

IMPACT

THE INSTITUTE OF FOOD AND AGRICULTURAL SCIENCES MAGAZINE | VOL. 21 NO. 3 | FALL 2005

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Rx for Plants:
New Gulf Coast Research
and Education Center
Responds to Regional Needs



UNIVERSITY OF
FLORIDA

IFAS

perspective



TELLING THE IFAS STORY IS A LITTLE LIKE THE CLASSIC STORY OF THE BLIND MEN TRYING TO

DESCRIBE AN ELEPHANT: The power and singularity of the whole creature is difficult to express as a sum of its parts. IFAS touches the lives of all Floridians and millions more throughout the world, but many of you may not be aware of the full range of research accomplishments and educational opportunities IFAS has to offer. The more you know about IFAS as a whole, the better we can meet your needs.

That is why, beginning with this issue of IMPACT magazine, we are trying to provide more information about IFAS and our statewide programs in teaching, research and extension. The editorial board has been expanded to help provide the big picture. While we think it is more important to promote our programs than our identity, we also know that a well-established identity can translate to credibility when we establish new programs, when we recruit faculty and staff, when we seek legislative support, and when we serve you.

Why is this important? It is important because a strong identity enables IFAS to give our students an outstanding education, to provide research and development activities for the second largest industry in the state, and to deliver practical knowledge about agricultural, human, and life sciences and natural resources to your front door.

With new deans and other key leaders in place, IFAS is making a variety of changes to enhance the research we conduct, to expand extension programming, and to provide state-of-the-art graduate and undergraduate education.

“Solutions for Your Life” is a new Web-centered approach to tell the IFAS story. From home finance to insect control, from finding the local 4-H program to increasing profitability of your agricultural enterprise, understanding environmental issues, and better managing natural resources, you can find information that can help you improve your home, your health and your business, at SolutionsForYourLife.ufl.edu or SolutionsForYourLife.com/. Featured subject areas include agriculture, the environment, families and consumers, healthy communities, lawn and garden maintenance, and 4-H and youth development. The Web site can take you to your local county extension office or to the latest publications to help answer your questions and provide you with solutions for your life.

From a new research and education center to boost agriculture in the state to building homes to withstand hurricanes, from managing invasive plants to cultivating great-tasting tomatoes, IFAS touches the lives of every Floridian in a multitude of meaningful and subtle ways. With your help and support, IFAS will continue to provide leadership in educating future leaders, meeting the challenges of population growth, finding alternative fuels, promoting sustainable agriculture, creating a healthier environment, and building a better quality of life for generations to come.

Whatever we do, we can always do more. Please let us know how IFAS can better meet your needs. You can e-mail me at jgcheek@ufl.edu or write me at P.O. Box 110180, Gainesville, FL 32611-0180. I look forward to hearing from you.

A handwritten signature in black ink that reads "Jimmy G. Cheek". The signature is fluid and cursive.

JIMMY G. CHEEK
*Senior Vice President
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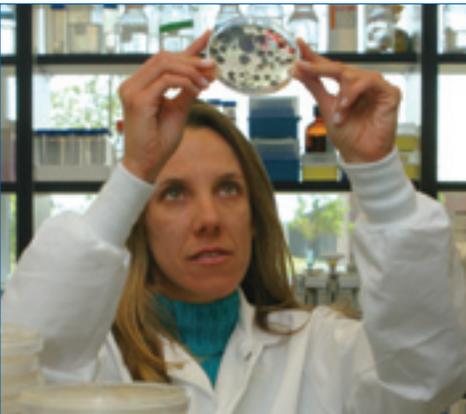
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On the Cover

Natalia Peres, an assistant professor of plant pathology at UF's Gulf Coast Research and Education Center in Wimauma, Fla., examines a petri dish with a fungal growth of *Phyllosticta* sp., which causes leaf spot on blueberries. Peres manages the center's Plant Diagnostic Laboratory, which identifies plant diseases in crops and provides recommendations for their control. She said strawberries, vegetables and ornamentals constitute most of the sample load at the present time. **COVER PHOTO BY THOMAS WRIGHT. FOR MORE INFORMATION, PLEASE SEE PAGE 18.**



MEASURING Mercury

To learn how tiny amounts of mercury affect wildlife – especially wading birds in the Florida Everglades – scientists at UF’s Institute of Food and Agricultural Sciences have started a five-year study at the new Wetlands Ecological Research Aviary in Gainesville.

“The research aviary provides a unique environment for studying the effects of Everglades-appropriate levels of mercury on the development and reproduction of aquatic bird-life,” said Peter Frederick, an associate research professor in UF’s wildlife ecology and conservation department and leader of the project.

“Results of the research will help wildlife managers and other federal and state agencies determine safe mercury levels for wildlife that may be different from existing human health standards,” he said.

Located at the U.S. Department of Agriculture Wildlife Services in Gainesville and managed by UF, the research project is funded by the Florida Department of Environmental Protection, the U.S. Fish and Wildlife Service, the U.S. Geological Survey and the U.S. Army

Corps of Engineers. Funds from the federal Comprehensive Everglades Restoration Plan – described as the world’s largest ecosystem restoration effort – also help support the UF research project.

Frederick said the 13,000-square-foot outdoor aviary, one of the nation’s largest, houses more than 160 white ibises (*Eudocimus albus*). About the size of a chicken, the ibis has a long, decurved bill and blue eyes.

“They are kept in outdoor conditions with plenty of room to fly and lots of water to drink and bathe in – we want the birds to be in as natural an environment as possible,” he said. “The birds are exposed to mercury, but no more than they would get in the wild. When the research is completed, the birds will be placed in zoos.”

The reproductive success and health of wading birds such as herons, egrets, ibises and storks in the Everglades are important measures of the success of ecological restoration, Frederick said.

“As the Everglades restoration plan moves forward, we need to increase our ability to predict how wading birds will

More than 160 white ibises are housed at UF’s new Wetlands Ecological Research Aviary in Gainesville. The ibis is about the size of a chicken and has a long, decurved bill and blue eyes. (Inset photo) Peter Frederick records data on the condition of white ibises at the research aviary. **PHOTOS BY JOSH WICKHAM**



respond,” he said. “We are very confident that the hydrological restoration – getting the water flows right – will be good for wading bird populations. But we are now aware that mercury might also have an effect – maybe even one that partially cancels the positive effects of hydrological restoration.”

When fish ingest mercury, either by absorbing it through their gills or by eating other contaminated fish, the toxin is stored in their bodies. Wading birds, which consume large amounts of fish, are particularly at risk for mercury contamination because they are at or near the end of long aquatic food webs that can accumulate the toxin, Frederick said.

Selected because of their abundance in South Florida, white ibises serve as representative fish-eating birds for much of the southeastern United States, he said. They comprise 40 percent to 60 percent of the wading bird population in the Everglades.

“At high contamination levels, mercury has very obvious effects on wild animals and humans,” Frederick said. “With this project, we are asking whether effects also occur at very low, but chronic, contamination levels. The effects we are looking for are unlikely to kill the bird, but they might impair the immune system, reduce foraging abilities or alter hormones to the point that birds don’t breed. And these are the things that could affect population size and response to Everglades restoration.

“Our regulatory agencies protect people from eating too much mercury in fish or other food, but unlike people, the birds are out there eating 24/7 and are unprotected,” he said. “For years, scientists have been trying to isolate the effects of low-level mercury contamination on wild wading birds, but have been unsuccessful because it’s nearly impossible to separate the effects of mercury from other things such as age, predation and weather.”

