshell quality.

Another study led to the use of a small programmable computer to monitor soil moisture conditions and control irrigation systems in citrus groves.

With the growth of the state and UF, IFAS research and education programs were evaluated and improved throughout the 1970s and 1980s. No new experiment stations were established, but many existing facilities were renamed as area research and education centers.

While heaters and wind machines were early techniques used to protect citrus trees from freezing, in the 1980s UF/IFAS researchers demonstrated that micro-sprinkler irrigation provided effective freeze protection. Since then, it has become the most common freeze protection system in Florida.

During the decade, scientists developed data on the relationship between pesticide coverage and sprayer type, nozzle arrangement, ground speed and volume rate. The information helped the citrus industry improve spray coverage while reducing application cost and drift.

In the mid 1980s, UF/IFAS scientists developed the first prototype robot citrus harvester. The prototype has been the basis for several multimillion-dollar robot harvesting projects worldwide. It's also the foundation for a current research project with Florida Department of Citrus.

In the 1980s, wildlife ecology and conservation researchers developed designs used in many management areas throughout the United States.

"In the 1990s, UF/IFAS scientists developed new environmentally friendly methods for aquatic weed control," Jones said. "Urban pest control was revolutionized with the development of new methods to control termites, including the highly aggressive Formosan termite now spreading throughout the Southeast."

Dan Gorbet, right, professor of agronomy, and grower Jeff Crawford check the new C-99R peanut cultivar at UF's North Florida Research and Education Center in Marianna. (Photo by Eric Zamora)



Later in the decade, researchers also began demonstrating how highly treated wastewater could be used to irrigate on citrus groves. Research and extension faculty became a key part of the Conserve II project near Orlando, the largest reclaimed water agricultural irrigation project of its type in the world.





Before the advent of modern integrated pest management (IPM) programs and other best management practices (BMPs) developed by UF/IFAS researchers, growers used mechanical methods to control weeds and diseases in citrus groves. Photo early 1900s.

In 1964, UF teaching, research and extension programs were brought together under a new administrative umbrella known as the Institute of Food and Agricultural Sciences. (Photo circa 1950s.) Background photo: Until severe freezes in the late 1980s forced citrus growers to move production to southern areas of the state, the hills of Central Florida were covered with groves as far as the eye could see.

In the 1990s, UF/IFAS and Florida Department of Citrus researchers continued to make advancements in the storage, handling, packaging and decay control of fresh fruit.

Researchers also developed a process that uses pressurized carbon dioxide gas to produce orange juice that tastes fresh-squeezed but has the shelf life of pasteurized orange juice.

UF/IFAS researchers have established the importance of zinc in the diet. Using molecular biology techniques, the sites of zinc action on specific genes – especially those that regulate elements of the immune system – have been identified and evaluated. The mineral is most abundant in beef and seafood, two important Florida commodities.

“Scientists also are internationally recognized leaders in research on folate, a vitamin that reduces the risk of birth defects and chronic disease,” Jones said.

Based on UF/IFAS studies, the National Academy of Sciences has increased the intake recommendations for folate in hopes of reducing vascular disease and birth defects. Research findings in food science and human nutrition have also led to the establishment of new post-harvest treatments for shellfish to reduce dangerous bacteria.

Finally, research in the School of Forest Resources and Conservation is identifying commercially important tree genes and utilizing other biotechnologies to improve the growth of trees in managed forests. Higher productivity on fewer acres will make it possible to meet the needs for renewable and recyclable products. The research will also allow forest lands to meet other forest-based needs and services.

– Patrick Hughes

UF/IFAS RESEARCH and EDUCATION CENTERS

- Citrus Research and Education Center - Lake Alfred
- Everglades Research and Education Center - Belle Glade
- Fort Lauderdale Research and Education Center
- Florida Medical Entomology Laboratory - Vero Beach
- Gulf Coast Research and Education Center - Bradenton, Dover
- Indian River Research and Education Center - Fort Pierce
- Mid-Florida Research and Education Center - Apopka
- North Florida Research and Education Center - Marianna, Quincy, Live Oak
- Range Cattle Research and Education Center - Ona
- Ruskin Research and Education Center - Ruskin
- Southwest Florida Research and Education Center - Immokalee
- Subtropical Agricultural Research Station - Brooksville
- Tropical Research and Education Center - Homestead
- West Florida Research and Education Center - Jay, Milton



The Florida Cooperative Extension Service has a long and rich history. After passage of the Federal Smith-Lever Act in 1914, the Florida Legislature made extension an important part of the University of Florida and Florida A&M

University. The extension system is unique because of its relationships with the Cooperative State Research, Education, and Extension Service of the U.S. Department of Agriculture at the federal level, the state of Florida, the boards of county commissioners in each of our 67 counties and the Seminole Tribe.

As we celebrate our rich history and accomplishments, we look to the future. Our vision for the 21st century builds upon our past successes as we expand and explore ways to meet the future needs of Florida's citizens. Our vision addresses contemporary issues that are relevant to constituents residing within and beyond our traditional rural and agricultural heritage. Globalization, consolidation, integration and mergers have made an impact all of society. Technological breakthroughs will continue to open new horizons and create new challenges. Demographic data forecast a new and much different Florida. We will continue to develop our educational programs, based on science and research, that enable people to make practical decisions to sustain and improve their quality of life.

As we look to the future, we are mindful of the many challenges facing Florida citizens: an increasing population that is multilingual and multicultural; access to safe and affordable food; the ability to maintain a sustainable food and fiber system; changing lifestyles; improved health well-being and quality of life for all citizens from the oldest to the youngest; increased pressure on natural and renewable resources from urban and rural interests; water quality, quantity and allocation; shifting consumer preferences; heightened environmental, health and safety concerns; alternative crops; global competition; new processing technologies; biotechnology; and integrity of our coastal areas and natural resource areas.

