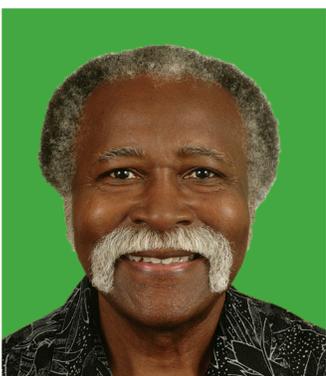


# IMPACT<sup>®</sup>

THE INSTITUTE OF FOOD AND AGRICULTURAL SCIENCES MAGAZINE | VOL. 22 NO. 1 | FALL 2006



Solutions for  
Your Life

# perspective



## TIME IS RIGHT FOR FLORIDA INVESTMENT IN BIOMASS ENERGY RESEARCH AND DEVELOPMENT

In his 2006 State of the Union address, President Bush said the United States is “addicted to oil.”

Now, more than ever, rising energy costs are driving home the need for alternative energy sources to replace oil and other fossil fuels. Building a renewable and sustainable energy supply is one of the most important scientific challenges of the 21st century, and our success is crucial to the nation’s future economic growth.

One of the most promising alternative energy sources is biomass, which includes agricultural crops, woody materials and organic residues. These can be used to generate ethanol and methane gas, which can be used for automobiles and serve as clean-burning fuels to create electricity.

In fact, ethanol generated from biomass could replace half of our imported petroleum.

More than one billion tons of biomass could be produced in the United States each year, according to a recent U.S. Department of Agriculture report. Fortunately, the University of Florida’s Institute of Food and Agricultural Sciences (IFAS) already has considerable experience converting biomass to energy, and the time is right for the state to become a national leader in the commercialization of this technology. This can only be accomplished by investing in research to make production methods more practical and affordable.

Florida could lead the nation in biomass energy production because we have the resources and the demand for it. Thanks to strong agriculture and forest industries, Florida is the nation’s No. 1 biomass producer. The state also ranks third in total energy consumption and fifth in per-capita energy consumption. It is also critical to our economy that we meet the energy needs of more than 40 million visitors each year.

Florida has the technology to bring biomass energy to the marketplace. The University of Florida Center for Renewable Chemicals and Fuels was formed five years ago to provide research and education in the production of chemicals and fuels from biomass. The center is directed by Distinguished Professor Lonnie Ingram, who holds a dozen patents on ethanol production. More than 60 other IFAS scientists and Extension faculty have submitted proposals for bio-

mass research in agronomy, engineering, entomology, forestry, microbiology, plant pathology, soil science and other disciplines. Support for these research efforts will provide the knowledge to make biomass energy successful.

We must move forward with a strong commitment to innovation and efficiency. For example, we propose to establish an ethanol research and demonstration facility that tests all phases of the process of producing ethanol from woody materials (yard waste, crushed sugar cane stalks and peanut hulls), grasses and forest trees. At the same time, we will be developing new and improved production methods for high-yielding grasses, trees and even potatoes with high starch content.

Methane, which can also be produced from biomass, is a versatile form of energy and can be used for all applications designed for natural gas. To produce methane, we can use agricultural byproducts, such as animal manure and culled fruits and vegetables. Florida’s farmers can provide a reliable supply of these materials and earn extra income by doing so. IFAS is already a leader in waste-to-biogas energy systems, with a patent for the production facility design at our Dairy Research Unit in Hague where usable fuel is produced from manure.

The university is planning to build a biodiesel plant on campus. Biodiesel is another alternative fuel made from crops or waste vegetable oil to power diesel engines.

Our Extension faculty will play a crucial role in educating the public about biomass, and this information will be available on the new IFAS Web site: <http://www.solutionsforyourlife.com>.

Our faculty will also help producers grow energy crops, assist business owners with conversion to biomass fuels and show consumers how to use these new forms of energy efficiently.

This effort will require cooperation from a host of partners, including Florida’s agricultural industries; state and federal government agencies; builders and utilities; waste management officials – and Florida residents.

Our state and our nation deserve nothing less than an all-out effort to ensure reliable energy supplies for the future. UF/IFAS is in a unique position to provide that national leadership in biomass fuels.

A handwritten signature in black ink that reads "Jimmy G. Cheek".

JIMMY G. CHEEK  
Senior Vice President  
Agriculture and Natural Resources  
University of Florida

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# IMPACT

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## On the Cover

There's something for everyone at the new Solutions for Your Life Web site launched recently by the University of Florida's Institute of Food and Agricultural Sciences. Sponsored by UF's Extension Service, the Web site provides instant access to UF's statewide research and education programs as well as information from partnering agencies and institutions.

FOR MORE INFORMATION, PLEASE SEE PAGE 12 AND VISIT [HTTP://WWW.SOLUTIONSFORYOURLIFE.COM/](http://www.SOLUTIONSFORYOURLIFE.COM/)



# NEW “HURRICANE HOUSE” IN FORT LAUDERDALE

Built to withstand winds of more than 140 mph, the new “hurricane house” at UF’s Fort Lauderdale Research and Education Center opened to the public May 26, just days before the official start of the 2006 hurricane season.

“This hurricane house demonstrates that it is possible to build a home that will come through a Category 4 or 5 hurricane with little or no damage,” said Van Waddill, director of the Fort Lauderdale center, which is part of UF’s Institute of Food and Agricultural Sciences.

He said the 3,000-square-foot house – officially known as the Broward County Windstorm Damage Mitigation Training and Demonstration Center – also shows how existing homes can be made more hurricane resistant. The materials, products and construction methods, which meet or exceed new state building codes, can be used in new homes or to retrofit existing structures.

Waddill said new Florida building codes, which went into effect in March 2002, are stricter than the ones they replace, but not as strong as those enacted in Miami-Dade and Broward counties. He said the stricter standards should be required statewide because no area of the state is immune to hurricane damage over the long term.

The hurricane house in Fort Lauderdale is one of four demonstration facilities located at UF Extension Service offices around the state. Other hurricane houses are in Fort Pierce, Pensacola and St. Augustine. The Florida Department of Financial Services provided \$2.3 million for the four houses, which cost about \$600,000 each.

Bob Stroh, director of UF’s Shimberg Center for Affordable Housing, supervised the design and construction

of the homes. He said homeowners and builders can visit the hurricane demonstration houses to see three types of window shutters and other features, such as impact-resistant doors, a steel “safe room” and a garage door that will withstand winds of more than 150 mph.

He said visitors also can see exposed sections of interior walls that demonstrate alternative construction methods, such as insulated concrete forms that can be used to build stronger and more energy-efficient homes. The forms use reinforcement bars and concrete sandwiched between plastic foam sheets.

Pierce Jones, director of the Program for Resource Efficient Communities at UF in Gainesville, said the method is more expensive than regular concrete block or wood-frame construction, but it is desirable in coastal areas that are more vulnerable to hurricane-force winds and storm surges.

The new insulated concrete forms meet Florida building code requirements, and an increasing number of builders know how to work with the materials, he said.

In the wake of the devastating hurricanes of 2004 and 2005, the UF hurricane houses around the state are becoming magnets for builders and residents who want to learn more about wind damage mitigation, energy efficiency and environmentally sensitive construction, Jones said.

In Broward County, the hurricane house is located at 3205 College Ave. in Davie. Telephone: (954) 577-6300.

In St. Lucie County, the hurricane house is located at 8400 Picos Road in Fort Pierce. Telephone: (772) 462-1660.

Van Waddill, holding emergency preparedness publications, says the new “hurricane house” at UF’s Fort Lauderdale Research and Education Center is designed to withstand winds of more than 140 mph. Officially known as the Broward County Windstorm Damage Mitigation Training and Demonstration Center, the 3,000-square-foot structure opened to the public May 26. **PHOTO BY JOSH WICKHAM**



In St. Johns County, the hurricane house is located at 3125 Agriculture Center Drive in St. Augustine. Telephone: (904) 209-0432.

In Escambia County, the hurricane house is located at 3740 Stefani Road in Cantonment near Pensacola. Telephone: (850) 475-5230. ■ — CHUCK WOODS

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## BRAZILIAN BERRY DESTROYS CANCER CELLS

A Brazilian berry popular in health food contains antioxidants that destroyed cultured human cancer cells in a recent University of Florida study, one of the first to investigate the fruit's purported benefits.

Published Jan. 12 in the *Journal of Agricultural and Food Chemistry*, the study showed extracts from acai (ah-SAH-ee) berries triggered a self-destruct response in up to 86 percent of leukemia cells tested, said Stephen Talcott, an assistant professor of food science and human nutrition.

"Acai berries are already considered one of the richest fruit sources of antioxidants," Talcott said. "This study was an important step toward learning what people may gain from using beverages, dietary supplements or other products made with the berries."

He cautioned that the study, funded by UF sources, was not intended to show whether compounds found in acai berries could prevent leukemia in people.

"This was only a cell-culture model, and we don't want to give anyone false hope," Talcott said. "However, we are encouraged by the findings. Compounds that show good activity against cancer cells in a model system are most likely to have beneficial effects in our bodies."

Other fruits, including grapes, guavas and mangoes, contain antioxidants shown to kill cancer cells in similar studies, he said. Experts are uncertain how much effect antioxidants have on cancer cells in the human

body because factors such as nutrient absorption, metabolism and other biochemical processes may influence the antioxidants' chemical activity.

Acai berries are produced by a palm tree known scientifically as *Euterpe oleracea*, which is common in floodplain areas of the Amazon River, Talcott said. When ripe, the berries are dark purple and about the size of a blueberry. They contain a thin layer of edible pulp surrounding a large seed.

Historically, Brazilians have used acai berries to treat digestive disorders and skin conditions, he said. Current marketing efforts by retail merchants and Internet businesses suggest acai products can help consumers lose weight, lower their cholesterol and gain energy.

"A lot of claims are being made, but most of them haven't been tested scientifically," Talcott said. "We are just beginning to understand the complexity of the acai berry and its health-promoting effects."

UF is one of the first institutions outside

Stephen Talcott, who is studying the potential health benefits of antioxidants in acai berries, holds the South American berry in his UF laboratory. PHOTO BY THOMAS WRIGHT

Brazil with personnel studying acai berries, he said. Besides Talcott, UF's acai research team includes Susan Percival, a professor with the food science and human nutrition department; David Del Pozo-Insfran, a doctoral student with the department, and Susanne Mertens-Talcott, a post-doctoral associate with the pharmaceuticals department of UF's College of Pharmacy. ■ — TOM NORDLIE

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# GENE COULD HELP CROPS BEAT GLOBAL WARMING

Though *E. coli* bacteria are well known for making people sick, a University of Florida study shows that a gene found in the microbes can keep plants healthy by improving their resistance to heat stress – a discovery that might help researchers develop food crops that can withstand harsh climates and global warming.

Tobacco plants carrying the gene thrived after spending a week in 95-degree heat, said Bala Rathinasabapathi, a UF associate professor of horticultural sciences. The gene poses no threat to human health.

Researchers believe the plants were unusually resilient because they contained up to four times the normal amounts of vitamin B-5 and one of its components, the amino acid beta-alanine, he said.

The UF study appeared in the March issue of the journal *Plant Molecular Biology*.