In previous research funded by the Florida Department of Environmental Protection and the Florida Fish and Wildlife Conservation Commission, Frederick and other scientists found a dramatic decline in mercury contamination levels

in Everglades wildlife during the past decade. Between the 1930s and 1980s, bird populations in the wetland declined by up to 90 percent depending on species, and Frederick believes mercury contamination may have impaired the restoration of these populations.

“One hint comes from the fact that the numbers of wading bird nests in the Everglades increased by two or three times immediately following the sharp, local decline in mercury,” he said. “While tantalizing, that doesn’t prove mercury was keeping birds from breeding. For that, you need a controlled experiment, and the new aviary will provide the setting for that work.”

Scientists attribute the recent mercury declines in the Everglades to tougher emission standards for power plants and incinerators, along with a big reduction in the use of mercury in household products such as flashlight batteries and paint. The toxin, which causes reproductive and behavioral problems in birds, also causes serious neurological damage and developmental problems for people who ingest it.

Once the mercury study is completed, the research aviary will be transferred to the USDA and be used for other avian studies.

Michael Avery, director of the Florida field station for the USDA’s National Wildlife Research Center, said other research at the Gainesville facility includes the development and testing of new tools and techniques for managing depredation and nuisance problems caused by vultures, identifying and testing repellents to reduce the impacts of exotic monk parakeets on electric utility facilities, and evaluating reproductive inhibitors for managing non-native bird species. ■

– CHUCK WOODS

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Melanoma Vaccine Shows Promise

A vaccine against melanoma – the most deadly form of skin cancer – provides almost complete protection in mice and could lead to a similar treatment for people, according to a University of Florida researcher who has developed a novel treatment for the cancer.

The vaccine uses inactivated or dead melanoma cells in combination with

a super-antigen to boost the immune response in mice against malignant melanoma cells, said Howard Johnson, a professor of immunology at UF’s Institute of Food and Agricultural Sciences. Super-antigens are proteins that are potent stimulators of immune system cells.

He said UF is in the process of obtaining patent protection for the

vaccine and licensing the technology to a pharmaceutical company. Once the vaccine is licensed, human clinical trials can begin – a process that could take three or four years.

“Until now, super-antigens have never been used in a cancer vaccine, and our research shows that these proteins help provide a strong immune response against malignant melanoma,” said Johnson, an internationally recognized immunologist who was the first to show that molecules called interferons are important regulators of the immune system.

(Continued on next page)

“We have found that combinational therapy of super-antigens and inactivated melanoma cells can protect 60 percent to 100 percent of the mice against a 25-fold lethal dose of melanoma,” Johnson said. “More importantly, when vaccinated mice were challenged a half-year later with a lethal melanoma dose, 80 percent to 100 percent survived the second challenge, which is essentially complete protection.”

He said these preclinical studies demonstrate that weak immune responses against cancers such as melanoma can be converted to strong responses by using super-antigens in the vaccine. Moreover, preventive or prophylactic vaccination against cancer would be more effective than attempting to develop a vaccination against existing cancer.

“For the sake of comparison, we know that vaccination against active flu or polio is not effective, but preventive vaccination can give the immune system a head start against these and other diseases,” Johnson said. “When it comes to slowing or stopping melanoma, this head start has clearly been the difference between life and death in our mice models.”

He said that melanoma cancer cells do produce an immune response, but the response is too weak to mount an effective defense against the cancer under normal circumstances.

Howard Johnson collects melanoma tumor cells in his laboratory in UF’s microbiology and cell science department. **PHOTO BY JOSH WICKHAM**



“This is because the proteins on the surface of a melanoma cell are not as ‘foreign’ to us as those of influenza and polio viruses, so we are using proteins called super-antigens to boost the immune response to melanoma — our approach is to use super-antigens to enhance the response to a point where melanoma cells are killed,” he said.

Johnson’s vaccine would primarily benefit two groups of people: the elderly and those who have already had a melanoma lesion.

“As we age, we become more at risk for developing melanoma and other cancers,” he said. “People who have had melanoma lesions successfully removed are at greater risk of developing future lesions, so vaccination

should reduce the risk of recurrence,” he said.

Johnson said malignant melanoma is an aggressive form of cancer derived from melanocytes in normal skin. Currently, melanoma accounts for about 4 percent of all newly diagnosed cancers in the United States with more than 53,000 new cases and about 7,400 deaths annually. Early-stage lesions are curable by surgical removal, but once melanoma spreads to distant sites via the lymphatic system, the prognosis is guarded. ■

— CHUCK WOODS

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GREEN MUSSEL INVASION

Residents and visitors along Florida's northeast coast beaches may notice a new and unwelcome addition – an invasive mussel that already plagues the state's Gulf Coast where it's killing native shellfish and covering manmade objects.

The Asian green mussel (*Perna viridis*) was discovered at St. Augustine in 2002 and now is found from Savannah, Ga., to Mosquito Lagoon near Titusville, said Patrick Baker, a mollusk expert with UF's Institute of Food and Agricultural Sciences.

The marine pest, native to tropical parts of the Indian and Pacific Oceans, seems immune to local predators, said Baker, who is also UF assistant research professor of invertebrate zoology and malacology, the study of mollusks. Baker said some east coast areas could suffer damage on the same scale found in Tampa Bay, where the first – and to date the worst – U.S. infestation was discovered in 1999.

"So far, St. Augustine is the only place on the east coast where the density approaches levels in Tampa Bay," he said. "Green mussels definitely have the potential to cause problems, but we're not sure how bad it will get."

In Tampa Bay, oyster reefs have died after colonies of green mussels sprang up among the oysters and competed for the microscopic floating plants both species eat, Baker said. East coast oyster populations may be vulnerable, and researchers suspect the mussel could interfere with hard shell clam fishing and farming operations.

Green mussels anchor themselves to virtually any hard surface below the waterline, including boat hulls, navigation buoys, dock pilings and seawater intakes for power plant cooling systems, he said. The mussels begin reproducing when two or three months old. When they reach high densities – up to 1,000 adults per square foot in some cases – they may have to be removed from manmade structures, a costly process that can impact consumers.

"They don't do anything different from barnacles and other fouling organisms native to Florida," Baker said. "They just do it better, and they're bigger."



Maia McGuire said the invasive green mussel was discovered in Florida in 1999 and recently spread to Florida's Atlantic coast. PHOTO BY JOSH WICKHAM

Growing up to six inches in length, the mussel has a smooth outer shell with a bright green coating that gradually darkens with age, he said.

Options for controlling the green mussel appear limited, said Maia McGuire, a marine extension agent with Florida Sea Grant, a coastal research and education program affiliated with UF. No non-native marine invertebrate has been successfully eradicated in U.S. waters, although mechanical and chemical control is possible in closed systems such as power plants.

Some Florida residents have taken matters into their own hands, removing the mussel from local waters – to eat. "We don't recommend this practice," McGuire cautioned. "Although the green mussel is considered edible in its native range, there's not much information available yet about the possible risks of eating the ones that grow here. And some areas where the mussels are found are closed to shellfish harvest for health reasons."

Experts are uncertain how the mussel arrived in Florida, but possible culprits include adult mussels traveling while attached to ship hulls, larvae contained in ship ballast water and larvae floating on ocean currents, McGuire said.

"We want to learn more about their biology and the timing of their reproductive cycle so we'll have a better idea whether the mussels are reproducing here or if the larvae are arriving from other places," she said.

Residents are asked to report sightings of green mussel colonies or individual shells at UF's Green Mussel Home page, <http://greenmussel.ifas.ufl.edu> ■

– TOM NORDLIE

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New Web Site for Small Farmers

Launched in May, a new Web site for small farmers received 30,000 hits during its first month, and traffic to the site has increased to more than 50,000 hits per month, according to University of Florida extension specialists.