As we face these new challenges we depend on our unique interaction with the people of Florida at the

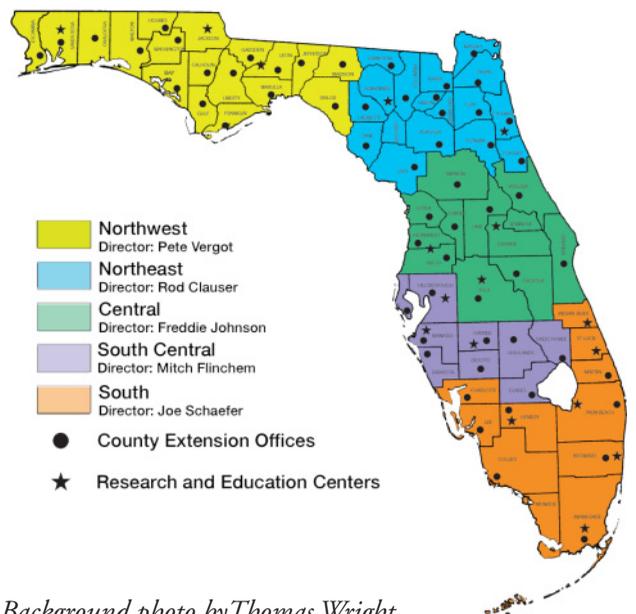
grassroots levels to identify and prioritize critical issues. We will continue to work with our agricultural, natural resources and rural and urban community clientele to identify new needs and to meet our traditional goals. Extension uses a long-range planning process every four years that relies on these stakeholders to identify current and emerging issues. Currently we are conducting a planning process that will drive extension for the next five years and many years thereafter.

Technology has made the world a much smaller place. Problems are becoming more global in nature. Many new issues that are arising will require us to forge new partnerships with other colleges, universities and organizations to gain access to science-based research necessary for providing new information. Our faculty will continue to be trained in using technology to provide information locally, regionally, nationally and, in some cases, internationally.

As we have in the past, we will move toward the future providing scientifically sound information and solutions that make the Florida Cooperative Extension Service an important resource for the state, as well as the integral outreach area of the Institute of Food and Agricultural Sciences and the University of Florida.

— Dean Christine Waddill

Florida Extension Administrative Districts



Background photo by Thomas Wright

UF/IFAS EXTENSION is YOUR HISTORIC GATEWAY to the UNIVERSITY of FLORIDA

With programs in all 67 Florida's counties, the Florida Cooperative Extension Service provides vital services to residents in both rural and urban settings. The statewide educational program is a prime example of how residents receive useful research-based information from the University of Florida's Institute of Food and Agricultural Sciences.

As early as 1888, courses were offered to Florida farmers to promote more efficient and productive agricultural techniques based upon research. From 1906 to 1914, under the leadership of Peter Henry Rolfs, who was dean of Florida Agricultural College, Farmers' Institutes contributed to a sharp increase in Florida's agricultural production. Today, the strong connection between extension and research continues.

Extension officially began after passage of the 1914 Smith-Lever Act. In 1915, the Florida Agricultural Extension Service was established. After the Smith-Lever Act passed, extension functioned through land-grant universities established by the Morrill Acts, bringing the research and knowledge of these institutions to the public. During this period, county agents and local leaders also began organizing 4-H youth development clubs.

In 1916, the Florida Extension Homemaker Council was established to promote new scientific information. Emphasis was placed on the practical –

demonstrations sought to “teach by showing” and encourage “learning by doing.”

Mass media has been used by extension to provide necessary information to Florida residents. In 1917, the extension service began publishing the weekly Agricultural News Service. Today, extension information is distributed in many formats, including publications, television and radio as well as the Internet and computer technology. Extension's Electronic Data Information Source (EDIS), for example, provides more than 6,000 educational fact sheets via the Internet for use worldwide.

“In the 1920s, almost all Florida counties benefited from the presence of extension agents,” said Christine Waddill, dean for extension. “Their work typically involved identifying plant and livestock diseases and promoting agricultural techniques developed by research, as well more challenging tasks, such as capturing and vaccinating wild hogs against hog cholera. Family and consumer science agents focused on education and home-economic skills, offering techniques crucial to survival during the Great Depression.”

Timpoochee on Choctawhatchee Bay in West Florida became the first permanent 4-H camp in the 1920s. Today, Florida 4-H has four camps that offer summer activities to more than 4,000 annually.

In the 1920s, the first school lunches in rural schools of the state were organized and implemented by extension home demonstration agents in Orange and Osceola counties.

Like society at large, Florida agriculture changed with the advent of World War II. Advances in technology contributed to the growth of agribusiness, which became an increasingly important part of the state's knowledge-based economy. Although extension continued to provide important services to family farms, field specialists were hired to address the needs of larger growers and distributors. And, as the United States emerged as a key international force after the war, Florida extension agents provided training for both individuals and groups from other countries.

Extension programs have always relied on the mass media to deliver information to Florida residents. The first television program produced by extension aired in the 1950s on Jacksonville's WMBR-TV (now WJXT).

Background photo: Florida extension work with African-American youth began in 1917 when more than 1,200 young men and women enrolled in farm and homemaking clubs.





The aroma of a necklace pod draws the attention of Sylvia Blue, right, master gardener for UF/IFAS, and visitor Kay Strommen in the fragrance garden at Lakes Park in Fort Myers. The garden allows visually impaired people to experience the beauty of the plants. (UF/IFAS file photo)

During the 1940s, the extension service and the U.S. Department of Agriculture eradicated cattle tick in Florida. The eradication program involved quarantining cows in areas of infestation and immersing them in a solution of arsenic. With extension input, the Florida Legislature passed the “livestock fencing law,” which required cattle to be in fenced areas. The law also helped improve cattle breeding and pastures as well as pest and disease management.

After years of releasing sterile screwworms, the pest was eradicated in 1959, a crucial development for the state’s cattle industry. Extension played a key role in the effort, offering education to counties in cooperation

with USDA and the Florida Livestock Board. At the same time, extension began offering business analysis to Florida’s agricultural producers to help individual farmers and ranchers improve management operations.