“We’re already researching the gene’s effect on tomatoes and lettuce, which are economically important to Florida and vulnerable to heat,” said Rathinasabapathi, who co-authored the study with graduate student Walid Fouad.

“Large-scale application is several years away, but we believe this technology will be practical and affordable. It’s certainly needed.”

Up to 20 percent of the world’s food crop is lost to heat stress each year, he said. That figure is likely to increase if predictions of future global warming prove correct.

Besides fighting crop loss, the gene could enable farmers in tropical and subtropical areas to grow a wider variety of foods, Rathinasabapathi said.

The connection between the gene and heat tolerance was discovered by accident as researchers tried to learn how plants make beta-alanine. The process is well understood in bacteria, so the researchers decided to take a gene that helps regulate beta-alanine production in *E. coli* and observe its effects in plants.

They transferred the gene to tobacco, a species popular in genetic research. During an experiment on heat stress, Fouad was surprised to find plants carrying the gene were taller than their ordinary counterparts.

“We hypothesized that the plants grew taller and larger under higher than optimal temperatures because something associated with the gene protected them from heat,” Rathinasabapathi said. “One possibility was that the large amounts of beta-alanine and vitamin B-5 they were producing played a role.”

In the current study, researchers found that tobacco plants modified with the gene contained four times as much beta-alanine and vitamin B-5 as ordinary tobacco plants. Modified plants exposed to 95-degree heat for one week weighed almost twice as much as ordinary plants grown under the same conditions. But when the modified plants were kept at temperatures typical for tobacco farming – about 75 degrees – they grew at the same rate as their ordinary counterparts.

“The practical applications for this gene may be limited to situations where crops will be exposed to temperatures of 90 degrees or more,” Rathinasabapathi said. “We’re conducting follow-up studies to learn more about how the gene works so we can maximize its benefits.” ■

— TOM NORDLIE

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Bala Rathinasabapathi holds genetically modified tomato plants that contain a gene found in *E. coli* bacteria. The gene enables plants to better withstand heat. **PHOTO BY MARISOL AMADOR**

# Python Problems in the Park

Removing gigantic Burmese pythons from a place they're not wanted is no easy feat, but University of Florida researchers have found a high-tech way to make it easier – they sent radio-tracked pythons out into Everglades National Park to do the work for them.

Frank Mazzotti, an associate professor with UF's Institute of Food and Agricultural Sciences, led a team that used "Judas snakes" to lure – and catch – other pythons from the park, where they're not welcome.

The pythons, which can grow longer than 20 feet and weigh more than 200 pounds, are released in the park by pet owners who either don't want them or can't handle them anymore. They've caused problems since the mid-1990s, their battles with native alligators being the most widely documented.

Mazzotti, who is based at UF's Fort Lauderdale Research and Education

Center, credits National Park Service officials for having the courage to go ahead with the snake-tracking project, despite its risk.

But while a python could overpower a human, Mazzotti says he believes they pose a far bigger risk to people who hit the snakes with their cars or crash trying to avoid one.

"Python attacks are not impossible, but I'd say that someone driving a Honda Civic who hits a 14-foot, 100-pound python is more likely to have a serious problem," he said.

Last winter, researchers caught four "Judas snakes," implanted pinkie-sized radio transmitters in them, tagged them and turned them loose in the park. For three months, they kept tabs on the snakes' whereabouts, using them to find other pythons.

Three of the four original snitch snakes helped researchers find 15 more

untagged snakes – 12 of which were caught and euthanized. The fourth had post-surgery troubles and was removed from the study.

The Burmese python is one of the world's largest snake species. One of the snakes found in the Everglades was 16 feet long and 152 pounds.

Park officials have caught or found the remains of more than 212 pythons, 95 of them in 2005.

The team hopes to study how much of the national park and adjacent lands the pythons are using, and whether the snakes seek each other's company outside of their breeding season. ■

– MICKIE ANDERSON

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The growing number of large pythons in Florida's Everglades National Park is increasing conflict between the powerful snakes and alligators, according to Frank Mazzotti. In this file photo, the alligator appears to have the upper hand in the struggle. Mazzotti, who is helping remove pythons from park, said a python was killed last year when it attempted to swallow a medium-sized alligator that was too big for the snake. PHOTO BY LORI OBERHOFER, EVERGLADES NATIONAL PARK



# REPTILE CHIC: Florida Alligator Farmers Cash in on Fashion Trend

While some agricultural producers are facing tough times, Florida alligator farmers are cashing in on reptile chic – the growing worldwide demand for alligator skins on everything from belts and boots to \$10,000 designer handbags.

“The market for high-end alligator leather products is very strong right now, and farmers are getting top dollar for their gator skins,” said Perran Ross, a wildlife ecologist with the University of Florida’s Institute of Food and Agricultural Sciences. “Florida alligator farming has had its ups and downs in recent years, but it’s definitely a good time for those who are already established in the business.”

He said Louisiana is the nation’s leading producer, harvesting about 300,000 alligators every year, compared to 60,000 in Florida. But Hurricanes Katrina and Rita damaged alligator egg production in Louisiana. As a result, luxury-goods manufacturers in the United States and Europe need to secure future supplies of alligator skins. This is an opportunity for Florida farmers, who can provide high quality products.

Perran Ross holds an alligator that is being raised for its meat and skin.  
PHOTO BY MARISOL AMADOR



Ross said the value of finished alligator skin products may be anywhere from five to 10 times the raw-product value.

Allen Register, owner of Gatorama in Palmdale, Fla., one of 60 licensed alligator farms in the state, said prices for alligator bellies range from \$40 to \$50 per foot, which is up by almost 50 percent from a few years ago. He said that belly skins are more valuable because they are soft and flat, compared to horn-back skins, which have bumpy ridges and are often used in the western-wear market.

Like other Florida alligator farmers, Register harvests alligators when they reach four or five feet in length, which requires about two years of growth. He said Louisiana farmers typically harvest three- or four-foot-long alligators after one year to save on the space needed to raise large numbers of alligators.

“In the past, buyers have been a lot more fussy about scars and scratches on hides, but we are seeing less emphasis on those imperfections, probably because of the increased demand from U.S. and foreign luxury-goods manufacturers,” Register said. “After some slow times during the past eight or nine years, the market is definitely on the upswing.”

In addition to the strong international demand for alligator hides, the domestic appetite for alligator meat is growing. The meat now commands prices of \$4.50 to \$4.75 per pound at the wholesale level and \$7.50 to \$10 per pound at retail, Register said.

Ross said alligator farming has about a \$25 million impact on Florida’s economy. He said it is not a “get-rich-quick scheme,” but one that requires large capital investments over a three- or four-year period, during which little or no income is generated. To protect this renewable resource in Florida, alligator farms are licensed and regulated by the Florida Fish and Wildlife Conservation Commission.

He said the commercial harvest of alligators actually helps conserve the species and its habitat because the economic incentives from egg production and legal harvesting encourage landowners to maintain wetlands. In addition, license fees from the program help support research, monitoring and wildlife management programs that conserve alligators.

“In other words, alligators pay their own way for their conservation,” Ross said. “Florida has a model program that is emulated all over the world for managing alligators and their habitat for sustainable economic gain.” ■

– CHUCK WOODS

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# CLAM INDUSTRY STAYS STRONG IN CEDAR KEY

After weathering two of the worst hurricane seasons on record, Cedar Key is still one of the nation's top clam producers. Starting from ground zero in 1993, the small village on Florida's Gulf Coast – also known as “Clamalot” for its ideal growing conditions – rapidly became the No. 1 producer of cultured hard clams in the nation.

“Clam production in Southwest Florida and the Indian River area on the east coast is recovering from the disastrous hurricanes of 2004 and 2005, but the storms had little effect on production in Cedar Key,” said Leslie Sturmer, a University of Florida aquaculture Extension agent.

According to the first-ever aquaculture census conducted by the U.S. Department of Agriculture in 1998, Florida produces more hard clams by volume than any other state. About 80 percent of that production comes from Florida's west coast, with Cedar Key producing 70 percent of the total, Sturmer said.

“In addition to all the usual agricultural statistics about the growth of the clam industry in Cedar Key, many local folks like to point to the growing number of new pickup trucks in town,” Sturmer said. “Used to haul clams, the trucks are a good indication of the clam industry's strong economic impact in this island community – a place that's proud of its fishing heritage and protective of its fishing resources.”

She said development of the farm-raised hard clam (*Mercenaria mercenaria*) industry in the rural coastal area started with several job retraining programs that have helped hundreds of displaced workers in the commercial fishing industry. Since 1991, more than 200 underemployed oyster harvesters and former net fishermen in Cedar Key have been trained and moved into small-

scale business enterprises, building a new aquaculture industry in one of the state's oldest ports.

The education programs, conducted by the Harbor Branch Oceanographic Institution in cooperation with UF's Institute of Food and Agricultural Sciences, provide workers with information on the production and marketing of clams and other business aspects of clam culture.

“The training programs helped establish the clam farming industry in Cedar Key as well as Southwest Florida and the Oak Hill area on the east coast,” Sturmer said. “The growth in hard clam production in these areas of the state can be attributed to our training programs and the high natural productivity of subtropical waters for almost year-round clam seed planting, growth and harvesting.”

Sturmer said no other production area in the nation can match the excellent production conditions in Florida.

Clam farming now provides income to Florida fishermen displaced by the 1994 statewide ban on fishing nets, boosting local economies in rural communities such as Cedar Key, she said. Statewide, about 400 shellfish growers are farming more than 1,800

Leslie Sturmer, left, checks clams with Mike Hodges, owner of Hodges Seafood Co. in Cedar Key. Hodges, who harvests 15 to 20 baskets of clams a week every week of the year, has worked closely with Sturmer to build the clam industry in this Gulf Coast village. PHOTO BY THOMAS WRIGHT

acres of state-owned submerged lands in coastal waters, producing more than 140 million clams annually.

In 1989, clam sales represented less than one percent of all aquaculture sales in the state, but that figure has jumped to almost 20 percent. Farm-gate sales of clams topped \$16 million in 2005 – a 34-fold increase since 1989.

According to Chuck Adams, a Florida Sea Grant marine economics specialist and professor in UF's department of food and resource economics, the total economic impact of Florida's clam industry, which is the largest marine aquaculture industry in the state, exceeded \$34 million in 1999. Aquaculture sales in the state, including tropical fish and aquatic plants, bring in about \$100 million annually, he said. ■

– CHUCK WOODS

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# EEL EFFECTS

The Asian swamp eel has been described as a voracious predator of fish that could threaten Florida's \$60 million aquarium fish industry, but the exotic eel is not a major problem after all, according to a new University of Florida study.

"When we started this research about two years ago, we were concerned that these eels might affect the state's ornamental fish industry, especially if they invaded outdoor ponds and began feeding on fish produced for the aquarium trade," said Jeff Hill, an assistant professor with UF's Institute of Food and Agricultural Sciences. "These small ponds are densely stocked with valuable fish, so we need to protect them."

But an extensive analysis of the eels' diet at UF's Tropical Aquaculture Laboratory in Ruskin shows that they ate few ornamental fish being raised in ponds, preferring to consume a mix of insects, small crustaceans, tadpoles and worms, Hill said.