The Web site, created by UF and Florida A&M University, is designed to help small farmers, especially those who may be struggling to compete in a market dominated by large corporate farmers.

“With fewer resources available to them, small farmers in Florida face a variety of issues and challenges, which often place them at a competitive disadvantage,” said Bob Hochmuth, a multicounty Extension agent with UF’s Institute of Food and Agricultural Sciences.

“Small farms represent more than 90 percent of all farms in Florida, and their success is vital to the state’s \$69 billion agriculture and natural resource industries,” he said. “That’s why UF and FAMU created a Web site (<http://smallfarms.ifas.ufl.edu>) that specifically addresses the needs of these farmers.”

Hochmuth, based at UF’s North Florida Research and Education Center in Live Oak, said the Web site was developed to make small farm information accessible in one convenient location. Alejandro Bolques, a Florida A&M University Extension agent in Gadsden County, helped design the Web site.

“Small farmers may be seeking information on getting started in farming,

Bob Hochmuth said information on greenhouse and hydroponic crops continues to be one of the most popular features offered on the small farms Web site. **PHOTO BY THOMAS WRIGHT**



or considering one of many alternative enterprises, and now it’s all pulled together on one site to make the search easier,” Hochmuth said.

“We host Extension events at the Live Oak center frequently, and the Web site helps us get information out to the community,” Hochmuth said. “There’s no way we would have been able to reach so many people with traditional methods.”

The Web site provides links and other resources for small farmers, including information on how to get started, budgeting, business planning, financing, grants, marketing and other issues. Farmers using the site can select topics on enterprises of special interest to them, including greenhouse and hydroponic production, cut flower production, livestock production and organic farming. Each topic includes information on production, marketing and economics, as well as links to other useful information.

The small farms Web site team is working on a new feature that will

be added to the site later this year. The “virtual field day,” an interactive video demonstration of greenhouse and hydroponic production, will make the center’s greenhouses accessible to users all over the world, all year long, Hochmuth said.

UF is one of few land-grant universities with expertise in hydroponics, he said. At the Live Oak center, three greenhouses are devoted to demonstrating hydroponic production.

“The field day on hydroponics is one of the most popular events that we offer at Live Oak,” Hochmuth said. “But it is time-intensive, and we can only host so many people. We hope the virtual field day will allow us to share our resources with a wider audience.” ■

— YASMIN WALLAS & JULIE WALTERS

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CHILD IDENTITY THEFT

To help prevent child identity theft, Mary Harrison advises parents to safeguard their children's personal information.

PHOTO BY MARISOL AMADOR

Identity theft is not just for adults. Offenses against children are on the rise, and a University of Florida consumer education expert says the problem can actually be worse for younger victims.

"Many parents don't realize that child identity theft exists, which means the crime often goes undetected for years," said Mary Harrison, a professor with UF's Institute of Food and Agricultural Sciences.

"Parents need to know how to recognize child identity theft because early discovery can greatly reduce the impact on victims," she said. "If the crime is reported promptly, the thief has less time to run up debt, and authorities have a better chance of finding evidence."

For children under 18, the number of identity theft complaints reported to the U.S. Federal Trade Commission increased by more than half between 2003 and 2004 – from about 6,400 cases to 9,800. At the same time, the percentage of child victims among all identity theft cases increased from 3 percent to 4 percent.

In some respects, identity thieves treat personal data from children and adults the same way, Harrison said. Most often, they use stolen information to conduct fraudulent financial transactions, though they sometimes use it to obtain government documents such as driver's licenses, or give it to police when stopped or charged with a crime.

But when it comes to credit card fraud, child identity theft differs in an important respect: Thieves necessarily create new credit accounts for child victims, whereas most cases of adult identity theft involve existing accounts, she said. That can make the crime worse for child victims.

According to a 2003 FTC survey, victims of new account fraud spend four times as much time and almost five times as much money clearing their records compared with victims who had only existing accounts accessed. Victims of new account fraud are also far more likely to encounter

other problems, such as denial of credit, loss of utility or phone service and criminal investigation.

Safeguarding a child's identity requires many of the same precautions parents should take for themselves, but with a few twists, Harrison said.

Preschool-age children are unlikely to be approached by scammers, so parents must bear the burden of protecting documents and other information, she said. Parents should avoid carrying their child's Social Security card, and should complain if their child's school uses Social Security numbers to identify students.

For older children, the popularity of personal computers in homes and schools creates a risk they will be victimized by Internet scams such as "phishing," Harrison said.

"Even bright children who are very computer-savvy may not understand the dangers of being too free with their personal information," she said.

Receiving debt collection notices in your child's name is a serious indication that your child's information is being misused, and warrants checking the child's credit report with the three major credit reporting agencies, Experian, TransUnion and Equifax, she said.

Harrison said parents should consider checking their children's credit reports every year, especially if they suspect their personal information has been compromised.

Parents who discover evidence of child identity theft should immediately report fraudulent activity to one of the three major credit reporting agencies and ask that a fraud alert be placed on the child's credit record, she said. Parents should also contact any creditors listed in the child's credit report and file a police report. ■

— JULIE WALTERS

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New Training Facility

The O. Wayne Rollins Foundation in Atlanta has pledged \$150,000 to UF's Institute of Food and Agricultural Sciences to help establish the Orkin Termite Training Facility at the Mid-Florida Research and Education Center in Apopka. Construction of the facility – the first of its kind in Florida – will begin in 2006, with completion expected by the end of the year.

John Capinera, chairman of UF's entomology and nematology department in Gainesville, said the foundation's gift will benefit Floridians as public and private organizations use the facility to learn about the most effective inspection and treatment methods for subterranean termites, which cause 95 percent of all termite damage in North America. Because of Florida's climate and soil composition, the state is home to the nation's largest termite populations, including the highly aggressive Formosan termite.

"Part of the foundation's goal is to promote pest control innovation that enhances health and lives," said Glen Rollins, president and chief operating officer of Orkin and grandson of O. Wayne Rollins, for whom the foundation is named. "The Orkin Termite Training Facility will provide expert termite education, benefiting homeowners throughout the Southeast and the nation."

UF faculty and staff, along with other industry professionals, will provide statewide training to a wide range of participants, including pest control

Faith Oi holds a structural beam damaged by termites. Oi is project coordinator of the new Orkin Termite Training Facility that will be located at UF's Mid-Florida Research and Education Center in Apopka. PHOTO BY MARISOL AMADOR



professionals, government employees and students. The termite training facility will also be available for lease by manufacturers and other companies, including pest control firms from Northern states where training schedules are restricted by climate.

Faith Oi, an assistant extension scientist at UF and project coordinator of the new facility, said all aspects of home and commercial pest control will be demonstrated, providing trainees with practical experience in treating termites.

"We are very pleased that UF will have this valuable resource for hands-on education, and we are grateful for the enabling gift from the O. Wayne Rollins Foundation," Oi said.

She said the training facility will support integrated pest management (IPM) programs recommended by UF entomologists and Orkin pest control professionals.

"The goal of IPM is to balance the risk of using pesticides with the need to control pests and protect the environment," Oi said. "The Orkin donation for the termite portion of the

training facility will help expedite construction of the general household pest programs as well as lawn and ornamental programs at the facility. This will allow us to educate pest control professionals who participate in the UF-sponsored 'IPM in Schools' program, which promotes the use of IPM in educational facilities throughout the state."