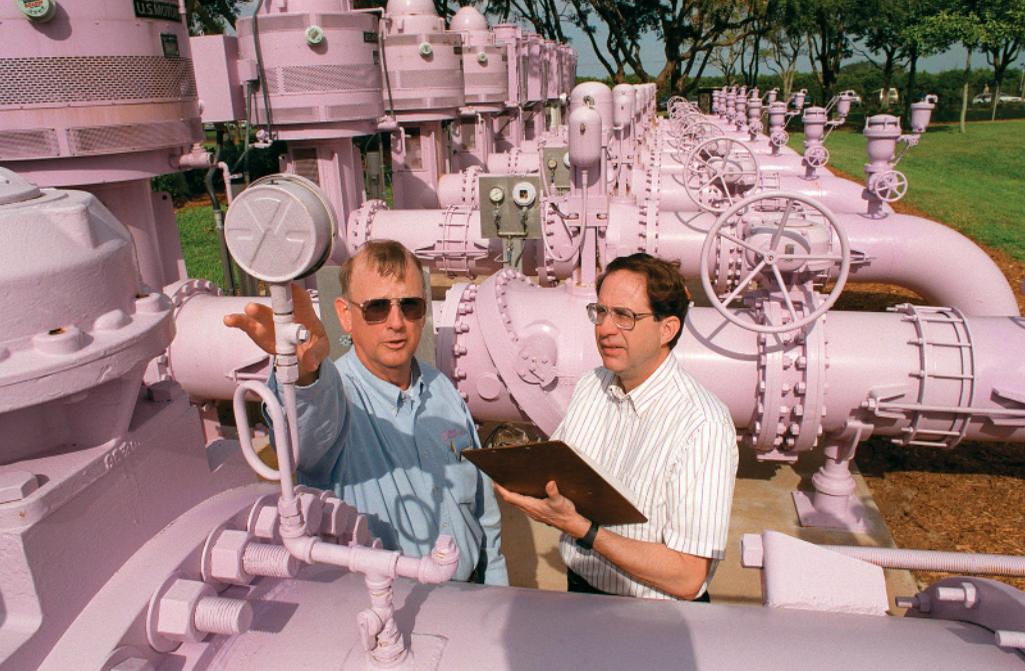
On the 50th anniversary of the Smith-Lever Act in 1964, the Florida Board of Control approved the creation of UF’s Institute of Food and Agricultural Sciences (UF/IFAS), consolidating extension, research and teaching under one administrative umbrella.

“As Florida’s population grew in the 1960s, the need for extension programs also increased,” Waddill said. “In addition to supporting agribusinesses such as

Top photos: During the early 1900s Extension home demonstration agents and clubs such as the Florida Canning Club helped families grow and preserve enough food for a family of four for one year.

Bottom photos: African-American extension agents discuss farm improvements with a North Florida farmer during the 1950s. Florida extension programs helped established regional markets where farmers could sell their crops.





Phil Cross, left, senior project manager at Water Conserv II, and Larry Parsons, professor of horticulture at the Citrus Research and Education Center, record data on reclaimed water at the distribution center west of Orlando in Orange County. (Photo by Eric Zamora)

Background photo: During the early 1900s Extension home demonstration programs showed residents how to process poultry and other livestock, as well as fruits and vegetables.

Florida's citrus industry, extension began to address homeowners with services related to ornamental horticulture. The services also benefited Florida's growing wholesale nurseries. With the help of statewide extension programs, Florida horticulture crops ranked second in the nation in 2002."

In the 1960s extension administration requested that 4-H Clubs be organized on the community level. Before that time, most 4-H programs were conducted by the public school system.

Most of the direct leadership was done by county

4-H agents. Today, there are more than 250,000 4-H youth in schools and individual clubs. There are 17,360 4-H adult and teen volunteers working with these children statewide.

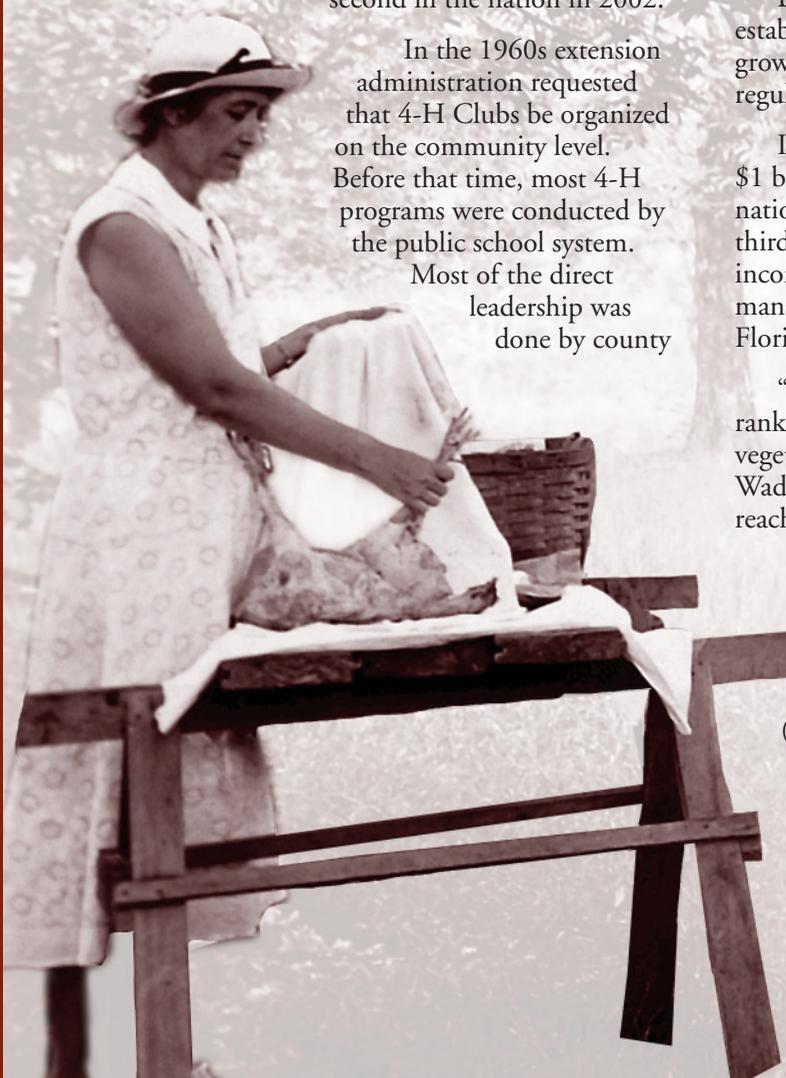
During this period, extension entomologists established the Chemical Information Center to keep growers, packers and processors updated on federal regulations on chemicals and food additives.