For the study on the feeding habits of the swamp eels, Hill and Craig Watson, director of the Ruskin laboratory, collected eels from seven tropical fish farms in Hillsborough County and one in Polk County. Then the stomachs and intestinal tracts of all the eels were examined to find out what they were eating.

"We can now say that the nonindigenous Asian swamp eel (*Monopterus albus*) – compared to other predators – represents a low threat to the Florida ornamental aquaculture industry, and it represents less of a predation risk than we anticipated," Hill said. "We recommend that producers continue to employ best management practices, but aggressive control and eradication of the Asian swamp eel is not warranted."

Hill, who is often asked what to do if someone comes across a swamp eel, said they are not dangerous to people, and the best course of action is probably simply to leave the eels alone. He said it is illegal to release swamp eels, or any other non-native fish, from one body of water to another.

He said Asian swamp eels are not true eels, but relatively advanced fishes with eel-like characteristics. Unlike swamp eels, the American eel, which is a true eel, has fins. Florida also has two groups of native amphibians that might be confused with swamp eels – amphiumas and sirens. Amphiumas have four tiny legs and sirens have two small front legs and prominent, bushy gills. Asian swamp eels do not have legs or external gills.

Common throughout Asia from India to China, the eels are now in Florida, Hawaii and Georgia, where there is a small population north of Atlanta. Hill said researchers are not sure how the eels entered Florida, but the fish is now established in at least three areas of the state – waterways in Homestead, Miami and the Tampa Bay area. ■

– CHUCK WOODS

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Jeff Hill holds an Asian swamp eel in his Ruskin, Fla., laboratory. First described as a voracious predator of fish that could threaten Florida's \$60 million aquarium fish industry, the exotic eel is not a major problem after all, according to a new study by UF's fisheries and aquatic sciences department.

PHOTO BY JOSH WICKHAM

# 4-H Life *in the* Legislature

Do you think all public facilities should be closed on Sept. 11? What about lowering the voting age in Florida to 16? Should jaywalking be legal? These were just a few of the bills debated at the Florida 4-H Mock Legislature June 26-29 in Tallahassee. Conducting business with an acting governor, lieutenant governor and cabinet, and with both a house and senate in session, more than 250 4-H mock legislators, lobbyists and reporters experienced how state government actually works.

Now in its 34th year, the 4-H Mock Legislature program brings youth in direct contact with legislators and lobbyists. It is the only 4-H program of its kind in the United States.

“The legislature program perpetuates youth learning in civic engagement, specifically legislative and government processes and the leadership skills to make community decisions regarding public policy,” said Marilyn Lesmeister, state 4-H volunteer development specialist and one of the adults advising the youth-driven event.

The elected “4-H governor,” Abigail Crawford of Bradford County, signed four bills over the weeklong event. Crawford also serves as the State 4-H Council president. “I think the representatives, senators, lobbyists and reporters are doing a phenomenal job, treating legislation as it should be – taking jobs seriously and participating fully,” she said.

The opening session began with a visit by the state’s actual lieutenant

governor, Toni Jennings. Jennings gave a brief speech and then swore in the mock governor, lieutenant governor, senate president, speaker of the house, secretary of the senate and clerk of the house.

Then it was off to committees where the debating began on a variety of issues. Lobbyists came to the meetings and stated their business in order to persuade legislators to vote their way on a bill.

Current events in this country and around the world caused 4-H teens to form the first-ever homeland security committee this year. They felt that this hot topic area of policymaking was important for their research and debate. Topics debated in this area included: reimbursing homeowners for the purchase of hurricane shutters; mandatory generators in all Florida gas stations; mandatory searching of all personal luggage in Florida airports; and making bird flu vaccinations available to all Florida residents.

The 4-H legislative bills are intentionally controversial. According to Lesmeister, they are designed to promote debate, research, negotiation and problem-solving in order to simulate real legislative experience. “The

4-H lobbyists and legislators are not expected to represent their own values or views, but they practice communication skills, negotiation and critical thinking,” she said.

This hands-on experience in how government works is organized by the 4-H Youth Development Program which is administered by the Extension Service in UF’s Institute of Food and Agricultural Sciences. As the 2006 Mock Legislature closed, the teens were able to look back on their involvement in planning, writing bills and debating the issues and realize that they are becoming engaged citizens in society.

Last year, 4-H worked with more than 240,000 young people between the ages of 5 and 18 in Florida’s 67 counties and on five Seminole Tribe reservations in South Florida. All programs are open to all persons regardless of race, color, age, gender, sexual orientation, handicap or national origin. For more information, visit [www.florida4h.org](http://www.florida4h.org) or contact the county Extension office in your area. ■

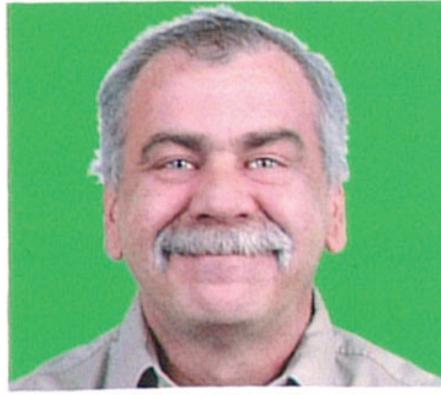
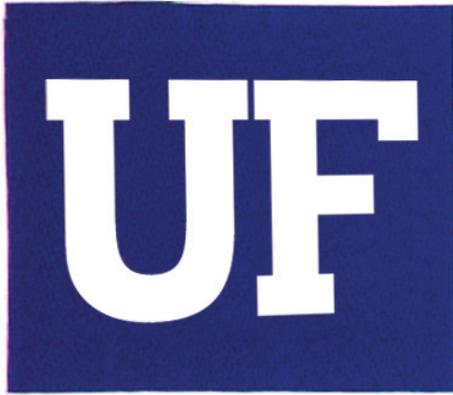
– LAURA LOK

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Jonathan Daniels of Duval County debates the issues in the Senate Chambers at 4-H Legislature. PHOTO BY JOSH WICKHAM





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The Web site is being widely promoted in the media, including billboards such as the one shown above. Initial billboard locations, provided by the outdoor advertising industry at no cost, include Citrus County, Columbia County, Leon County, Marion County and St. Lucie County. **PHOTO BY JOSH WICKHAM**

**YOUR NEW  
GATEWAY**  
*For*  
**EXTENSION  
INFORMATION**

By Tom Nordlie

# Solutions for Your Life.com

University of Florida Extension

LAUNCHED IN MAY, THE SOLUTIONS FOR YOUR LIFE WEB SITE PROVIDES ROUND-THE-CLOCK ACCESS TO A VAST ARRAY OF USEFUL INFORMATION FROM THE STATE-WIDE TEACHING, RESEARCH AND EXTENSION PROGRAMS OF UF'S INSTITUTE OF FOOD AND AGRICULTURAL SCIENCES.

For decades, Florida residents have looked to the University of Florida's Cooperative Extension Service for reliable, research-based information on agriculture, the environment, gardening, family life and other topics.

Now there's a new way to get that information – and it's as close as your computer.

It's called Solutions for Your Life, and it's a Web site offering a vast array of resources from the Extension, research and education programs of UF's Institute of Food and Agricultural Sciences, as well as partnering agencies and institutions. Launched in May, the site is located at <http://www.solutionsforyourlife.com> and sponsored by UF's Extension Service.

"Solutions for Your Life isn't meant to replace direct contact with Extension offices in all 67 Florida counties, but it supplements what our offices can do," said Larry Arrington, UF dean for Extension. "Because the Web site is available 24 hours a day, it lets users browse or research information on their own schedule. And it links our clientele with all three branches of IFAS – the Florida Cooperative Extension Service, Florida Agricultural Experiment Station and the College of Agricultural and Life Sciences."

With hundreds of how-to publications, educational programs, technical reports and other materials, Solutions for Your Life also helps UF Extension faculty serve their clients more effectively, he said. County agents can use the site to research difficult questions and increase their knowledge of popular topics.

“This project greatly enhances the value of our Extension program to the state,” Arrington said. “We think users will agree.”

Solutions for Your Life currently receives about 1,000 visits per day and is already recognized as one of the largest and most sophisticated Extension Web sites in the nation, said Ashley Wood, director of IFAS Communication Services.

“There’s a lot of interest among land-grant institutions in putting Extension information online,” said Wood, who manages the Solutions for Your Life Web team. “This project came about because we saw an opportunity to pull together a great deal of material that could help residents improve their lives.”

Solutions for Your Life is the largest Web project undertaken by UF’s Extension Service, Wood said. Planning began in January 2004, and the site itself was in development for more than a year. But the project’s roots reach back much further. For 15 years, UF has been a national leader in applying new technology to the Extension mission, producing innovative Web sites such as the Electronic Data Information Source (EDIS) and RadioSource.NET.

“Our past experience was a big help in developing Solutions for Your Life,” Wood said. “One reason this site is considered a model for other universities is that we put so much emphasis on organization, making sure users could easily find what they needed.”

The Solutions for Your Life home page prominently features several items related to current events and seasonal themes. Other items that change frequently include a calendar, a links section, a “Did you know?” feature and information about continuing education opportunities for industry professionals.

The home page also contains six permanent topics – agriculture, community development, environment, families and consumers, 4-H youth development, and lawn and

garden. Each topic has its own Web page, organized to help users find specific information.

Local Extension news and events will still be publicized on county Extension office Web sites, said Ligia Ortega, IFAS Web manager.

“Solutions for Your Life was developed to be a state-wide resource, so it only contains material with a statewide focus,” Ortega said. “This way, the site enhances the Web presence of all county Extension offices equally.”

She said greater Web presence is important because the Internet is widely used by young people, an audience that may not be aware of Extension.

“Solutions for Your Life can also help Florida residents take the guesswork out of Internet research,” Ortega said. “It’s frustrating when you have to decide which Web sites are relevant, accurate and unbiased.”

Pat Montgomery, a high school teacher from St. Johns County, experienced that problem firsthand. She turned to Solutions for Your Life for information about planting blueberry bushes after visiting sites that focused on other parts of the country with different growing conditions.

Montgomery found that Solutions for Your Life contained information about commercial blueberry production in Florida, but nothing aimed at casual growers. So she sent an e-mail to the Web team asking for help. The next day, Ortega sent relevant material to Montgomery, and other members of the Web team posted it on the site.

“I was very happy with the experience,” said Montgomery, whose husband previously worked as a Manatee County Extension agent. “I’ll use the Web site again.”

Extension faculty are finding they can easily refer the public to Solutions for Your Life during conversations, said Eleanor Foerste, a natural resources agent with the Osceola County Extension office.

In June, Foerste took part in an interactive hurricane education program hosted by WESH-TV in Orlando. While describing strategies parents can use to discuss hurricane preparation with children, Foerste stated the Solutions for Your Life Web address on the air. Efforts are under way to have the address linked to several Central Florida Web sites, she said.



“One thing I like about Solutions for Your Life is that users can locate their county Extension offices with it,” Foerste said. “Sometimes Florida residents don’t know Extension is a statewide program, with local faculty available to help them.”

Responsiveness to users’ needs is one of the long-term keys to success for Solutions for Your Life, said Liz Felter, UF Extension Web site content development and training manager.