In addition to the foundation's gift, the Florida Department of Agriculture and Consumer Services has pledged \$150,000 to help build the termite training facility.

Founded in 1967, the O. Wayne Rollins Foundation provides philanthropic contributions for the support of medical research at colleges and universities, including the role of pests in the environment. The foundation's geographic focus is predominantly Georgia and the Southeast. ■

– CHUCK WOODS

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Eastern subterranean termite (*Reticulitermes flavipes*)





Daniel Sonke (left) and Ted Holmes are working together to make the ChemSearch database on pesticides available to research and extension faculty at land-grant universities across the nation. **PHOTO BY NORM LEPLA**

Following successful tests at the University of Florida, a California-based company is making its crop management database on pesticides available to research and extension faculty at land-grant universities across the nation.

“When our research and extension faculty said they needed accurate, up-to-date information on pesticides from 104 manufacturers, we began a unique business arrangement with Crop Data Management Systems Inc. in Marysville, Calif.,” said Daniel Sonke, an assistant coordinator for the integrated pest management (IPM) program at UF’s Institute of Food and Agricultural Sciences in Gainesville.

“We selected CDMS because the company has developed an excellent, searchable online database for agricultural and specialty chemicals,” Sonke said. “Their ChemSearch database, which is updated daily, provides instant information on more than 1,600 products, along with label instructions, worker protection standards and other information about these products – information that’s essential when our faculty make recommendations to growers and residents about using these products on agricultural crops, turfgrass and ornamentals.”

He said UF initiated a statewide trial of the CDMS ChemSearch database in 2003, and the program was expanded in 2004 to 12 other states participating in the Southern Region IPM Center in Raleigh, N.C. IPM is the combined use of cultural, biological and chemical methods for effective, economic pest control with little effect on non-target organisms and the environment.

“Now, CDMS is so pleased with UF/IFAS leadership on the project that the company is making ChemSearch available to all land-grant universities and government

INSTANT INFORMATION ON PESTICIDES

institutions in the United States,” Sonke said. “They are offering the database service to these agencies at a substantial discount.”

The database allows users to search by crop or site, pest (up to four at a time), state or county, manufacturer, product name, type of product (insecticide, herbicide, etc.), application time or label type. As a result of searches, use rates, pests controlled, re-entry options, crop rotations and safety information as well as other facts are displayed or printed in a one- or two-page format. In addition to the label summary for each product, full-text versions of all product labels are available.

“After searching other commercial databases, it was very clear that ChemSearch was the easiest service to use,” Sonke said. “You can learn how to use it in a few minutes, and it contains most of the chemicals our agents recommend.”

Sonke said the database is currently limited to pesticides for agriculture, turf and ornamentals. It does not contain household and structural products, and its home landscape section is limited to the largest manufacturers, rather than off-patent products and local brands. However, extension agents can still use the database to obtain information about active ingredients in household products.

Ted Holmes, Southern regional sales manager for CDMS in Bradenton, said the database allows users to compare label summaries between two products, providing a side-by-side comparison of things such as application rates, federal restrictions and environmental considerations.

For more information about ChemSearch, visit the CDMS Web site, <http://www.cdms.net/> ■ – CHUCK WOODS

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CONTROLLING CANKER

Brian Scully examines a grapefruit tree infected with citrus canker at the Indian River Research and Education Center. PHOTO BY JOSH WICKHAM



Citrus canker, one of the most destructive diseases affecting Florida's \$9 billion citrus industry, was found in June at UF's Indian River Research and Education Center, prompting state officials to destroy all research and teaching groves at the Fort Pierce facility.

As a result, all citrus research at the center has been temporarily halted, and the original grove site cannot be replanted until summer 2007, said Center Director Brian Scully.

"Losing the trees was devastating, but our scientists are now working closely with growers in the region to continue important research, and we are planning new research groves so we can get all of our projects back on track," he said.

Caused by bacteria in the genus *Xanthomonas*, citrus canker affects all citrus varieties, including grapefruit, oranges and tangerines. Infected trees develop small brown lesions on leaves, stems and fruit. Left unchecked, the disease eventually reduces tree productivity.

When researchers at the center discovered suspected canker lesions, they notified the state Division of Plant Industry, which confirmed the presence of the disease. Infected trees and trees within 1,900 feet of those with the disease were burned.

Scully said tissue samples from 20 unique citrus varieties are being preserved in quarantine by the Division of Plant Industry in Gainesville. If they are free of infection, the samples will be used to propagate new trees. These samples were selected from among 250 rare and heirloom varieties collected by center faculty over the past 50 years and preserved at the center.

The bacteria that cause canker can be spread via air currents, rainwater, people, animals, plants and farm equipment.

"Inspectors found the first lesion in the highest part of a tree in a remote area of the research grove, which is consistent with an airborne transmission," Scully said. "If a worker accidentally introduced canker bacteria, we would have seen the lesion on a lower part of a tree, probably one growing in a heavy-traffic area."

Though the original grove site may be replanted eventually, new groves may also be established west of the center. UF scientists are working with the U.S. Department of Agriculture and St. Lucie County to develop an 1,800-acre publicly owned research park. The center's field operations and agricultural research sites may be relocated as part of the project.

"When we establish new research groves, it will give us a chance to modernize our research program, and that's the silver lining to this situation," Scully said. "We can select new varieties of scion and root stock and upgrade our grove design, irrigation systems and cultural practices."

Prior to the canker outbreak, researchers at the center – along with scientists at other UF facilities – were working on more than two dozen projects, some using trees from as far back as the 1950s.

"It's difficult to quantify the loss, but the monetary costs are not as significant as the impact on our overall research program," Scully said. "Some potential scientific discoveries have been delayed or even lost."

Fortunately, no other canker outbreaks occurred this year at research facilities operated by UF's Institute of Food and Agricultural Sciences, said Harold Browning, statewide coordinator of citrus teaching, research and extension programs. Canker struck UF



only once before, several years ago at the Tropical Research and Education Center in Homestead.

Browning, who also is director of UF's Citrus Research and Education Center in Lake Alfred, said he was pleased with the way faculty and staff responded to the canker outbreak in Fort Pierce.

"This unfortunate situation has strengthened our commitment to help Florida's citrus industry," he said. "Dealing with this disease is a big challenge, and we're trying to stay one step ahead of the problem."

As if citrus canker weren't enough, the Florida citrus industry is facing another threat. An Asian bacterial disease known as citrus greening, or Huanglongbing, was discovered in South Florida in late August, Browning said.

Citrus greening affects all citrus varieties and has reduced production in Asia, Africa, the Indian subcontinent and the Arabian Peninsula, he said. Unlike citrus canker, the new

disease is spread by an insect, the citrus psyllid, which was found in Florida in 1998.

Symptoms of infection include mottled leaves, yellow shoots, misshapen and off-flavored fruit, and eventual decline in tree health, Browning said.

While the state Division of Plant Industry and U.S. Department of Agriculture work to determine the extent of the infection, UF is assembling a team of experts to fight the disease, he said. The team will address research and education issues related to the bacterium, the citrus psyllid, and response from growers and homeowners.

"We have entomologists and plant pathologists who are familiar with citrus greening and will focus their efforts on assisting the industry," Browning said. ■ — TOM NORDLIE

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Citrus canker is one of the most destructive diseases affecting Florida's \$9 billion citrus industry. State law requires infected trees to be destroyed, along with all citrus trees within 1,900 feet. **UF/IFAS FILE PHOTO**



Designer Genes For Trees



John Davis (left), Gary Peter and Matias Kirst are among UF scientists working on a new research project to identify genes that regulate wood properties and disease-resistance traits in loblolly pine. **PHOTO BY THOMAS WRIGHT**

With the aid of a \$6 million grant from the National Science Foundation, University of Florida researchers are working with scientists at the University of California, Davis; North Carolina State University; and Texas A&M University to identify genes that regulate wood properties and disease-resistance traits in loblolly pine.