In the 1960s, Florida's cash farm income exceeded \$1 billion for the first time. Florida ranked first in the nation in citrus production, second in vegetable crops, third in greenhouse and nursery crops and sixth in income from all crops. About 37,000 producers managed more than 2 million cattle and hogs in Florida.

"Thanks in part to extension programs, Florida still ranks first in the nation in citrus production, second in vegetable crops and 12th in the nation in beef cattle," Waddill said. "Florida farm cash receipts in 2000 had reached 6.95 billion dollars."

In 1969, USDA initiated Florida's Expanded Food and Nutrition Education Program (EFNEP) through extension to educate limited-income families on diet and nutritional issues. In the early 1970s, the Family Nutrition Program (FNP) was launched nationwide to help families and youth with limited incomes. The primary objective of the program was to improve the quality and adequacy of the diets of low-income families and to provide assistance in managing their available resources. Today this program reaches more than 7,000 needy families in Florida each year.

A change in funding permitted the extension program to be broadened to include food science and technology programs in





Extension home demonstration agents helped Florida residents learn valuable skills in crafting, such as quilting, weaving and caning to supplement their income during the 1930s.

addition to the pesticide residue and food and feed additive programs. Programs were initiated with Florida vegetable processors to improve processing procedures and quality of specific vegetable products.

In the 1970s, the Marine Advisory Program was established as a component of the Florida Cooperative Extension Service. It officially was designated the Florida Sea Grant Extension Program in the 1980s.

During this period, extension began to address other important agricultural and environmental issues, adding new specialists in areas such as rural development, foliage and lethal yellowing of palms.

Since 1979, the Extension Florida Master Gardener Program has provided instruction along with the latest scientific research to teach Florida residents about horticulture in exchange for their volunteer hours. In 2001, more than 3,600 master gardeners contributed 309,825 hours to county horticulture programs.

Efforts to educate Florida's limited-income families continued with the establishment of a personal and family resource management program and the first "Food and Fun Camps" designed for children.

During the energy crisis of the 1970s, the establishment of

Extension Energy Information Centers in every county helped Florida residents reduce their use of energy, thereby decreasing their household expenses. The effort was in cooperation with the Governor's Energy Office.

In the 1990s, extension education programs helped policy makers, agricultural business leaders and the general public understand how the North American Free Trade Agreement (NAFTA) would affect Florida's economy. Extension also provided information to USDA and the Florida Farm Bureau on the potential consequences of resuming trade with Cuba.

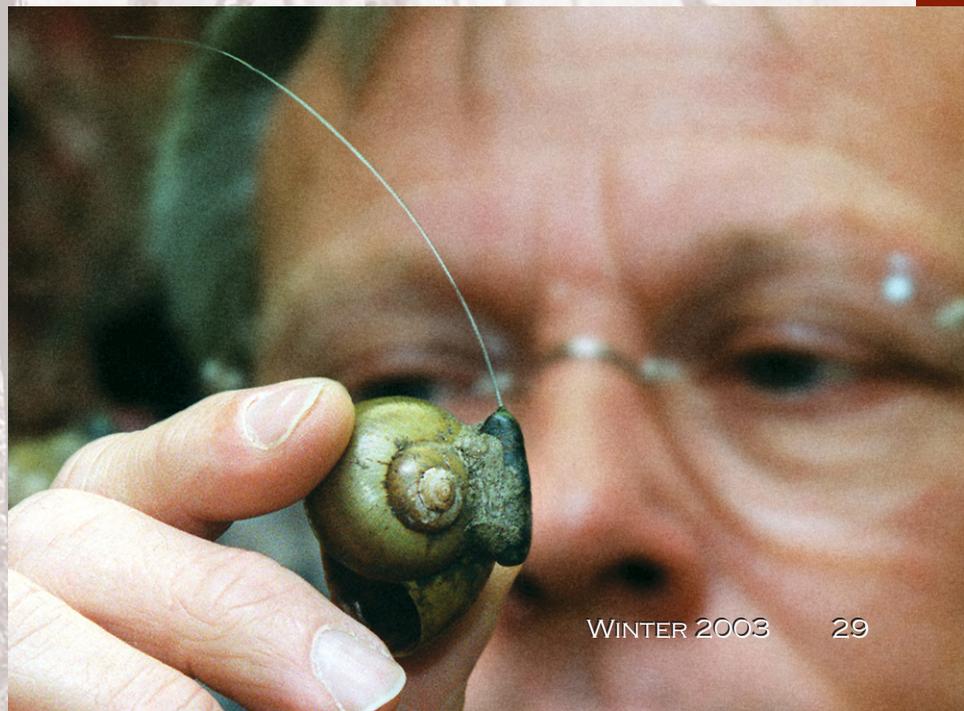
From 1995 to the present, extension has been conducting nutrition education through the Family Nutrition Program for food stamp recipients in approximately 35 Florida counties. Currently, Florida's 200,000 welfare recipients are also eligible to receive free job training through extension's Welfare-to-Work Initiative.

In 1998, wildfires burned a half billion acres of Florida forests, destroyed or damaged more than 300

Franklin Percival, specialist in the wildlife ecology and conservation department, examines a miniature transmitter attached to an apple snail.

Percival and Florida water management district researchers use the devices to track snail movements and learn about their habits and needs.

(Photo by Tara Piasio)





Extension nutrition and health education programs are helping Florida residents make lifestyle choices that promote health and reduce the risk of disease. (Photo by Tara Piasio)

Background photo: From the 1800s to the early 1900s, Florida forests were heavily exploited for construction, shipbuilding and railroad expansion, leaving the state with the challenge of restoring forests. Extension production and conservation practices are key to sustaining a viable forest products industry.

buildings and hurt tourism, resulting in a loss of more than \$600 million. In response, extension faculty in UF's School of Forest Resources and Conservation developed educational programs on proper landscaping to reduce the threat of wildfires to forests and homes.