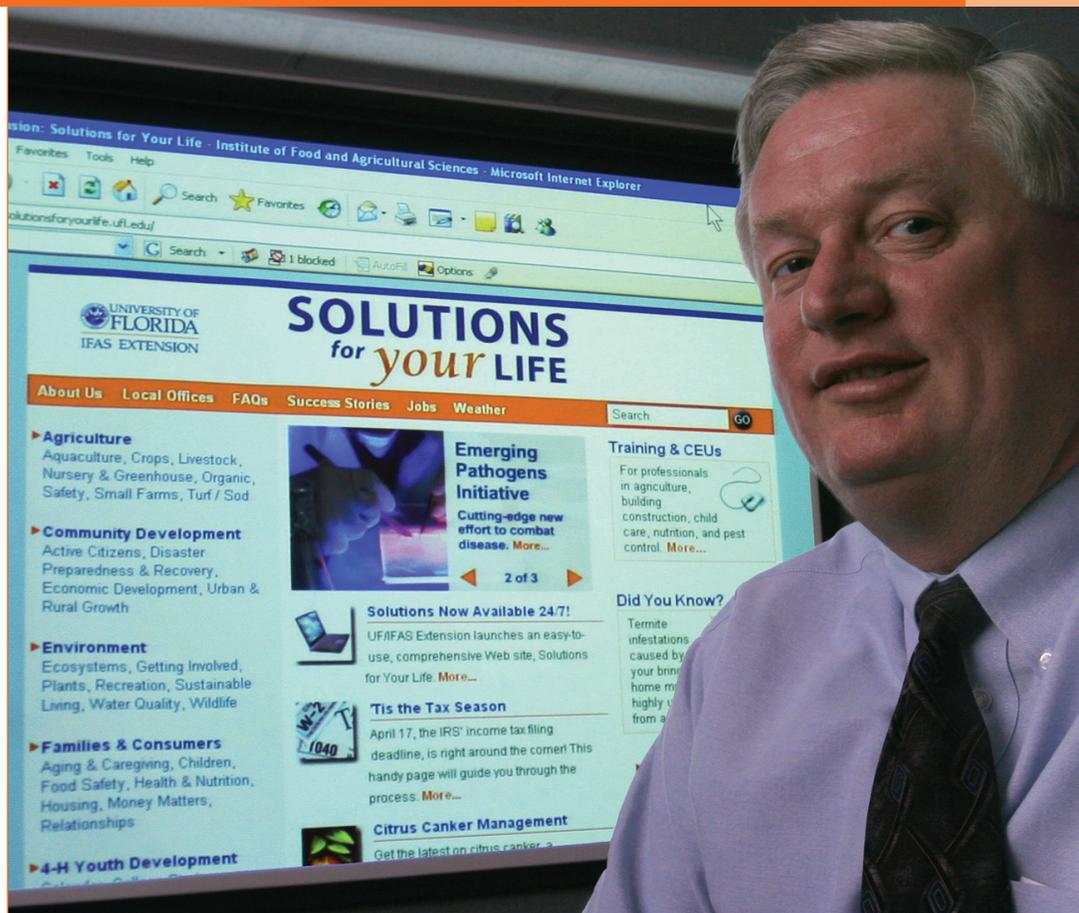
“We want to emphasize timely topics – material that’s needed now,” Felter said. “We also want to offer the latest cutting-edge information as our researchers develop it.”

The Web team’s other immediate goal is to boost public awareness of Solutions for Your Life and drive more traffic to the site, said Tracy Irani, an associate professor with UF’s agricultural education and communication department.

“We’re using billboards, posters, bookmarks, business cards and brochures to brand the Solutions for Your Life theme,” said Irani, who serves as faculty adviser to the Web team.

Solutions for Your Life marketing efforts sport a distinctive look, combining bright colors with photographs of smiling people. The photos depict a broad cross-section of Florida’s population, underscoring the idea that Solutions for Your Life aims to serve all residents, she said.

“No matter who you are or what you do, Solutions for Your Life can help you,” Irani said. “That’s what we want people to remember.” ■



Larry Arrington, dean for the UF Extension Service, says the new Solutions for Your Life Web site strengthens Extension’s statewide outreach efforts. PHOTO BY THOMAS WRIGHT

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The photos below, from left to right, are keyed to information available on six permanent Web site topics – agriculture, community development (including disaster preparedness), environment, families and consumers, 4-H youth development, and lawn and garden. PHOTOS BY UF/IFAS PHOTOGRAPHY



# GOING UNDERCOVER

*By Chuck Woods*



THANKS TO THE PROTECTED AGRICULTURE PROJECT AT UF'S INSTITUTE OF FOOD AND AGRICULTURAL SCIENCES, AN INCREASING NUMBER OF GROWERS IN FLORIDA AND THE SOUTHEAST ARE GOING UNDERCOVER – GROWING A WIDE RANGE OF HIGH-VALUE CROPS IN HIGH-TECH GREENHOUSES ON A YEAR-ROUND BASIS. THE RESEARCH AND DEMONSTRATION PROJECT, FUNDED LARGELY BY THE U.S. DEPARTMENT OF AGRICULTURE, RECYCLES WATER AND FERTILIZERS AND REDUCES THE NEED FOR PESTICIDES.

With a few taps on a computer keyboard, University of Florida researchers can control just about every aspect of growing vegetables and other high-value crops in greenhouses that protect plants from pests and diseases – boosting yields by 10 times over field-grown production.

“It’s all part of the growing trend toward precision, high-tech agriculture in Florida,” said Dan Cantliffe, a professor and chairman of UF’s horticultural sciences department and leader of the Protected Agriculture Project at UF’s Institute of Food and Agricultural Sciences. “The project demonstrates how vegetable and fruit crops can be produced on a year-round basis – not just when weather conditions or market windows are favorable for Florida growers.”

He said the computerized greenhouse project, which covers one acre at UF’s Plant Science Research and Education Unit in Citra, reduces labor requirements and automates everything from plant nutrients in drip irrigation systems to temperature controls in the greenhouses. The amount of phosphorus, nitrogen and other plant nutrients needed by each crop can be precisely controlled by the computers. Greenhouse operations at Citra can also be monitored and controlled by UF computers in Gainesville, more than 20 miles from the site.

To those who say the protected agriculture system is too expensive, Cantliffe replies that the greenhouses can be constructed for \$2 to \$4 per square foot – far less than the cost of a new home.

Exterior view of one of the two half-acre research greenhouses at UF’s Protected Agriculture Project in Citra. Each greenhouse has about 22,000 square feet of computer-controlled growing area.

(Inset) Emil Belibasis, left, owner of Beli Farms in Wellborne, Fla., and Dan Cantliffe, chairman of UF’s horticultural sciences department, examine cucumber plants in a high-tech greenhouse. Belibasis is one of the first growers in the state to begin using new technologies demonstrated at UF’s Protected Agriculture Project. **PHOTOS BY JOSH WICKHAM**



Phil Stansly examines squash plants for tiny parasitic wasps that control whiteflies.  
PHOTO BY JOSH WICKHAM

He said the sustainable farming system will also eliminate or minimize worries about freezes, drought, weather and certain other problems, such as E. coli bacterial contamination. The greenhouses can be built almost anywhere in the state, reducing problems associated with urbanization and loss of prime farmland in South Florida.

“Growing crops in a protected greenhouse environment will make Florida producers more competitive against imports from other areas in the world,” Cantliffe said. “If the vegetable industry in Florida is going to prosper and grow, there is a clear need for these new greenhouse production technologies.”

He said Florida vegetable production now involves intensive production practices on more than 230,000 acres. Crops such as tomatoes, peppers, cucumbers, strawberries and watermelons account for 61 percent of the state’s vegetable crop value, and the new protected agriculture system could allow growers to produce more

of these crops – with higher plant densities – year-round.

“Production of crops such as blueberries, eggplants and squash could also be increased, along with the production of new crops such as the Galia muskmelon, which is widely produced in Spain and Israel, Morocco, Turkey and other Middle Eastern countries and shipped to Europe, where consumers pay top prices for this excellent-tasting melon,” Cantliffe said.

“Considering the fact that vegetable culture in Florida is already a highly technological business involving several high-cost inputs such as polyethylene mulch, drip irrigation, fertilizer and pesticides, this new system will be cost-efficient and sustainable over the long term,” he said. “Almost one-third of Florida vegetables, including all tomatoes, strawberries, peppers, eggplants and most melons, are produced on plastic mulch, and nearly half of all the crops grown on mulch have drip irrigation.”

While the passively ventilated greenhouse structures can protect crops from wind and rain, they also can protect crops from insects when fitted with insect-exclusion screens. Therefore, these greenhouse structures can reduce the need for pesticides, he said.

Unlike existing hydroponic greenhouse structures that require substantial investments in heating and cooling systems, the Protected Agriculture Project relies on passively ventilated greenhouses for greater energy efficiency, Cantliffe said. The automated greenhouse production system reduces the need for pesticides and recycles water and fertilizers – solving several major problems facing the state’s \$1.6 billion fruit and vegetable industry.

“For example, it will help growers who are increasingly concerned about more state and federal regulation of water, fertilizer and pesticides,” said Cantliffe. “It will also solve problems associated with the recent federal ban on the use of methyl bromide, a widely used soil fumigant to control soil pests.”

Lance Osborne, left, checks papaya plants with Debra Taylor, a deputy at the Seminole County Correctional Facility in Sanford, Fla. Inmates at the facility, who have been growing their own vegetables for more than 10 years, are also growing beneficial insects on papaya plants for Osborne and other UF researchers. The insects provide effective biocontrol of the sweetpotato whitefly (*Bemisia tabaci*) in greenhouses at the Protected Agriculture Project. PHOTO BY THOMAS WRIGHT



Cantliffe said the greenhouse structures – also known as plasticulture systems – could include the use of soil-less culture for crop production. One example would be bag or pot-container production using inert media such as perlite or coconut fiber. Pine bark, which is an inexpensive and renewable resource, can also be used as a growing medium.

“With soil-less culture in greenhouses, winter vegetable production would not depend on the warm, sandy soils of southern coastal Florida,” he said. “In addition, the loss of methyl bromide would be less troublesome if a portion of the vegetables could be grown in soil-less culture under a protective structure.”

Cantliffe said the new greenhouse technology is already being used in European countries, such as Holland and Spain, and Mediterranean countries, such as Egypt, Israel, Morocco and Turkey, as well as Canada, China, Korea, Mexico and Japan. He said producers in these countries face some of the same challenges as Florida growers.

“The Protected Agriculture Project provides much-needed information for hands-on training and demonstrations so that Florida producers can examine,

The Protected Agriculture Project includes a computerized system that mixes precise amounts of liquid fertilizer from these tanks, and the nutrients are delivered via drip irrigation to plants in the greenhouse. **PHOTO BY JOSH WICKHAM**

work and train in this new agricultural business environment,” Cantliffe said.

The new greenhouse technology being demonstrated in Citra has already been adopted by Beli Farms in Wellborne and by several other Florida vegetable growers. Emil Belibasis, owner of the farm, which grows tomatoes on the vine and mini-cucumbers in four acres of greenhouses, said the new structures are naturally ventilated with overhead retractable shade.