The research – to be conducted by faculty in UF’s new Genetics Institute – will benefit the \$200 billion forest industry in 13 Southern states where loblolly pine is the most-planted species for commercial timber. Southern pines cover just six percent of U.S. forestland, but account for 58 percent of the nation’s total wood pro-

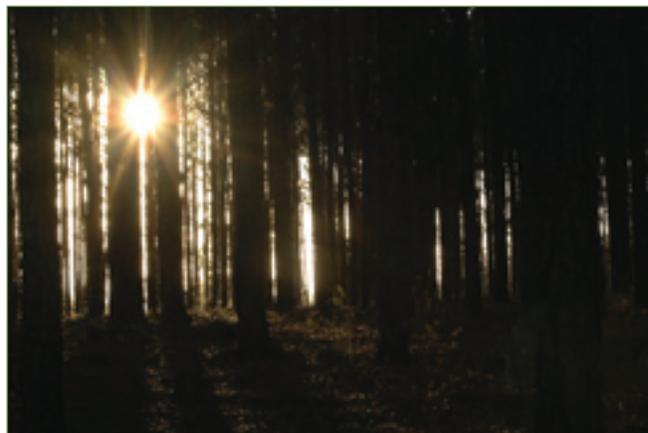
duction. In Florida, forestry is a \$16 billion industry, the state’s largest agricultural commodity.

“By aggressively seeking to identify all of the major genes controlling specific wood properties and disease-resistance traits in loblolly pine, we anticipate a significant breakthrough in our understanding of a pine species that is the highest-valued crop in nine of 13 Southern states,” said Gary Peter, an associate professor of plant genomics in UF’s Institute of Food and Agricultural Sciences. Peter is leading the UF research effort to identify genes controlling wood properties. “Wood is also a renewable energy source, and increasing productivity

through genetics could help reduce our nation’s dependence on nonrenewable energy,” he said.

The NSF Plant Genome Research Program grant was made to UF’s School of Forest Resources and Conservation because of the school’s long history of cooperating with the forestry industry, particularly in interdisciplinary genetic research to identify mechanisms that control productivity and health of planted pines, Peter said.

John Davis, an associate professor of forest biotechnology who is leading the UF effort to identify genes controlling disease resistance, said the research findings will reveal genetic



mechanisms that help explain the long evolutionary success of pine trees. He said the research will generate an unprecedented glimpse of the genes that affect interactions among pine trees, fungi and other natural components of forest systems. The new insights are expected to enhance gene conservation efforts and society's ability to cope with challenges such as evolving pest populations.

Dudley Huber, an associate in forest genetics and co-director of the UF pine breeding cooperative, said understanding how different genes affect the health and viability of trees in natural and breeding populations will have immediate and far-reaching benefits for tree improvement programs and should dramatically reduce testing costs and breeding cycle times.

Matias Kirst, an assistant professor of quantitative genetics, is leading the UF effort to identify gene regulatory networks. "Genes regulate tree properties; however, some genes also regulate other genes," he said. "Understanding these networks will help us unravel how genes work together to make a pine tree."

The UF team also includes George Casella, professor and chair of the statistics department, who is working with Huber to develop and apply novel analytical methods for the discovery of significant associations between genotypes and phenotypes.

“Although this research is still a few years from application, the main beneficiary will be the large number of private land owners across the Southeast who own forestland with southern pines.

— GARY PETER

Kenneth Berns, director of the UF Genetics Institute, said the NSF grant represents an important stride for the genetics program.

"The Genetics Institute unites researchers from UF's Institute of Food and Agricultural Sciences with faculty from the colleges of medicine, engineering, and liberal arts and sciences," he said. "This kind of study requires expertise in population genetics and bioinformatics – two of the main areas

pegged for development in the UF Genetics Institute's strategic plan.

"Bioinformatics is necessary in the loblolly pine research to analyze gene sequences," Berns said. "Then, population genetics analysis will be used to understand how evolutionary forces have influenced the gene pool of the species. Both techniques require the classification and analysis of vast amounts of data."

In addition to the valuable applied benefits of this multidisciplinary research, the loblolly pine project is expected to provide significant insight into an important frontier in fundamental genetic research: the structure, function and regulation of genes that control complex traits, Berns said. ■

— CHUCK WOODS

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“GREEN INDUSTRY” GROWING FAST

by Chuck Woods

THE NATIONWIDE BOOM IN HOUSING

and other construction associated with urban development is driving one of the fastest-growing segments of U.S. agriculture, according to a new economic study by UF’s Institute of Food and Agricultural Sciences and the University of Tennessee.

The \$147 billion environmental horticulture industry – also known as the “green industry” – is not only one of the nation’s fastest-growing businesses, but it continues to expand even during recessionary periods, said Alan Hodges, an economist with UF’s Institute of Food and Agricultural Sciences and one of three authors of a new national study.

He said the research is the first to evaluate the economic impact of the green industry for the entire United States, and it shows how the industry contributes to personal income and job growth in local and regional economies.

Nationwide, the industry generates a total of \$147.8 billion in output or sales, 1.9 million jobs, \$64.3 billion in labor income and \$6.9 billion in indirect business taxes. The industry generates \$95.1 billion in value-added impacts, which represent the value of output less the value of purchased inputs used in the production of goods or services for final consumption.

The industry consists of a variety of businesses involved in production, distribution and services associated with ornamental plants, landscape and garden supplies and equipment, Hodges said. It includes wholesale nurseries, greenhouses and sod growers as well

as landscape architects, contractors and maintenance firms, retail garden centers and various other retail stores selling plants and garden supplies.

In addition, he said the industry is linked to urban forestry by providing plant material and professional personnel for growing, maintaining and managing city trees.

Besides Hodges, those participating in the study include John Haydu, a professor of food and resource economics at UF’s Mid-Florida Research and Education Center in Apopka, and Charles Hall, an agricultural economist at the University of Tennessee in Knoxville.

Hall said results of the study will help legislators and other decision makers understand the economic importance of the environmental horticulture industry. “There are several key labor and water-related issues that are currently being debated, and the results of this study will help clarify the impact of various policy alternatives,” Hall said.

Robert Dolibois, executive vice president of the American Nursery and Landscape Association in Washington, D.C., said the study shows how the green industry is expanding its contribution to the economy and improving the nation’s managed landscapes on a massive scale.

“It is worth noting that a dominant portion of this industry’s activity is conducted by thousands and thousands of privately held small businesses,” he said. “They are a significant engine for creating new jobs, and the industry is a gateway of opportunity for entrepreneurs nationwide.

“With the nation’s demographics driving this growth, we can expect even larger numbers in future studies, as long as the industry has access to a legal and sustainable work force,” Dolibois said.

For the production and manufacturing sectors, including nurseries and

greenhouses, lawn and garden equipment manufacturers, and greenhouse manufacturers, the study shows the total output impact was \$34.6 billion. These sectors created 300,677 jobs with a value-added impact of \$20.4 billion.

For the horticultural service sectors of landscape services and landscape architects, the total output impact was \$57.8 billion. These sectors created 753,557 jobs with a value-added impact of \$39 billion.

For the wholesale/retail trade sectors, the total output impact was \$55.5 billion, generating 910,104 jobs and a \$35.3 billion value-added impact.