"Extension's highly successful Florida Automated Weather Network (FAWN) also was established in 1998," Waddill said. The network uses automated monitors located throughout the state to collect weather data and provides important services to Florida agriculture – especially during winter freezes.

The current \$7.8 billion federal plan to restore the Florida Everglades hinges on the participation of numerous UF/IFAS faculty and staff. Extension agents are currently working with producers in the 505,000 acre Everglades Agricultural Area to reduce the amount of phosphorus in drainage water.

More than 350 clam growers in Brevard, Dixie, Indian River and Levy counties were the first aquaculture producers in the nation to be eligible for federal crop insurance. This was the result of extension working with the USDA Risk Management Agency, reinsurance companies and the clam farming industry to develop a pilot crop insurance program.

Extension's new Distance Diagnostic Information System (DDIS), which uses the Internet to transfer detailed information, has enabled pests and plant

diseases to be identified and diagnosed in minutes or hours instead of days.

Extension faculty continue to fight mastitis in dairy cattle, providing multilingual educational programs on equipment maintenance and milking procedures. And extension has responded to an increasing public concern over pesticides by developing an integrated pest management program for schools, which relies on inspection instead of routine spraying.

Pete Weingartner, left, associate professor of plant pathology, adjusts equipment on a FAWN (Florida Automated Weather Network) station in St. Johns County. Assisting him are Austin Tilton, Putnam County extension director, and Bill Cotton, executive director of the North Florida Growers Exchange. (Photo by Thomas Wright)



Working with the federal SHIP (Special Housing Initiative Program) and other affordable housing programs, extension helped more than 2,000 people in 21 counties become certified for home ownership during 2001.

With the 2005 federal ban on methyl bromide soil fumigant, extension continues to develop alternative methods of pest control and study soilless mediums for growing crops. New programs – in Spanish as well as English – are being

developed to help Florida residents protect well water and control invasive plants and pests. New facilities, such as the bull-testing program at Marianna, Fla., will continue to ensure that Florida livestock and crops are among the world's best.

“Any survey of extension accomplishments is going to be incomplete,” Waddill said. “The impact of extension on quality of life in Florida can't be overstated. As Florida meets its future, extension will be there to inform, educate and support.”

– Patrick Hughes

Photo right: During World War I and World War II, extension home demonstration agents helped farm families produce Victory Gardens where they could harvest food for the table and sell produce for extra income.

Bottom left: At the North Florida Research and Education Center in Marianna, research coordinator Ronnie Hartzog, left, and Jackson County extension agent Doug Mayo discuss plans for a bull-test sale. (UF/IFAS file photo)

Bottom right: Jiannong Xin, UF/IFAS software developer, helped construct Extension's new Distance Diagnostics and Identification System (DDIS). By connecting extension agents with researchers via a Web-based archive, DDIS enables homeowners and commercial growers to treat plant and insect problems more rapidly. (Photo by Thomas Wright)



MEETING the NEEDS of YOUTH

FLORIDA 4-H

The 4-H Youth Development Program began in 1902 at the national level. 2002 marks 4-H's centennial year.

4-H was first established in Florida in 1909 under the Farm Demonstration Program, with J.J. Vernon distributing seed corn to boys in Alachua, Bradford and Marion counties. By 1914 there were 935 boys enrolled in 4-H clubs. In 1912, Agnes Ellen Harris founded tomato clubs for 500 girls in 11 counties. By 1916 a new project was added, with 652 boys enrolled in raising swine. Additional projects soon followed in cotton, sweet potatoes, wildlife conservation, forestry, farm animals and home beautification. Over time, the focus shifted from farm production to the development of young people.

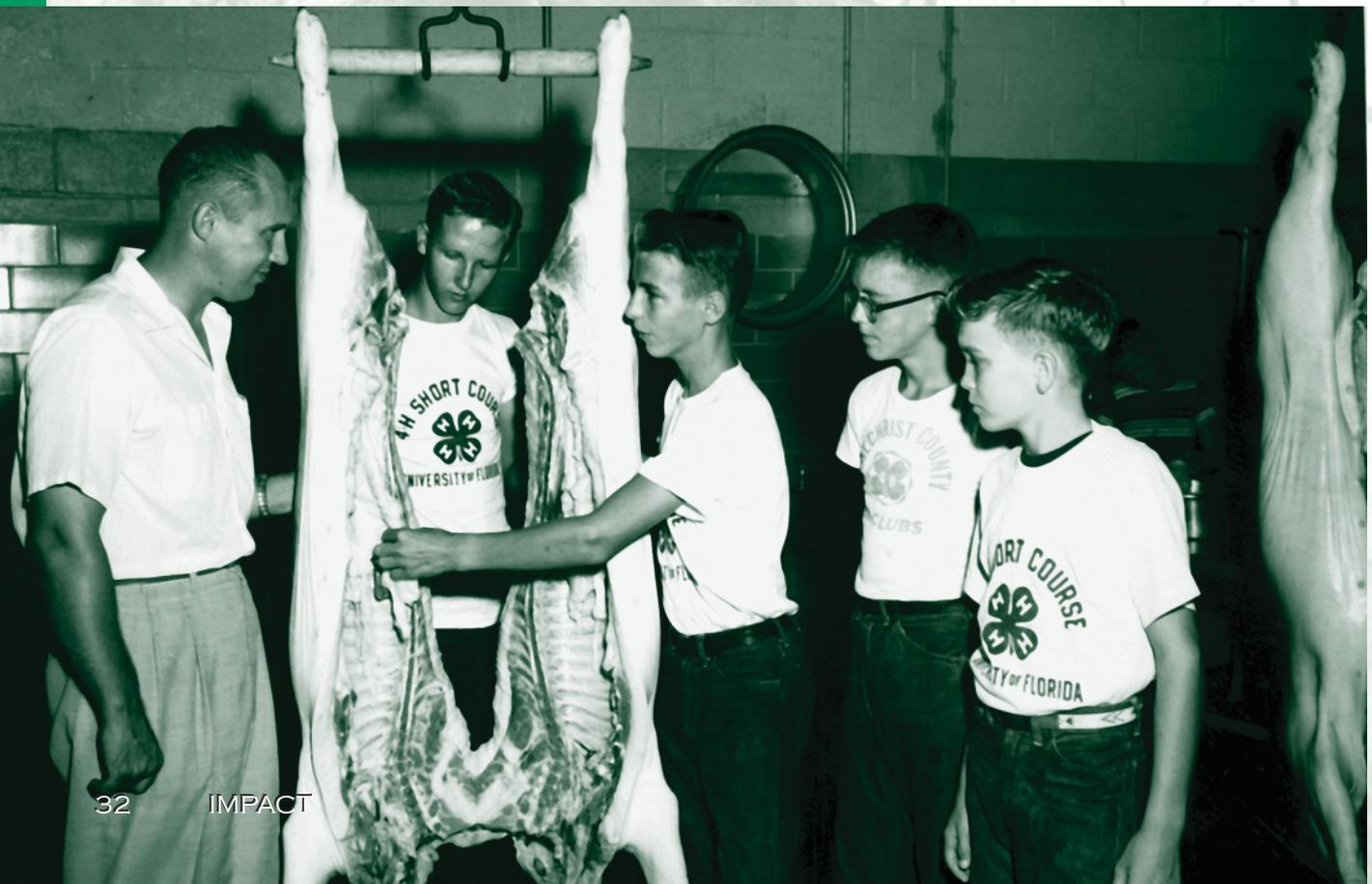
Leadership for 4-H could be found in three universities, with agents housed at the University of Florida, the Florida State College for Women (FSCW,