“We use pine-bark pots and coconut-fiber slats for the growing media, with one row of pots for two rows of crops,” Belibasis said. “Recently, we installed a computerized environment controller and a weather station to better control the greenhouse environment. It controls fans, pads, heaters, curtains, shade and irrigation.”

He said the new structures also have improved environmental controls for managing disease. The use of insect screens, soaps, specialized equipment



and cultural practices for insect control has helped reduce the need for pesticides.

## RELATED RESEARCH

Working with Cantliffe on various aspects of the greenhouse project are four other UF faculty members stationed in Immokalee, Apopka and Gainesville. Phil Stansly, a professor of entomology at the Southwest Florida Research and Education Center in Immokalee, and Lance Osborne, a professor of entomology at the Mid-Florida Research and Education Center in Apopka, are developing effective pest management strategies, while Steve Sargent, a professor in the horticultural sciences department in Gainesville, is developing handling recommendations for some of the new greenhouse vegetables, such as baby

Jeanmarie Mitchell, left, and Mark Jones, students majoring in horticultural sciences in UF's College of Agricultural and Life Sciences, and Dan Cantliffe, center, examine tomatoes being grown at the Protected Agriculture Project. **PHOTO BY THOMAS WRIGHT**





Beli Farms, which produces tomatoes in Wellborne, Fla., on a year-round basis, uses many of the technologies demonstrated at UF's Protected Agriculture Project. The pipes on the ground carry hot water to heat the greenhouse, and they also are used as tracks for carts to prune and harvest the crop. **PHOTO BY THOMAS WRIGHT**

yellow summer and zucchini squashes. John VanSickle, a professor in the food and resource economics department, is studying the market for the new greenhouse crops.

Stansly said pest management depends partly on fine mesh screen covering all ventilation spaces and double doors with positive airflow to impede insect entry. "The trade-off is between exclusion on the one hand and ventilation on the other – too coarse a mesh and the bugs get in; too fine and plants go down with fungal diseases," he said. "These greenhouses are engineered to provide the benefits of insect screen without the drawbacks. For one thing, the screen has rectangular openings that exclude pests like whiteflies but allow sufficient air movement."

Biological control is used against pests that breach the barriers. Stansly said that a year of work in vegetable greenhouses in southern Spain with the Dutch company Koppert Biological Systems made him a believer in the power of this strategy. "I didn't think that pests like thrips and whiteflies could be controlled without recourse to insecticides, especially since both are vectors of debilitating plant viruses, but seeing is believing," he said.

"Predaceous mites and minute pirate bugs were used by more than 50 percent of the growers in one major pepper-growing region, and we were successful in bringing a tiny parasitic wasp (*Eremocerus mundus*) online to control whiteflies," Stansly said. "We hope our work at Citra will demon-

strate that similar biologically based pest management systems can be adapted to Florida conditions."

Osborne said biological control in protected culture is a widely accepted technology in many parts of the world, such as Europe and Canada. It has also become commonly used in the production of Florida ornamental crops, where the cost can be more easily justified than in vegetable production. However, these methods don't always transfer to greenhouses in southern climates, where the temperatures are significantly higher and there is year-round pressure from pests.

He also said the size of the greenhouse vegetable industries in other countries supports the development of commercial insectaries, thereby allowing for more readily available biolog-

ical control agents and technical support. A large concentration of growers utilizing biological controls also reduces costs to the growers for both technical support and natural enemies.

“In Florida, we are developing systems to make the use of biological controls both economical and user friendly for growers and the general public through the use of ‘banker’ plants, which are plants that are used to rear the natural enemies of greenhouse pests,” Osborne said. “We currently have effective biological control systems available for mites, whiteflies and aphids, and we are developing systems for thrips and mealybugs.”

Sargent said there is little or no reliable postharvest information available for growers and shippers to market specialty vegetables grown under protected culture. This lack of knowledge restricts the ability of growers and shippers to compete in potentially lucrative markets, thereby making research on protected production systems more important.

Crops that have high demand but little available postharvest information include baby squash, edible flowers and Beit Alpha cucumbers. There are many types of summer squash (*Cucurbita pepo*), with a wide range of colors, shapes, sizes and flavors. Summer squashes are harvested at immature stages, as opposed to winter types that are harvested fully mature. Both squash fruit and flowers come from the same crop, and the squash fruit develops below the edible female flower. Male flowers also form separately.

“There is significant demand for the baby squashes and edible flowers by upscale restaurants and by grocers for use as fresh garnishes in salads or in a variety of cooked dishes,” Sargent said. “Buyers want either the flower detached from the fruit at harvest and sold separately, or fruit and flower as an intact product.”

He said their current studies indicate that male squash flowers picked just prior to opening hold up better

Steve Sargent uses a colorimeter to measure changes in the external and internal color of Beit Alpha cucumbers. His postharvest studies include tracking the effects of shipping and handling operations on the quality of fresh cucumbers and other vegetables grown at the Protected Agriculture Project. **PHOTO BY MARISOL AMADOR**

during handling and shipping than open male flowers or detached female flowers.

Successful postharvest handling of fresh produce requires careful coordination and integration of the various steps involved in harvesting the produce and bringing it to consumers in order to maintain the initial horticultural product quality, Sargent said. Quality refers to those characteristics that consumers associate with each commodity and that are dependent upon the particular end use, such as sweetness in mangos, tenderness in snap beans, crispness in carrots and flavor in tomatoes.

“Quality also refers to freedom from defects, such as blemishes, mechanical injury, physiological disorders, decay and water loss,” he said. “Quality loss in fresh vegetables is cumulative; each incident of mishandling reduces final quality at consumer level.”

Sargent said many factors reduce quality during postharvest handling, including harvesting the produce at the incorrect maturity stage; handling the produce carelessly during harvest, packing, shipping and retailing; sanitizing contact surfaces improperly; using unsanitized wash water; delayed or inadequate cooling; shipping or storing produce above or below optimal temperature; not providing proper relative humidity; poorly designed packages and, for some commodities, exposing the produce to ethylene gas.

VanSickle, who also is director of UF’s International Agricultural Trade and Policy Center, says protected agriculture technologies allow Florida growers to get their products into new markets. VanSickle said it is important



for growers to understand the marketing channels and consumer expectations for new crops.

“Many of Florida’s vegetable crops move through traditional institutional market channels that fit well with field-production technologies,” he said. “Crops grown under plastic are generally perceived by consumers to be of higher quality and command premiums in the market. Therefore, production of protected agricultural crops should add value to Florida vegetable crops.” ■

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Lonnie Ingram, right, holds a petri dish containing the new bacteria that produce ethanol from biomass. Gregory Luli, left, said Celunol Corp. plans to build a 20-million-gallon biomass-to-ethanol plant in Jennings, La. The plant's technology and process will be based upon Ingram's genetically engineered bacteria. **PHOTO BY THOMAS WRIGHT**

# BIOMASS-TO-ETHANOL TECHNOLOGY *READY TO GO*

By Chuck Woods

Half the automotive fuel in the United States could be replaced with ethanol from renewable agricultural crops, forest wastes and energy crops, according to a University of Florida researcher who has developed bacteria that convert biomass and other farm wastes into fuel.

"We can reduce our dependence on imported oil and lower the price of automotive fuel by reformulating our gasoline with ethanol derived from inexpensive farm wastes," said Lonnie Ingram, a distinguished professor of microbiology with UF's Institute of Food and Agricultural Sciences.

His breakthrough technology – genetically engineered bacteria – produces fuel ethanol from farm wastes, such as corn stems, cobs and leaves. A related technology can be used to produce biodegradable plastics from biomass.

"With the cost of imported oil reaching record highs, we can use this new technology to produce ethanol for about \$1.30 a gallon," he said. "Ethanol will stretch the nation's fuel supply and make gasoline burn more cleanly. Gasoline-ethanol blends also boost the octane rating of automotive fuel."

Ingram, who was invited to present a briefing about the technology to the staff and members of Congress, says his genetically engineered bacteria are capable of converting all sugar types found in plant cell walls into fuel ethanol. Ingram's two organisms produce a high yield of ethanol from biomass, such as sugarcane residues, rice hulls, forestry and wood wastes and other organic materials.

The bioconversion technology, selected by the U.S. Department of Commerce to become Landmark Patent No. 5,000,000, is being commercialized with assistance from the U.S. Department of Energy (DOE). Celunol Corp., based in Dedham, Mass., holds exclusive rights to use and license the UF-engineered bacteria.

Until now, all of the world's fuel ethanol has been produced from high-value materials – such as cornstarch and cane syrup – using yeast fermentations. In 2005, more than 4.5 billion gallons of fuel ethanol was manufactured from cornstarch and used as automotive fuel.

Ingram said his technology will further expand ethanol production by converting cellulosic waste into fuel ethanol, more than doubling current ethanol production.

Ingram, who is director of the Florida Center for Renewable Chemicals and Fuels at UF, cited a recent report from the U.S. Department of Agriculture and DOE that indi-

cates more than one billion tons of biomass can be sustainably produced each year. Converting this to fuel ethanol could replace half of all imported petroleum in the United States.

A member of the National Academy of Sciences, Ingram said he genetically engineered the two organisms by cloning the unique genes needed to direct the digestion of sugars into ethanol, the same pathway found in yeast and higher plants. These genes were inserted into a variety of bacteria that have the ability to use all sugars found in plant material, but normally produce a worthless mixture of acetic and lactic acids as fermentation products. With the ethanol genes, the engineered bacteria produce ethanol from biomass sugars with 90 percent to 95 percent efficiency.

"Until we developed this new technology, the chemical makeup of biomass prevented it from being used to make ethanol economically," Ingram said. "Biomass is a much cheaper source of ethanol than traditional feedstocks, such as cornstarch and cane syrup, but the cost of processing is higher."

Gregory Luli, vice president of research at Celunol's laboratory at UF's Sid Martin Biotechnology Development Institute in Alachua, Fla., said the firm plans to build a 20-million-gallon biomass-to-ethanol plant in Jennings, La. The plant's technology and process will be based upon Ingram's genetically engineered bacteria.

"The first phase of commercializing Ingram's technology will be a one- to two-million-gallon demonstration facility, expected to be operational by spring 2007, that will convert organic waste into ethanol, a form of alcohol that can be used as a clean-burning fuel," Luli said. "Waste from the sugarcane industry in Louisiana will serve as the plant's main feedstock."

Ingram, who addressed the World Congress on Industrial Biotechnology and Bioprocessing in Orlando in April, said the Governors' Ethanol Coalition, which includes governors from 33 states, wants to expand federal mandates on using ethanol as a motor-vehicle fuel additive. The coalition, which is facing opposition from the oil industry, is seeking federal incentives to boost production to at least eight billion gallons a year by 2012. The move to increase ethanol production is also supported by the National Commission on Energy Policy, a research group based in Washington, D.C.

"Energy independence is important to Florida and the nation, and it should be a 10-year national goal," Ingram said. "Energy independence should be the 'moonshot' of our generation." ■

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# Manure Matters

By Chuck Woods

The growing number of big dairy and swine livestock farms – along with increased development in rural areas – has resulted in greater awareness and concern about the proper storage, treatment and utilization of manure. UF/IFAS FILE PHOTO

*As the nation looks to agriculture for renewable fuels from crops and other sources, University of Florida researchers have developed a manure management system that produces energy, saves valuable nutrients for biofertilizer, cuts greenhouse gas emissions and reduces offensive odors.*

It's not often that one technology can solve several major problems, but an innovative University of Florida animal manure management system is a sustainable option for dairies and other livestock operations that produces renewable energy and protects the environment.