In terms of employment and value-added impact, the largest individual sectors were landscaping services, generating 704,875 jobs and \$35.6 billion in value-added impact; lawn and garden stores (347,916 jobs and \$14.8 billion); nursery and green-houses (261,408 jobs and \$18.1 billion); florists (200,461 jobs and \$4 billion) and building material supply stores (123,591 jobs and \$6.5 billion).

Other sectors covered in the study included general merchandise stores with a value-added impact of \$4 billion, landscape architects (\$3.5 billion), lawn and garden equipment manufacturers (\$2.6 billion), lawn

and garden equipment wholesalers (\$2.7 billion), wholesale flower, nursery stock and florist suppliers (\$1.9 billion), and food and beverage stores (\$1.4 billion).

Regionally, the total value-added impact of the green industry was the largest in the Midwest with \$19.2 billion, followed by the Pacific (\$18.4 billion), the Northeast (\$17.9 billion) and the Southeast (\$13.5 billion).

The largest individual states in terms of value-added impact were California with \$13.7 billion, Florida (\$7.1 billion), Texas (\$6.1 billion), Illinois (\$4.3 billion), Pennsylvania (\$3.7 billion), New York (\$3.5 billion) and Ohio (\$3.5 billion).

The research was supported by a grant from the U.S. Department of Agriculture’s Forest Service and its National Urban and Community Forestry Advisory Committee, along with funding from the American Nursery and Landscape Association in Washington, D.C., and the Professional Landcare Network (PLANET) in Herndon, Va. ■

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John Haydu (left) and Alan Hodges check anthurium production at UF’s Mid-Florida Research and Education Center in Apopka. **PHOTO BY ERIC ZAMORA**



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PHOTO BY THOMAS WRIGHT



FACILITIES DEDICATED IN TAMPA AND DOVER,

by Chuck Woods

the new \$16 million Gulf Coast Research and Education Center (GCREC) near Tampa is now a regional program that continues to be responsive to the needs of producers and consumers. The center – part of UF’s Institute of Food and Agricultural Sciences – focuses on a wide range of agricultural crops, environmental issues and state-of-the-art production technologies. The center’s Plant Diagnostic Laboratory helps growers identify and treat diseases that threaten crops. And the center’s new landscape and ecology program will improve the link between ornamental growers and the urban environment.

“Building on its reputation as a leader in vegetable, strawberry and ornamental plant research, UF’s Gulf Coast Research and Education Center has moved into a new era – and into a new facility that allows scientists to continue helping growers produce crops in an environmentally friendly manner while maintaining a competitive edge in the global marketplace.”

These comments by Jack Rechcigl, director of the center, describe the basic mission of the improved regional facility that was dedicated in April 2005. More than 600 growers, industry representatives and UF officials attended ceremonies that highlighted some of the important research accomplishments at the center since its inception in the 1920s.

Jay Taylor, president of Taylor and Fulton Inc. in Palmetto, Fla., and chairman of the center’s advisory committee, said research is the key to the future of agriculture, and the regional facility will provide growers with the technologies they need. “It’s a prime example of what we can do when the agricultural industry and UF’s Institute of Food and Agricultural Sciences work together,” he said.

TASTY TOMATOES

Reggie Brown, manager of the Florida Tomato Committee in Orlando, said research on tomatoes – which generate more than \$400 million in

farmgate sales annually – continues to be a priority at the center. As Florida’s most valuable vegetable crop, tomatoes help support the state’s position as the nation’s second-largest vegetable producer.

“The tomato industry’s success is closely linked to a highly rated vegetable research program at UF’s Gulf Coast Research and Education Center that dates back to 1942,” Brown said. “Recognized for its international leadership in tomato breeding, the center has developed more than 45 fresh market tomato varieties for commercial growers and home gardeners.”

Jay Scott, a professor of horticultural sciences and leader of the center’s tomato breeding program, said the state’s humid, subtropical climate and infertile soils present special challenges to growers who must deal with pests, diseases and other production problems.

“Improved germplasm from the breeding program has been used by private companies in the development of many high-yielding, disease-resistant tomatoes that thrive in Florida, including varieties such as Florida 47, Florida 91 and Sebring, which are the mainstays of the tomato industry in Florida and other Southeastern states,” Scott said. “UF breeding lines are also in several newer hybrids such as Soraya, Escudero and Crown Jewel.”

He said important breeding lines have been released to the seed industry in the last 10 years. These include five lines resistant to Fusarium wilt races 1, 2 and 3, and two lines resistant to Fusarium crown and root rot. One of these lines is used in Crown Jewel. All seven of the lines have a gene that increases the production of lycopene, which is an important antioxidant that improves internal fruit color.

Scott said the 2003 release of Solar Fire gives growers a heat-tolerant variety that can set fruit at warm temperatures. “This variety sets well under the high temperatures that we have every fall, and it allows growers to harvest more fruit for the early market when the yield of many varieties is depressed.”



Jack Rechcigl examines one of the new lisianthus flower varieties developed at the Gulf Coast Research and Education Center. **PHOTO BY THOMAS WRIGHT**

Solar Fire produces medium- to large-sized fruit, just above 6 ounces, with an attractive red color and gloss. Each vine bears a lot of fruit, so crop yields are good. It is a firm tomato, an important factor when shipping produce, he said.

The new variety is also resistant to races 1, 2 and 3 of Fusarium wilt as well as Verticillium wilt race 1 and gray leafspot. It is moderately resistant to fruit soft rot, a bacterial disease that attacks damp tomatoes after the fruit has been harvested.

Another cultivar that will soon be released – tentatively named Flora-Lee – combines superior flavor and high lycopene content and should be a popular tomato with health benefits for the consumer, Scott said. The variety should compete well with greenhouse tomato varieties that have taken over much of the supermarket space over the last several years.

Dave Schuster examines tomato seedlings treated with new compounds to evaluate their effects on egg laying and virus transmission by whiteflies. **PHOTO BY JOSH WICKHAM**

“Our tomato breeding program is also focusing on developing varieties with resistance to two important diseases – TYLCV (tomato yellow leaf curl virus) and bacterial spot – which would be of huge value to the Florida tomato industry. Plant breeders never run short of useful things to work on,” Scott said.

INTEGRATED PEST MANAGEMENT

To control pests that attack tomatoes, peppers and other vegetables produced in west central Florida, researchers are developing effective integrated pest management strategies that emphasize biological control and optimal use of pesticides.

David Schuster, a professor of entomology at the center, is evaluating the effectiveness of pesticides for armyworms, leafminers, mites, tomato pinworms, pepper weevils, whiteflies and other troublesome vegetable pests.

He is also measuring the effects of pesticides on beneficial insects and monitoring the growing problem of insect resistance to some chemical controls.

“For example, we have monitored the resistance of the silverleaf whitefly to insecticides during the past five years, and we have made new recommendations to growers about managing this pest through consultations with crop consultants and extension, industry and grower group representatives,” Schuster said. “At the same time, we are evaluating repellents to silverleaf whitefly.”

He said that a crop oil now appears to be the most effective product for repelling adult whiteflies and slowing TYLCV, which is transmitted by whitefly adults. Working in cooperation with Israeli researchers, Schuster is seeking a federal patent for newer, environmentally friendly repellent technology. To track whiteflies and TYLCV, he is initiating a new cooperative research project that uses Geographic Information System technology.

Schuster is also studying the potential of releasing a parasite to control pepper weevils and of planting squash to trap whiteflies, thereby reducing the spread of TYLCV to adjacent tomato crops.