now Florida State University) and Florida A&M University.

In 1916, UF's College of Agriculture hosted the first weeklong "short course" for boys, providing opportunities for participants to learn new agricultural techniques and get a taste of campus life. A similar course for girls was held at FSCW beginning in 1912, where participants learned more about project work and opportunities for women. Another course for African-American children was first held at Florida A&M University in 1928.

In 4-H's early years, programs were segregated by race and sex. Extension work with African-American youth began in 1917, with reports listing 1,250 youth enrolled in farm and homemaking clubs. By 1921, poultry, dairy, home improvement, swine, marketing and savings clubs were part of the 4-H program for African-American youth.

Florida 4-H short courses offer a wide range of educational opportunities for Florida youth, including this 1960s course in beef cattle judging.



Miami-Dade County 4-Hers enjoy the waterfront at Camp Cloverleaf near Lake Placid. Camp Cloverleaf is one of four 4-H camps that offer weeklong summer programs. (Photo by Chuck Woods)



Background photo: Beginning in the 1920's, 4-H programs at Camp Timpoochee and other Florida 4-H camps have provided youth with valuable skills in water safety, team building and citizenship.

4-H clubs met in schools until the 1960s, and extension agents conducted educational programs at these meetings. School-based clubs also took part in extracurricular events like county and regional fairs. Judging teams participated in regional, state and national agricultural contests. The first state 4-H poultry show and judging contest was held in 1931.

Camping was part of 4-H programs from their beginning. 4-H club members throughout Florida donated chickens, eggs and produce to sell to establish the first camp. Opened in 1926 in the panhandle, Camp Timpoochee was one of the first 4-H residential camps in the country. Camp Cherry Lake in North Florida opened in 1937. Both remain in operation today.

Going to 4-H summer camp became a valued learning experience for thousands of children every summer. "My brother and I looked forward to going to 4-H camp every year," said Albert White, who attended 4-H Camp Doe Lake in the 1950s. The customer

service representative for Gainesville Regional Utilities learned to swim while at the camp and still chuckles at recalling the big softball game every summer. "I can still see us in those cabins today. 4-H was where I got life lessons and role models. They emphasized patriotism, family and citizenship," he said.

4-H club work with the Seminole tribe began in South Florida in 1955. Native American youth attended 4-H Camp Cloverleaf with children from surrounding counties, and extension work on the reservations continued from the late 1950s through the early 1970s. Extension returned to five south Florida reservations in the 1990s with the Extension Indian Reservation Program.

Major changes in 4-H's organizational structure occurred in 1964, when E.T. York established the Institute of Food and Agricultural Sciences. Agents from UF and FSU were combined into the Department of 4-H and Other Youth Programs at UF and placed under one state leader, Woodrow Brown. To comply with new federal integration rules, school-based 4-H clubs were abandoned in 1965 and replaced with volunteer-led community and project clubs.

In their annual report to the U.S. Department of Agriculture, 4-H staff called the departure from school-based clubs "the most drastic change in the history of 4-H club work in Florida." The role of the extension agent altered dramatically, and the change empowered 4-H club leaders to take more active mentoring and teaching roles. By 1967, nearly 3,000 club leaders were recruited from community volunteers.



4-H members inspect a wetlands area and learn about environmental issues during the Youth in Action 4-H District I Teen Retreat at Whiting Field Naval Air Station in Milton. (Photo by Tara Piasio)

A drop occurred in 4-H enrollment when the school-based clubs ended, and the number of members plunged again in the early 1970s during integration. “It was horrible. We required them to show that a club was integrated if it was in a mixed community. We lost black and white clubs in the process,” said Damon Miller, a retired state 4-H leader who began his career in 1971 as an extension agent in Leon County.

Yet the 1960s and 1970s gave 4-H the opportunity to solidify valued traditions like leadership development as well as establish new avenues for support. The Florida 4-H Foundation was founded in 1963 to provide private resources for the organization. A new State 4-H Council was formed in 1964, with Eddie Taylor of Clay County serving as its president. The council, which included boys and girls, was open to all young people. In 1964, separate short courses were combined into one annual State 4-H Congress held on the UF campus, drawing together youth from throughout Florida.

One successful program established during this time was Florida 4-H Legislature. Begun in 1972, it enabled participants to conduct a mock legislature and draft their own legislation. Eventually the program began using the statehouse chambers in Tallahassee, and today

Background (circa 1930s) and bottom photos (circa 1960s): 4-H clubs are a place for Florida’s youth to learn the value of patriotism, family and citizenship. Programs on cooking, crafts and beekeeping help youth develop skills that will benefit them later in life.



it annually draws hundreds of youth from throughout Florida to debate contemporary issues and learn how government operates.