Ann Wilkie, the associate professor with the soil and water science department in UF's Institute of Food and

Agricultural Sciences who developed the system, said the growing number of big dairy and swine livestock farms – along with increased development in rural areas – has resulted in greater awareness and concern about the proper storage, treatment and utilization of manure. Without proper management, animal manure can get into groundwater supplies, and odor problems can irk nearby residents.

“The key to our waste management system is a natural biological process called anaerobic digestion that relies on microorganisms to transform animal manure into biogas, a mixture of mostly methane and carbon dioxide,” Wilkie said. “Anaerobic digesters, which process waste under oxygen-free conditions, are different than conventional aerobic systems that use oxygen to treat the waste.”

Wilkie said anaerobic digesters can process five to 10 times more waste than aerobic systems. Because the waste is enclosed to keep oxygen out, anaerobic digestion keeps odors in. Odors, flies and pathogens are reduced by as much as 95 percent.

With anaerobic digestion, the biogas produced can be used to heat water or generate electricity, eliminating methane gas emissions that contribute to global warming. Nutrients such as nitrogen and phosphorus can be recovered and used to fertilize crops.

To demonstrate the technology at a working dairy farm, a large-scale anaerobic digester at UF's 500-cow Dairy Research Unit in Hague is now generating biogas from manure flushed from animal barns and milking parlors. The patented waste treatment technology is being made available for licensing by UF's Office of Technology Licensing.

About 40 cubic feet of methane per day can be produced from the waste of each dairy cow, Wilkie said. Each cubic foot of methane has about 1,000 BTUs (British Thermal Units), which adds up to a huge amount of usable energy. A British Thermal Unit is the amount of heat needed to raise the temperature of one pound of water by one degree Fahrenheit.

Art Darling, executive director of Sunbelt Milk Producers Inc. in Orlando, said that although methane technology is not without cost, it can solve important energy and environmental problems on Florida dairy farms.

Darling said the UF system takes advantage of the fact that it is less expensive to move liquid containing manure than it is to move dry manure solids. The anaerobic digester processes manure from the large volumes of water used to flush waste from animal holding areas at the dairy.

Because manure flushed from these areas is so diluted by water, only two types of anaerobic digesters are practical for Florida dairies – covered lagoons and fixed-film digesters,

Ann Wilkie records data at the waste treatment system at UF's Dairy Research Unit in Hague. The fixed-film anaerobic digester tank produces methane gas from flushed manure. Some of the gas is used to heat water on-site, and the flare stack burns off excess amounts of gas. Wilkie recently received the 2006 Sustainable Florida Best Practices Award from the Collins Center for Public Policy in Tallahassee for her research. **PHOTO BY MARISOL AMADOR**

Wilkie said. Covered lagoons require large land areas, gas-tight covers and careful sealing to prevent nutrients from leaching into groundwater. By contrast, the fixed-film anaerobic digester at Hague is a 100,000-gallon tank that has a relatively small footprint, which can be a real plus when local land-planning issues are a concern, she said.

"In covered lagoons, which are less efficient than fixed-film anaerobic digesters, the digestive bacteria float around, making only random contact with the manure particles," Wilkie said. "In fixed-film digesters, the bacterial growth occurs on the surfaces of the internal media that the waste must flow over, thereby assuring frequent contact. In this way, higher volumes of wastewater can be processed."

She said a fixed-film digester can process flushed manure in two to three days, compared to 30 to 40 days for a covered lagoon. Generally, the fixed-film design is suitable for any livestock manure that is diluted with water for transport or processing, such as dairy and swine waste.

The by-products of anaerobic digestion – liquid fertilizer and compost – reduce the need for synthetic fertilizers and soil conditioners that are produced using less sustainable methods, providing a cost savings as well as environmental benefits, Wilkie said.

Anaerobic digestion reduces the potential for global warming in two ways, she said. First, by capturing biogas, anaerobic digestion can reduce natural emissions of methane, a potent greenhouse gas. Second, when anaerobic digestion produces renewable fuel to replace fossil fuels such as coal, oil and natural gas, production of carbon



dioxide from burning those fossil fuels is avoided. Use of renewable resources represents a closed carbon cycle that does not contribute to increases in atmospheric concentrations of carbon dioxide.

Another advantage of anaerobic digestion is that it produces very little sludge. With aerobic treatment, up to 50 percent of the organic matter from the waste is converted to sludge, which requires further processing and disposal.

The anaerobic digester also lowers the levels of pathogens; starvation and competition with other microorganisms help kill pathogens that might be in the manure, Wilkie said.

David Armstrong, farm manager at the UF Dairy Research Unit in Hague, said the fixed-film anaerobic digester has been operating successfully for more than six years, and some of the methane produced is used to heat water for the milking parlor. He said the digester is "farmer friendly" because it is easy to operate and maintain. ■

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# QUESTIONS ABOUT QUAIL

Loss of habitat for the northern bobwhite quail – the nation’s most popular game bird – is blamed for its sharp decline in the Southeast, according to a University of Florida wildlife conservationist who says improved land management practices will help restore the species.

More intensive forestry and agricultural practices, urban sprawl and other types of development are important factors in their decline, causing bobwhite quail populations to drop by two-thirds since 1980, said Bill Giuliano, an assistant professor with UF’s Institute of Food and Agricultural Sciences. Florida hunters once harvested more than two million quail each year, but they now take fewer than 250,000.

Several nongame birds that share habitats with bobwhites – such as burrowing owls, crested caracaras, eastern meadowlarks and sparrows – are also experiencing long-term and large-scale declines.

In much of the Southeast, bobwhite numbers are a small fraction of what they were only 25 years ago, Giuliano said. Continued loss and alteration of habitat through changing land management practices and development threaten the future of quail in Florida and the region. Similar problems are affecting quail populations in other areas of the nation, where the birds live in a wide variety of habitats.

Giuliano said the length of the hunting season – November through March – does not appear to be a factor in their decline. However, considering these habitat problems, there may be a need for some new scientifically based regulations to manage the harvest.

“To bring the bird’s population back to 1980 levels in the Southeast, some 81 million acres of habitat need to be restored, and we are working with several public and private agencies to encourage that on both public and private lands,” Giuliano said.

Plans to restore habitat are being developed by UF researchers in cooperation with scientists at the Florida Fish and Wildlife Conservation Commission, the U.S. Geological Survey and the Tall Timbers Research Station in Tallahassee.

To educate landowners, managers, hunters and quail enthusiasts on the ecology and management of bobwhite, the UF Extension Service and the Florida Fish and Wildlife Conservation Commission held a quail management short course last year in Arcadia, Fla. Giuliano, who coordinated the course, said a similar program will be held Oct. 5-6 in Monticello, Fla.

Giuliano said quail biologists generally agree that nesting and ground-plant covers needed for brood-rearing are important factors across most of the species’ range in Florida and the Southeast.

“While the birds still thrive on large, intensively managed quail plantations in North Florida, their numbers have declined in South Florida, where changing land-use patterns have altered their preferred habitat,” Giuliano said. “In fact, the landscape has changed so much that extensive tracts of land have become completely unproductive for quail.”

He said vast acreages have been cleared for citrus groves and improved pastures. Concerns from urban residents about smoke often prevent land managers from using controlled burns to control excessive plant growth that may be undesirable for quail. For example, palmetto is beneficial for quail when it covers small areas of pastureland, but it becomes detrimental when the coverage is extensive.

UF DeSoto County Extension Director Jim Selph said many agricultural practices, including livestock grazing, are often blamed for the loss and degradation of habitat for quail and other wildlife. However, in many rangeland systems, grazing can actually be an effective management tool to create and maintain a good habitat for quail, he said.

The ideal quail habitat – often referred to as a “crazy quilt” of plants scattered about the landscape – includes small patches of bunchgrasses for nesting cover, weeds for foraging and other shrubs such as palmetto for escape cover, he said.

Selph, a livestock expert, said moderate grazing, which usually results in more open and diverse rangeland, produces the best habitat for quail. Heavy grazing, particularly when shrubs and other nonforage plants are being controlled, could lead to a “golf-course effect,” providing little forage for cattle and no food or cover for quail.

“Unfortunately, there is no magic stocking rate or number of animals that will always provide moderate grazing intensity and maintain the crazy quilt that quail need,” Selph said.

Giuliano said habitat restoration and possibly predator management practices could boost quail populations. Predators of quail include armadillos, bobcats, hawks, owls, raccoons and snakes.

Supplemental feeding, another form of predator management, can help protect the birds by reducing the time they spend away from their nests searching for food.

“Controlling red imported fire ants, which are one of the leading causes of low quail numbers throughout the Southeast, will also help quail populations rebound,” Giuliano said. “In fact, controlling fire ants in heavily infested areas could double quail populations.” ■

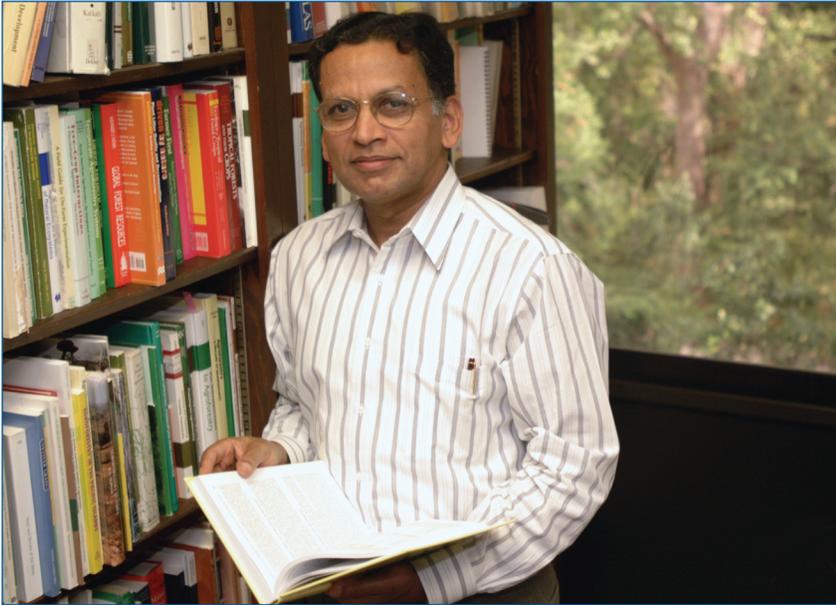
– CHUCK WOODS

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Loss of habitat in Florida and the Southeast has caused northern bobwhite quail populations to drop by two-thirds since 1980. The northern bobwhite quail (*Colinus virginianus*) is a small, chunky, short-tailed, round-winged, ground-dwelling bird that is about eight inches tall. For more information, please visit <http://floridaquail.wec.ufl.edu> **PHOTO BY THOMAS WRIGHT**

## HUMBOLDT RESEARCH AWARD



P.K. NAIR

P.K. Nair, a distinguished professor of agroforestry at UF's Institute of Food and Agricultural Sciences, has received the Humboldt Research Award – also known as the Humboldt Prize – which is Germany's highest research award for senior scientists in the United States.