STRAWBERRY FIELDS

Florida's \$200 million strawberry industry, which supplies most of the strawberries consumed in the Eastern and Midwestern United States during the winter, is based largely upon the new varieties and production methods developed at the Gulf Coast center.

Strawberry Festival, which was released in 2000, is currently the dominant variety in Florida because of its ability to produce a steady supply of high-quality fruit under a range of weather conditions.

Craig Chandler, a professor of horticulture who developed the variety, is also credited with the development of other widely grown varieties. In 1992, he released Sweet Charlie, a cultivar with high early-season fruit yield, flavor and resistance to anthracnose fruit rot. In 1980, his predecessor, Professor Charles Howard, released Dover, a cultivar with high midwinter fruit yield and resistance to crown rot.

Research at the center also helps growers control strawberry diseases and pests such as the two-spotted spider mite, described as the world's most damaging arthropod strawberry pest.

Jim Price, an associate professor of entomology at the center, has developed a successful technique – based

on the biological control of mites in European cucumber greenhouses – where spider mites are allowed to develop in strawberry fields to a certain low level. At that point, an average of one predatory *Phytoseiulus persmili* mite is released per plant.

“Within six to eight weeks, all evidence of spider mites disappears, and the pest is not evident for the remainder of the growing season,” Price said. “Since pesticides are not being used to control the mites, more naturally occurring biological control organisms survive and reduce the incidence of other arthropod pests.”

He said more than one-third of the Florida strawberry industry now uses this biological control technique to manage spider mites. The cost of the biocontrol is comparable to pesticides.

Chip Hinton, director of the Florida Strawberry Growers Association in Plant City, said the strawberry industry

Craig Chandler inspects stock plants of one of his promising new strawberry selections. PHOTO BY THOMAS WRIGHT



helps support research at the center, which also includes research on irrigation, soil fumigation and postharvest packaging that has revolutionized the industry.

ENVIRONMENTAL HORTICULTURE

To remain competitive in world markets, Florida's booming \$10 billion environmental horticulture industry depends on an almost continuous flow of new and improved floricultural plants developed at the Gulf Coast center.

Brent Harbaugh, a professor of environmental horticulture at the center, said that the plant breeding program is aimed at developing plants that are suited for production and use in Florida's climate. Breeding programs improve heat tolerance and resistance to disease and drought.

Zhanao Deng checks new caladium varieties for their growth and color display. He said UF has developed and released 16 caladium varieties for Florida growers and gardeners. PHOTO BY JOSH WICKHAM





Sick and poorly growing plants are submitted to the center's diagnostic laboratory almost every day, and Jim Mertely helps find ways to solve the problems. **PHOTO BY JOSH WICKHAM**

Zhanao Deng, an assistant professor of environmental horticulture at the center, said the ornamental plant breeding program is aimed at developing varieties that can resist diseases and pests as well as tolerate stresses such as sun, heat and drought. More than a dozen new caladium varieties with improved vigor and landscape performance have been developed and released during the past 25 years.

In 2005, three more caladium varieties will be released, Deng said. From the gerbera breeding program that began in 2000, four new gerbera varieties will be released this year. All of them were selected for superior garden performance in Florida.

"In addition, to help Floridians select and grow the best flowers, hundreds of new flower varieties bred in other parts of the United States or in other countries are tested at the center," Deng said. "The variety trials

are held twice a year, and we identify those that perform well in our climate."

Hugh Gramling, executive director of Tampa Bay Wholesale Growers, said the center's new landscape and ecology program will be an important addition, providing a strong scientific link between growers and the urban environment.

WATER RESOURCES

Water conservation and quality is a key issue in the 16 counties that comprise the Southwest Florida Water Management District. To reduce agriculture's thirst for the crucial resource in a rapidly urbanizing district, researchers at the Gulf Coast center have developed a variety of technologies that are now being used by thousands of growers.

Craig Stanley, a professor of soil and water science and associate director of the Gulf Coast center, said research has determined the optimum water requirements for crops such as tomatoes, peppers, strawberries and flowering ornamentals in southwest Florida.

"We also have developed and demonstrated fully enclosed subirrigation systems that utilize buried

Thanks to a lisianthus breeding program initiated at the center in 1985, researchers have developed heat-tolerant varieties of the flowering pot plants that can be grown economically in Florida. Maurine Blue and Florida Blue lisianthus were released in 1995 as the first heat-tolerant lisianthus to grow at 82 degrees Fahrenheit without causing the plants to form a cluster of leaves with no stems or flowers.

"Since these first releases, nine other varieties in the Maurine series and five other varieties in the Florida series have been released," Harbaugh said. "These varieties now account for nearly 75 percent of the lisianthus grown in the state."

In addition, 13 new lisianthus varieties, the first to have heat-tolerance with single- and double-flowering types for use as flowering pot plants, will be released in 2005.

Brent Harbaugh examines new heat-tolerant lisianthus flowers that were released by the center in October 2005. **PHOTO BY THOMAS WRIGHT**



microirrigation tubing for water table management,” he said. “Other water management practices developed at the center include the use of computers to schedule irrigation and manage nutrients. This information was put into practice to help reduce nitrogen and phosphorus loading from surrounding production areas near Lake Manatee, which is a prime source of drinking water for Manatee and Sarasota counties.”

METHYL BROMIDE ALTERNATIVES

With a looming 2006 federal ban on most uses of methyl bromide, scientists at the Gulf Coast center are searching for alternatives to the widely used soil fumigant that is essential for the production of fruits, vegetables and ornamentals in Florida and the nation. The fumigant is being banned by the Environmental Protection Agency in response to the Montreal Protocol international treaty. The chemical harms the Earth’s ozone layer, which helps protect the planet from radiation.

Jim Gilreath, a professor of horticultural sciences and leader of UF’s soil fumigation research program, said the project is recognized as one of the foremost programs of its kind in the world.

Jim Gilreath checks the growth of nutsedge, one of the most troublesome weeds affecting crops. PHOTO BY JOSH WICKHAM

Scientists from Europe, Australia and Central America regularly visit the center to learn about improvements in soil fumigation technology and potential alternatives to methyl bromide.

“Finding a replacement that will be as cost-effective as methyl bromide is proving to be difficult, but we do have some materials that show promise, and more research is needed,” Gilreath said. “Our previous research showed that the combination of Telone C-35 and Tillam herbicide produced good results for tomatoes, but the manufacturer of Tillam went out of business, and the product is not currently registered for use, so we are still looking.”