School enrichment efforts also began in the early 1970s, when 4-H returned to public schools with new programs like embryology and environmental education. Urban extension programs targeted Florida's growing city populations. 4-H Expanded Food and Nutrition Education Programs became key methods for teaching inner-city youth about good nutrition.

In the 1980s, the 4-H volunteer system grew to nearly 20,000 adult and teen leaders. Fundraising during this period focused on 4-H camp facilities, and private funds were instrumental in making major improvements. Strategic planning in 1991 and 1992 involved more than 1,500 youth and adults from across the state in discussing the future of the state 4-H program.

4-H continues to grow. In Florida, it now annually serves more than 250,000 participants ages 5 to 18. Today's 4-H members participate in some of the same projects completed by those in earlier decades, including public speaking,



U.S. Congressman Adam Putnam, center, a Florida 4-H alumnus, discusses agricultural issues with 4-H members while touring a citrus grove in Central Florida. (Photo by Thomas Wright)



The Flagler County 4-H Forestry Club was the first of its kind in Florida, educating youth about ecology and conservation. (Circa 1920s)

Background photo: Florida 4-H youth volunteers are learning how to become more involved in community activities such as annual beach clean-ups. (Photo by Audrey Wynne)

raising animals and cooking. Project lists have also expanded to include computers, rocketry and community service.

Today, the state 4-H office provides curriculum development and use, communications and marketing, accountability reporting, faculty in-service training, publications, public and private resource development, and leadership programs. It also manages four residential 4-H camping facilities.

According to Marilyn Norman, assistant dean for 4-H youth development at UF, the program has enjoyed tremendous staying power because of its philosophy about learning. “We believe that young people learn best by learning with their hands,” she said. “Whether that is applied to learning about computers or cows or corn, it is all learning by doing.”

– Ami Neiberger-Miller

4-H members from the Seminole Indian Tribe are part of an increasingly diverse population that benefits from the Florida 4-H Youth Development Program. (Circa 1960s)



FLORIDA'S COASTAL CONNECTION

SEA GRANT

Tinker, tailor, soldier and spy. Athelstan Spilhaus needed little introduction as he prepared to address colleagues gathered for the 1963 American Fisheries Society annual meeting.

As a pre-eminent scientist at Woods Hole Oceanographic Institution and Massachusetts Institute of Technology, his research and inventions had played a major role in Allied bombing raids and U-boat defense systems during World War II.

Yet for all his achievements, Spilhaus stood before the society's members and expressed his fundamental puzzlement over the United States' basic inability to capitalize on the strength of its oceans.

"Why can't we do to the oceans what they did a hundred years ago in land-grant institutions devoted to agriculture and mechanical engineering?" he said.

Calling the establishment of land-grant colleges "one of the best investments this nation ever made," Spilhaus wanted the U.S. to apply that "same kind of imagination and foresight" to exploitation of the sea. "Why not have sea-grant colleges?" he wondered aloud.

His idea took root and grew. Florida Rep. Paul Rogers and Rhode Island Sen. Claiborne Pell eventually introduced legislation that President Lyndon Johnson signed into law in 1966, creating the National Sea Grant College and Program Act.

Patterned after the land-grant college partnership between the federal government and universities, the act

was formed to apply university expertise to develop the country's marine and coastal resources through research, education and advisory services.

Today, there is a Sea Grant program in every coastal state, including those that border the Great Lakes. Funding comes from the U.S. Department of Commerce's National Oceanic and Atmospheric Administration (NOAA).

Florida Sea Grant began in 1971 as a joint effort between the University of Florida and Florida State University. Four years later, the minimum required in the federal act, the U.S. secretary of commerce awarded college status to the Florida Sea Grant program for sustained excellence in research, teaching and public service.

The program's headquarters were consolidated on the UF campus, and the Sea Grant Marine Advisory Service merged with extension. Sea Grant extension agents work for Florida Sea Grant, but through the state's cooperative extension framework.

"Florida Sea Grant thus became – and remains – the only statewide, university-based research, education and extension partnership of its kind in the state to address marine and coastal needs," said Florida Sea Grant Director James Cato. Among the program's 16 collaborating partners are all 11 state universities, plus three private universities and three privately funded marine-research laboratories.

Depending on the particular research need, Sea Grant efforts routinely involve state and federal agencies, professionals from business and industry, trade associations and citizen groups, he said.

Marine extension agent Frank Lawlor vents the gut cavity of an undersize grouper caught near Sarasota before he throws the fish into the water. Venting undersize fish allows them to descend back into deep water and spawn. (Photo by Thomas Wright)

Background photo: Sea Grant programs help protect Florida's fragile ecosystems, including seagrass beds around Florida Bay and the Florida Keys. Photo by Eric Zamora





Christine Verlinde, left, is part of the Sea Grant marine extension network that provides technical assistance to marina owners and operators who wish to earn Clean Marina status. She is holding a Clean Marina flag with Keith Bellflower, shipyard supervisor at Pensacola Shipyard Marine Complex, the state's first Clean Marina. (Photo by Eric Zamora)

From its earliest days to the present, Florida Sea Grant has been able to set itself apart by focusing research on problems in the coastal zone and the marine environment. Traditionally, government support and research investment at the university level has been directed toward scientific study of marine organisms through disciplines such as marine biology and limnology. But Florida Sea Grant provides both an

opportunity and a mandate to focus university resources on applied research, said Cato.

“Every Florida Sea Grant activity must satisfy three simple but tough criteria,” he said. “It must be based on a strong rationale, demonstrate scientific or educational merit and produce results that are clearly applicable in industry, management or science.”

For instance, following the 1995 state referendum that banned near-shore gill net fishing, Florida Sea Grant faculty worked with state



Debbie Miller, associate professor at the North Florida Research and Education Center in Milton, uses a variety of methods – including the installation of fences and sea oats – to stabilize and restore sand dunes on Santa Rosa Island near Pensacola. Photo by Eric Zamora.

Background photo: Sea oats help protect coastal dunes from erosion and other types of damage. Photo by Eric Zamora.