The award, which includes a 50,000 euro stipend (about \$60,000) for future research, was presented to Nair in June by the Humboldt Foundation in Bonn, Germany. He was nominated for the award by professional colleagues in Germany. Award winners are also invited to develop research projects of their own choice in Germany in cooperation with colleagues for periods of six months to a year.

The Alexander Humboldt Foundation is a nonprofit foundation established by the Federal Republic of

Germany for the promotion of international research cooperation. It enables highly qualified scholars to spend extended periods of research in Germany and promotes international scientific cooperation.

Nair, who is also director of the Center for Subtropical Agroforestry in UF's School of Forest Resources and Conservation, is an internationally recognized leader in agroforestry, said Jimmy Cheek, UF senior vice president for agriculture and natural resources.

"P.K. Nair is largely responsible for the development of agroforestry as a scientific discipline by applying agronomic concepts and practices to forestry," Cheek said. "This prestigious international award is another indication of the outstanding quality of our faculty."

The UF agroforestry scientist is the recipient of numerous awards, includ-

ing the 2005 Scientific Achievement Award from the International Union of Forest Research Organizations, the 2004 Barrington Moore Memorial Award from the Society of American Foresters and the 2004 International Crop Science Award from the Crop Science Society of America.

The Crop Science Society of America is affiliated with the Soil Science Society of America and the American Society of Agronomy, both of which have previously named Nair a fellow, their highest recognition, and given him international service awards. He also is a fellow of the American Association for the Advancement of Science. In 2005, he was selected for the senior specialist award of the Fulbright Commission.

Nair has a doctoral degree in agronomy from Pantnagar Agricultural University, India, and a doctor of science degree in agriculture from Goettingen University, Germany. He received an honorary doctoral degree from Kyoto University, Japan in 2002 and one from the University of Science and Technology, Kumasi, Ghana in 2005. On June 15, 2006, he received an honorary doctoral degree from the University of Guelph in Ontario, Canada.

He was editor-in-chief of Agroforestry Systems from 1994 to 2005 and has served on the editorial board of Plant and Soil for six years. He served as chair of the Global Organizing Committee for the 1st World Congress of Agroforestry in Orlando in July 2004. ■

– CHUCK WOODS

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## NEW BOOK PROFILES UF WOMEN ENGINEERS



JANIE FOUKE



WENDY GRAHAM



DOROTA HAMAN



CAROL LEHTOLA

Women represent less than 10 percent of the nation's engineering workforce, but a new book designed to increase their numbers pays homage to four University of Florida faculty members.

"Changing Our World: True Stories of Women Engineers" includes profiles of UF Provost Janie Fouke and Wendy Graham, Dorota Haman and Carol Lehtola of UF's Institute of Food and Agricultural Sciences.

The book, released during National Engineers Week in February, was writ-

ten by Sybil Hatch and produced by the Extraordinary Woman Engineers Project, an effort by more than 50 organizations to encourage young women to pursue engineering careers.

The four UF faculty members were chosen by a committee that reviewed hundreds of nominations from various engineering societies, said Graham, former chairperson of UF's agricultural and biological engineering department and now director of UF's new Water Institute.

Fouke, a biomedical engineer who was dean of engineering at Michigan State University before coming to UF, was recognized for discovering how cold weather can trigger asthma attacks by increasing blood flow to the lungs and expanding blood vessels.

Graham, profiled for research on reducing nutrient pollution in groundwater, said young women should consider engineering because it offers many career options.

"I think it's incredibly important to show young women what they can contribute to the world, and this book does a great job of showing what's possible through engineering," she said.

Haman, the first woman faculty member in UF's agricultural and biological engineering department, said it's important for universities to hire women engineers. An irrigation expert, she was profiled for helping farmers around the world.

"Female students need to see women engineers in leadership roles, and I think it benefits male students as well," she said. "Today, there's no reason why we shouldn't have as many women engineers as men."

Lehtola, an agricultural safety expert who was the first woman to graduate from South Dakota State University's agricultural engineering program, is profiled for her efforts to reduce deaths due to tractor rollovers, the most common cause of farm fatalities.

For more information, visit: <http://www.engineeringwomen.org/stories.html>. ■

— TOM NORDLIE

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MARK MCLELLAN

Mark McLellan, dean for research at UF's Institute of Food and Agricultural Sciences, has been named chair of the U.S. Food and Drug Administration's (FDA) Food Advisory Committee, whose members are the nation's top consultants for food issues. The appointment became effective in February and will continue through

## FDA COMMITTEE CHAIRMAN

June 2008. As chair, McLellan will lead a group of 17 scientists, consumer advocates and industry representatives consulted by the FDA for advice on complex or controversial issues.

"The FDA turns to the committee when it isn't sure of the best path to take on something," McLellan said. "My job is to guide the discussion among committee members so we can provide well thought-out guidance to FDA."

Depending on the FDA's needs, the committee may address topics ranging from basic food safety and product labeling to genetically modified foods, allergens and emerging pathogens, he said.

McLellan was selected for the position by FDA Commissioner Andrew von Eschenbach.

McLellan has led several large scientific organizations. Before arriving at UF in July 2005, he was direc-

tor of Texas A&M University's Institute of Food Science and Engineering.

He also served as director of Cornell University's Institute of Food Science and president of the Institute of Food Technologists, a nonprofit scientific society with 28,000 members.

McLellan's appointment is another indication of UF's prominence among the nation's leading universities, said Jimmy Cheek, senior vice president for agriculture and natural resources.

"By taking a leadership role with the FDA, Dr. McLellan will attract more attention to the University of Florida," Cheek said. "Our faculty and administrators are excellent, and this appointment will pave the way for greater UF involvement in issues of national concern." ■

— TOM NORDLIE

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JIM DAVIDSON

Jim Davidson, former University of Florida vice president for agriculture and natural resources, has been honored with the E.T. York Distinguished Service Award for his contributions to the people of Florida through UF agriculture and natural resource programs.

## DISTINGUISHED SERVICE AWARD

Davidson received the award April 4 at the Institute of Food and Agricultural Sciences' administrative council meeting at Emerson Alumni Hall. A plaque bearing his name was installed in McCarty Hall.

From 1992 until he retired in 1998, Davidson led statewide IFAS teaching, research and Extension programs. From 1986 until 1992, he served as IFAS dean for research. He came to UF in 1972 as a visiting associate professor and joined the faculty as a soil science professor in 1974. His research focused on the movement of pesticides and other organic materials through soil.

Davidson is a fellow of the American Society of Agronomy and the Soil Science Society of America and is listed in the American Men of Sciences, Men of Achievement, Who's Who in the South and Who's

Who in Science and Engineering. He served on national EPA and Academy of Science committees investigating groundwater quality.

Before coming to UF, Davidson taught at Oklahoma State University and held laboratory research posts at Oregon State University and the University of California, Davis.

He earned a bachelor's degree in soil science at Oregon State University in 1956 and stayed to earn a master's in soil physics in 1958. He earned a doctorate in soil physics at the University of California, Davis in 1965. ■

— MICKIE ANDERSON

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DAVID SAMMONS

David Sammons, associate dean and director of international programs in agriculture at Purdue University, has been named director of international programs at UF's Institute of Food and Agricultural Sciences.

In announcing the appointment, which became effective July 25, Jimmy Cheek, UF senior vice president for agriculture and natural resources, said international programs are increasingly important in the global economy, and Sammons' experience, cou-

pled with his vision for the future, will help the university develop a world-class program.

Cheek said Sammons will lead international efforts. International Programs, which is in the Office of the Senior Vice President, helps faculty identify and pursue opportunities, secure funding, network with colleagues and obtain foreign language training. Sammons will be the program's first full-time director since 1999. He replaces Roger Natzke, who has held the post since July 2003.

"I look forward to helping raise UF's profile and presence around the world," Sammons said. "There's enormous potential for the university to help meet global needs for improving agriculture, food production and natural resource management."

Throughout his career, Sammons has traveled extensively, beginning with an assignment as a Peace Corps science and agriculture education volunteer in the Philippines and, more recently, working in Africa, China, Europe, Japan and Russia, as well as

Central and South America and the Caribbean.

Sammons has served at Purdue since 1993. In September 2004 he took temporary leave to work as senior adviser for university relations and agricultural research, training and outreach in the Office of Agriculture at the U.S. Agency for International Development in Washington, D.C.

Prior to arriving at Purdue, Sammons was a member of the University of Maryland's agronomy department faculty from 1978 to 1993, specializing in plant genetics and breeding. At Maryland, he also served in two associate dean positions and was interim head of an outlying research and education center.

He has a bachelor's degree in biology from Tufts University, a master's degree in biology from Harvard University and a doctoral degree in agronomy from the University of Illinois. ■

— TOM NORDLIE

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JOHN HAYES

John Hayes, a professor and associate dean for international programs at Oregon State University's College of Forestry, has been named chairman of the wildlife ecology and conservation department at UF's Institute of

## WILDLIFE ECOLOGY & CONSERVATION

Food and Agricultural Sciences. The appointment became effective July 27.

In announcing the appointment, Jimmy Cheek, UF senior vice president for agriculture and natural resources, said Hayes' combination of research, teaching, Extension and administrative experience made him an ideal candidate for the position.

"The fact that Dr. Hayes has substantial experience in international programs is a plus," Cheek said. "The university continues to expand its work around the globe, and he will bring valuable insights to the position."

Hayes said the UF department is poised to become the nation's best wildlife program.

"One of the things that drew me to UF was the combination of high-quality teaching, research and Extension

activities," Hayes said. "My job will be to help everyone build on the accomplishments that have already been achieved."

Hayes had served at OSU since 1992, where he also was associate department head of forest science. His research focuses on applied ecology, including habitat ecology of vertebrates in forests, the influence of forest management on wildlife populations, and the ecology and conservation of bats.

He has a bachelor's degree in wildlife science from OSU, a master's degree in biology from Southern Oregon State College and a doctoral degree in ecology and evolutionary biology from Cornell University. ■

— TOM NORDLIE

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GARY FAIRCHILD

Gary Fairchild, a professor in the food and resource economics department, was one of two University of Florida faculty members who received a 2005-2006 Teacher of the

## TEACHER OF THE YEAR

Year award during commencement ceremonies in May.

“Fairchild was nominated for the award by UF’s College of Agricultural and Life Sciences because he consistently earns high marks from students for his classroom style, quick wit and genuine interest in them,” said Kirby Barrick, dean of the college.

Fairchild co-teaches his department’s capstone course, Contemporary Issues in Agribusiness Management, consistently lauded by students as tough but intellectually stimulating, Barrick said. Fairchild also teaches courses in international trade policy in agriculture, international agribusiness marketing, and

public policy and the agribusiness firm.

A faculty member in UF’s Institute of Food and Agricultural Sciences since 1971, Fairchild has chaired committees on program development, peer evaluation and other curricular issues; advised department and college clubs and councils; mentored junior faculty and served on the University Center for Excellence in Teaching advisory board.

Fairchild has a bachelor’s degree in rural sociology and a master’s degree in agricultural economics from Ohio State University, and a doctoral degree in agricultural economics from Texas A&M University. ■ – MICKIE ANDERSON

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JAMES NEWSOME

James Newsome, president and chief executive officer of the New York Mercantile Exchange Inc. and a 1982 graduate of UF’s College of Agricultural and Life Sciences, was honored as a Distinguished Alumnus during commencement ceremonies in May.

He was nominated for the honor by a UF Faculty Senate committee and

## DISTINGUISHED ALUMNUS

recommended for the award by the UF Board of Trustees. Jimmy Cheek, senior vice president for agriculture and natural resources, presented the award to Newsome.

Cheek said Newsome is widely respected for his forward-thinking approach, his insight into international markets and his strategic planning skills. “He is an outstanding role model for students and alumni, and he has brought distinction to himself and UF through his accomplishments,” Cheek said.

Newsome, who became president of the exchange in 2004, has expanded into international markets, opening a facility in London and partnering with a subsidiary of Dubai Holding to create the Dubai Mercantile Exchange. The New York exchange is the world’s largest physical commodities future exchange and the preeminent trading forum for energy and precious metals.

In 1998, Newsome was confirmed by the U.S. Senate to be a commissioner of the Commodity Futures Trading Commission (CFTC). He was appointed chairman of the commission in 2001. As chairman, he guided the implementation of the Commodity Futures Modernization Act of 2000 and oversaw unprecedented levels of futures activity. During his tenure, the CFTC brought cases against 22 energy companies for price manipulation and other fraud.

Originally from Plant City, Fla., Newsome earned his bachelor’s degree in food and resource economics at UF in 1982. He then completed his master’s and doctoral degrees in animal sciences and agricultural economics at Mississippi State University. ■

– CHUCK WOODS

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KIRBY BARRICK, LEFT, AND WAYNE SMITH

The University of Florida's College of Agricultural and Life Sciences has a new symbol to honor its history and mark its 100th year educating students in Gainesville.

The college's first academic mace – an attractive wooden staff more than four feet tall and weighing 20 pounds – will be used in commencements and other formal ceremonies, said Kirby Barrick, dean of the college.

## NEW ACADEMIC MACE FOR COLLEGE

“The mace is an impressive piece of work, and will be a symbolic addition to our graduation ceremonies,” Barrick said. “Since we cannot recount our college's long history at these events, the mace provides a way to represent it.”

Wayne Smith, director emeritus of UF's School of Forest Resources and Conservation, led the effort to develop the mace when he was interim dean of the college. A committee that included Jake Huffman, a professor emeritus of wood science; Jane Luzar, associate dean of the college; Steve Feagle, an instrument maker and designer with the agricultural and biological engineering department and George Hecht, a curatorial assistant with the Florida Museum of Natural History, designed and crafted the mace.

From bottom to top, the mace includes red mangrove, a strong wood representing southern coastal areas; live oak, a dense wood used to build ships such as Old Ironsides; cypress, a dura-

ble wood representing the state's wetlands and black cherry, a fine wood used to build furniture.

The final piece of wood is a piece of UF history – a block of longleaf pine salvaged from Machinery Hall, the first building completed on the Gainesville campus.

The pine was used for the head of the mace, which is decorated with the seals of the college, UF and the state of Florida. Atop it rests a gilded sphere that symbolizes the sun and the global reach of the college.

The brass bands used to connect the wooden sections of the mace were engraved to record the college's changing institutional names and administrative leadership throughout the years. ■

– TOM NORDLIE

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E.T. YORK

E.T. York, chancellor emeritus of the state university system of Florida and the leader of efforts to establish the state's first veterinary college at the University of Florida, was honored May 27 with the College of Veterinary Medicine's Special Service Award.

## SPECIAL SERVICE AWARD

York, who has also served as UF interim president and vice president for agricultural affairs, was recognized at the college's commencement ceremony. The award was presented to York by Julio Ibanez, a member of the college's first graduating class and president of its alumni council.

James Thompson, interim dean of the college, said York was the person most responsible for creating the college, which opened its doors in September 1976. “It's because of Dr. York that the college exists today,” Thompson said. “Everybody here recognizes that when they hear his name. We wanted to show our gratitude, and this was a fitting way to do it.”

The Special Service Award is one of three honors in the college's Distinguished Awards Program, which was established by its alumni council in 2000, Thompson said. The Special

Service Award is the only honor presented to individuals not directly involved in veterinary practice or trained at the college.

York's work to establish the college dates back to 1963, when he arrived at UF to serve as provost for agriculture. In 1967, he was appointed to represent UF in matters related to the creation of a state veterinary college. Thanks in part to his efforts, in 1969 the Florida Legislature designated UF as the location of the college and appropriated funding sufficient to start the planning process and hire key personnel, including a dean.

In the 30 years the college has been operational, York has remained involved in its activities, serving on various advisory committees. The college includes numerous faculty affiliated with UF's Institute of Food and Agricultural Sciences. ■ – TOM NORDLIE

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# DEVELOPMENT *News*

## THE PAUL J. DIMARE FOUNDATION TERM PROFESSORSHIP



PAUL J. DIMARE

Paul J. DiMare of Coral Gables, Fla., and members of his family have established “*The Paul J. DiMare Foundation Term Professorship*” endowment with their gift of \$1 million.

The state of Florida has a matching gift program which may further enhance the DiMare gift with matching funds of \$750,000. In addition, UF President Bernie Machen has pledged to add \$250,000 from the Faculty Challenge Initiative fund, ultimately increasing the endowment to a total of \$2 million.

The DiMare gift will provide support for a UF/IFAS tomato plant breeder/geneticist who will work to develop tomato varieties that are resistant to fungi, viruses and bacteria, as well as tomatoes that show increased yields and improved quality.

DiMare is the largest grower of fresh-market tomatoes in the United States and is commonly known throughout the industry as “Mr. Tomato.” He is a strong supporter of UF/IFAS research efforts to develop new breeds of tomatoes that would help the industry and consumers throughout Florida and the nation. ■

## THE JOHN T. BARNES PROFESSORSHIP

John T. Barnes of Pace, Fla., received his undergraduate degree in 1948 and his master’s degree in 1949 through the College of Agricultural and Life Sciences (CALs). He says he has been blessed during his lifetime due in part to the education he received at the University of Florida. As an expression of his appreciation, Barnes has chosen to give back to the college by setting up charitable gift annuities, which will benefit him during his lifetime, provide tax advantages and eventually support CALs by establishing “*The John T. Barnes Professorship.*” Barnes says he is proud to have his wishes carried out in a manner that will not only accomplish his personal financial planning goals, but will also allow him to give something back to UF/IFAS. ■

## THE LENTON ROWLAND JR. AND KITTY FEHR ENDOWMENT



LENTON ROWLAND JR.



KITTY FEHR

Lenton Rowland Jr. of Gainesville, Fla., and his sister, Kitty Fehr of Raleigh, N.C., have funded a charitable remainder unitrust (CRUT), which will one day establish “*The Lenton Rowland Jr. and Kitty Fehr Endowment.*” The CRUT will provide Rowland and Fehr joint life incomes. The remaining CRUT proceeds will be used to create the endowment, which will be used to support fellowship awards to graduate students in the UF/IFAS animal sciences department.

Rowland received a graduate fellowship while pursuing his degree and feels it is important to give something back to UF. Understanding the pressures graduate students face, Rowland and Fehr want the endowment to support graduate students so they will not have to take on additional outside employment.

Rowland, a former UF/IFAS animal sciences faculty member, and his sister, Ms. Fehr, have also included UF/IFAS in their estate plans to further supplement their future endowments. ■

# IFAS *Development*

## Ways you can help support UF/IFAS

The IFAS Development program serves as the central fundraising effort to secure private support for the University of Florida's Institute of Food and Agricultural Sciences in partnership with the University of Florida Foundation Inc. Charitable gifts provide the "margin of excellence" for IFAS academic programs, research, Extension and facilities.

## Ways to Give

There are several ways to support IFAS:

- **Cash**
- **Charitable Bequests** (wills and trusts)
- **Real Estate** (residential or farmland)
- **Life Income Gifts** (charitable remainder trusts, annuities, retained life estates and retirement planning)
- **Stocks** (especially appreciated stocks)
- **Life Insurance** (new or existing policies)

## How Gifts are Used

All gifts designed for IFAS are payable to the University of Florida Foundation and are generally tax-deductible. Your gift may support IFAS academic, research or Extension programs, faculty initiatives, student scholarships, enhanced facilities or equipment. Permanent named endowed funds may also be established to ensure long-term stable funding for any project or program.

## Matching Gift Programs

The state of Florida may provide matching dollars for endowment gifts. Employers may also match employee contributions. Check with your employer's benefits office and see if they will provide a matching gift form for you to complete and return with your gift.

## Life Income Programs from the University of Florida Foundation Inc.

The University of Florida Foundation Inc. offers charitable gift opportunities with life income plans. This method of giving enables you to transfer highly appreciated assets to the Foundation and to retain an income for your lifetime or for a term of years certain or for other designated beneficiaries. You also will receive a charitable income deduction or an estate tax deduction for part of the value transferred to the life income plan. You may specify how the residual of your gift will be used to benefit a UF/IFAS program or an area of your choice.

The following are additional ways these types of deferred gifts may benefit you:

- Enables you to create an alternative retirement resource that is not limited by federal contribution caps.
- Permits you to diversify your overall income portfolio.
- Allows you to convert low-yielding or non-income producing assets into higher income streams.
- May enable you to reduce or eliminate capital gains taxation on sales of appreciated assets.
- Can help you to reduce or eliminate federal estate taxes.

## State Matching Gift Levels:

- \$100,000 to \$599,999 gifts matched 50 percent
- \$600,000 to \$1,000,000 gifts matched 70 percent
- \$1,000,001 to \$1,500,000 gifts matched 75 percent
- \$1,500,001 to \$2,000,000 gifts matched 80 percent
- \$2,000,001 or more gifts matched 100 percent

**For more information, contact:**  
**IFAS Development Office**  
**Phone (352) 392-1975 • Fax (352) 392-5115**  
**Web site: <http://share.ifas.ufl.edu>**



PHOTO BY THOMAS WRIGHT

## MORE FLOWER POWER

Yvonne Arwood, a student in UF's environmental horticulture department, records data on how temperature, humidity, sanitation and other factors affect the longevity and shelf life of roses. She is part of a team of researchers in UF's Institute of Food and Agricultural Sciences helping flowers go the distance – extending flower quality and vase life by three or more days for consumers.

Terril Nell, chairman of the environmental horticulture department who has provided leadership for the postharvest floral program for more than 25 years, said their research has shown that keeping flowers cold as they move from the field to the florist is critical.

"Proper treatment and sanitary conditions are also important," Nell said. "Consumers can extend vase life by two to three days by using properly mixed commercial flower foods. Using clean, sanitized containers will help to keep all cut flowers fresh longer."

Nell and his research team are working with growers and retailers nationally and internationally to spread the word about how best to make flowers last longer.

"Sometimes the differences we achieve relate to the flower quality as well as vase life," said Nell, who began working with roses because of their popularity and economic value. He also works with carnations, lilies, gerbera, chrysanthemums and alstromeria.

"It's not enough to offer consumers a beautiful flower," Nell said. "It needs to come with an extended warranty to remain lovely for a reasonable period of time. Our research is providing scientific basis for that kind of guarantee." ■

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