Patterned after the highly successful land-grant college partnership between the federal government and universities, Florida Sea Grant applies university expertise to develop and protect the state's marine and coastal resources.

agencies and community organizations to address the economic fallout.

Through workshops, demonstrations, projects and publications, the Sea Grant Extension Program stimulated the development of a soft-crab fishery, now a Florida industry with the potential for an annual dockside value in excess of \$1 million.

Florida Sea Grant agents and specialists have also stimulated the state's hard-clam aquaculture industry to a \$34 million annual business. Cooperation with the U.S. Department of Agriculture's Risk Management Agency, reinsurance agencies and the clam-farming industry has resulted in crop insurance for the enterprise – a first in the United States.

To establish Sea Grant's priorities, Cato said the program uses input from hundreds of Floridians representing academic institutions, government, industry and citizens. Its strategic plan focuses all research and extension programs in 10 goal areas. These include the advancement of coastal-habitat restoration using artificial reefs, seafood safety and graduate education.

"Florida has more artificial reefs than any other state in the country, and Sea Grant has led the way in helping this important component of recreational fishing grow," Cato said.

From regional and statewide conferences, to construction, permitting, maintenance and monitoring, Florida Sea Grant faculty have worked with anglers to improve this resource and build on a body of scientific knowledge for habitat management and operations of marine protected areas and to better understand fisheries management.

"Seafood has never been safer to eat, not only in Florida but also throughout the country and Florida Sea Grant has had a lot to do with it," said Cato.

Florida Sea Grant faculty helped create and now manage the Federal Hazard Analysis Critical Control Point guidelines for seafood, Cato said, which has resulted in the training of more than 16,000 seafood processors and regulators from the United States and abroad since 1995.



Since 1972, more than 900 graduate students have received at least partial support for degree research in Florida universities through assistantships, internships, scholarships and fellowships administered by Sea Grant, according to Cato.

In addition, Sea Grant funds research in marine biotechnology, sustainable fisheries, marine aquaculture, the economic viability of water-dependent businesses, restoration of coastal water quality and the mitigation of coastal hazards and storms. The program's overarching goal, educating the state's population in marine and aquatic sciences, helps communities balance the development of coastal resources with the need to steward the natural environment.

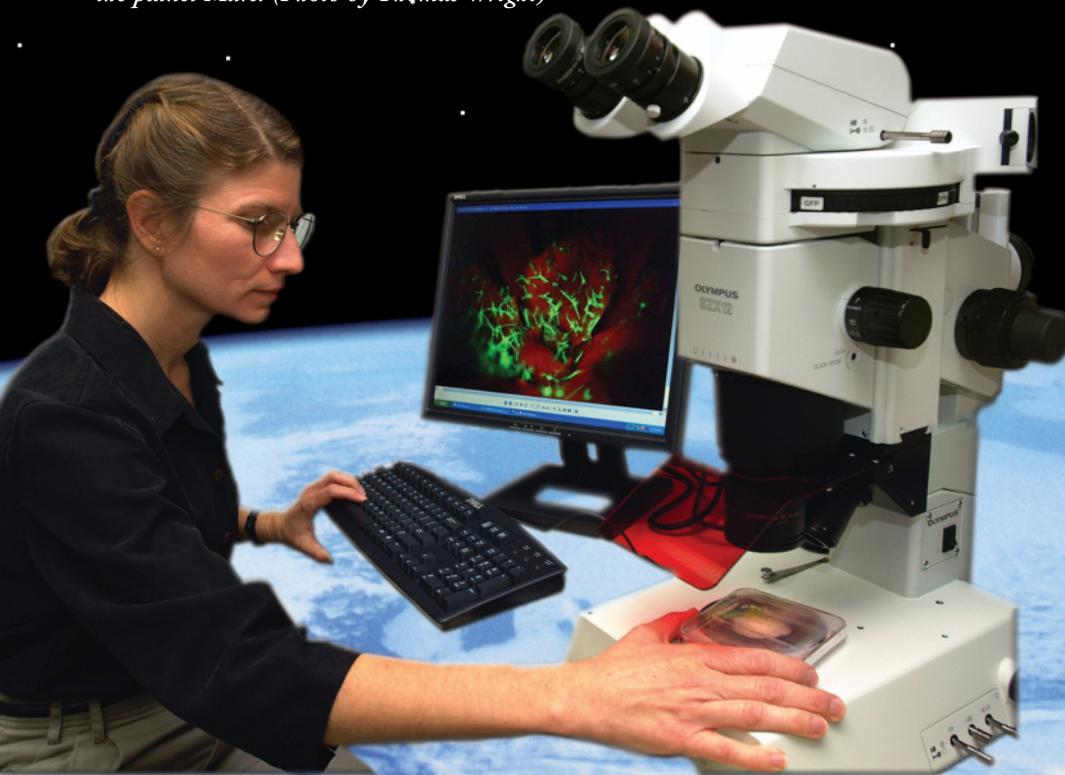
This strategy brings Florida Sea Grant closer to the goals envisioned by its founders nearly four decades ago. They new university expertise made little difference if it could not be pulled from the campus and applied to important marine issues of the day. Through research, education and outreach, Sea Grant has helped position Florida as a leader in marine research and the sustainable development of coastal resources.

Just as land-grant colleges deal with production from the land, Sea Grant is concerned with production from the ocean. Driven by a mandate that solves real-world problems, Florida Sea Grant faculty and researchers have helped maintain the value and strength of the state's seafood commerce with programs to ensure seafood safety and stimulate the sustainable harvest of commercial fisheries.

– Dorothy Zimmerman

Shaping the Future!

A fluorescent dissecting microscope captures an image of an arabidopsis plant engineered to provide a visible response to environmental stress. In this case, as the plant is exposed to a low oxygen environment, induction of a reporter gene (Adb/GFP) is detected as a green glow in the leaf hairs. The reporter-gene technology is being used by Robert Ferl, professor of horticultural sciences, and Anna-Lisa Paul, photo below, assistant research scientist in horticultural sciences, to study the effects of spaceflight and other abiotic environments on plant metabolism. The technology will be useful on future manned missions to the planet Mars. (Photo by Thomas Wright)



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