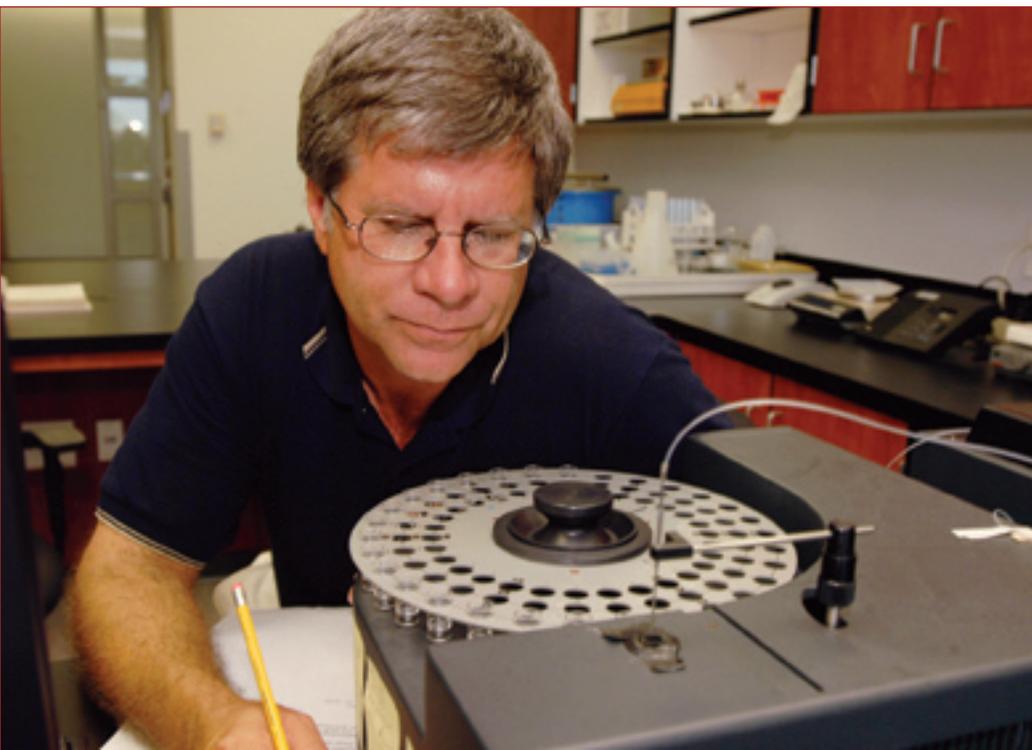
Until an effective replacement is found, tomato, pepper and strawberry growers are relying on critical use exemptions granted by the United Nations Environmental Programme on a year-to-year basis. The Florida Fruit



and Vegetable Association is currently seeking exemptions to help producers through the 2006 and 2007 growing seasons.

One way to reduce the use of methyl bromide is to install new highly retentive mulch covers on beds, Gilreath said. Methyl bromide application rates can be reduced by as much as one-half, and growers can still achieve effective control of soilborne pests, especially hard-to-control weeds such as nutsedge.

“The integration of herbicides and fumigants into a systematic approach to soilborne pest control continues to be a major focus of our work,” Gilreath said. “Because methyl bromide is so important for growers in Florida’s climate, we also need to continue our efforts to obtain critical use exemptions for the soil fumigant until such time as practical, effective alternatives are available.”



Craig Stanley uses a continuous-flow analyzer to measure groundwater samples for nitrate and phosphorus. PHOTO BY JOSH WICKHAM

RX FOR PLANTS

To help growers and extension agents accurately diagnose and treat plant diseases, the center also operates the Plant Diagnostic Laboratory.

“The primary function of the lab is to identify plant diseases in crops important to local agriculture and provide recommendations for their control,” said Natalia Peres, an assistant professor of plant pathology and manager of the lab. “Strawberries, vegetables and ornamentals constitute most of the sample load at the present time.”

She said the lab is fully equipped for the diagnosis of fungal pathogens,

which cause the majority of plant diseases in the region. Bacterial pathogens are isolated and may be referred to UF’s Bacterial Identification and Fatty Acid Analysis Laboratory in Gainesville for identification. Diseases caused by viruses and nematodes may be diagnosed in house or sent to other UF laboratories. Plant specimens damaged by insects or mites are referred to entomologists at the Gulf Coast center.

“Before submitting a sample, growers are urged to contact their local extension agents, who routinely diagnose common plant diseases and insect pests in their assigned special-

ties,” said Jim Mertely, a plant pathologist and lab coordinator. “Walk-in samples are also accepted at GCREC.”

Forms and instructions for the proper selection and handling of samples are available at the following Web site: <http://gcrec.ifas.ufl.edu>. Currently, there are no charges for diagnostic services at GCREC. However, samples referred to other laboratories may be subject to fees. ■



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UF's new Gulf Coast Research and Education Center is located in Wimauma, which is near Tampa in Hillsborough County. PHOTO BY THOMAS WRIGHT







BEE AWARE!

by Chuck Woods

UNIVERSITY OF FLORIDA RESEARCHERS

said it was only a matter of time until African honeybees became established in Florida, and now they have. To help residents and visitors learn how to live with these potentially dangerous insects, UF's Institute of Food and Agricultural Sciences and the Florida Department of Agriculture and Consumer Services are launching a statewide public education program.



Glenn Hall, who is working with the Florida Department of Agriculture and Consumer Services and other government agencies to educate the public about African honeybees, said they may eventually spread throughout the state and move into other areas of the Southeastern United States. **PHOTO BY JOSH WICKHAM**

African honeybees – often described by the media as killer bees – are established in Florida, and researchers say the aggressive insects will eventually spread throughout the state and move into other areas of the Southeastern United States.

“The bees, which tend to sting in large numbers, have been found and stopped at various Florida ports over the past decade, but now it looks like they’re here to stay,” said Glenn Hall, an associate professor of entomology at UF’s Institute of Food and Agricultural Sciences. He said Florida’s warm climate is ideal for the bees, which could be bad news for the state’s \$20 million honey production industry.

“If African honeybees become established in large numbers over the next few years, they will affect the pollination of many crops,” Hall said. “Public safety, recreation and tourism may also be affected, leading to liability problems.”

Hall, a bee geneticist who developed DNA markers to identify African honeybees, said that they look the same as European honeybees to the untrained eye.

African honeybees more aggressively defend their nests than European honeybees. African honeybees may swarm

as many as 16 times a year while European honeybees swarm about three times a year, he said. Once threatened, African honeybees will attack and pursue people and animals over long distances – up to a quarter of a mile or more. Their venom is no stronger than venom from European honeybees.

The African honeybees invaded five Southwestern states in the 1990s and have periodically turned up at Florida’s deepsea ports since 1987, Hall said. Until recently, swarms entering through ports such as Jacksonville, Miami and Tampa have been successfully captured in swarm traps maintained by the Florida Department of Agriculture and Consumer Services.

“However, new finds in the Tampa area suggest that African honeybees are spreading and becoming established in the state, and they are being found further inland from the ports,” he said. “We did not believe that enough bees could arrive on ships to form an established population, but they did so in Puerto Rico and now appear to be doing the same in Florida.”

He said the infestation around Tampa is still small, and the bees are not unusually aggressive. As isolated swarms enter one by one through the ports, daughter African queens from the swarms have no choice but to mate with the resident European male drones. Fortunately, the hybrid offspring are not as aggressive as their African parents.

“Once the combination of hybrids and new introductions reaches a critical mass, bees of African descent will likely start to mate with each other, resulting in more pure African-like characteristics,” Hall said.

He said that the arrival of African honeybees was expected and should not be viewed with undue alarm at this time.

“Concerns about the bees have been exaggerated, with some media and motion pictures portraying swarms of deadly, stinging insects invading cities,” he said. “Nevertheless, it’s important to be aware. African honeybees have attacked and killed people and livestock in Africa, in South and Central America, and in other states.”

There have been 14 fatalities in the United States, and hundreds of nonfatal stinging incidents have been reported.

Neither the European nor African race of honeybee is native to the Americas, Hall said. The European honeybee (*Apis mellifera*) has been managed by commercial and hobby beekeepers worldwide for many centuries, selected for desirable traits such as gentleness, honey production, tendency not to swarm, winter hardiness and disease resistance.

On the other hand, the African honeybee (*Apis mellifera scutellata*) is adapted for survival in Africa’s harsh environment where climate, predation and other factors have produced a hardy race, Hall said.

In the 1950s, Brazilian scientists thought that bees from tropical regions in Africa might thrive in South America’s tropical environment better than previously imported European honeybees.

“They were right,” Hall said. “Once the African honeybees were released in Brazil, they quickly spread throughout South and Central America, advancing up to 300 kilometers a year through the tropics into Mexico. It was only a matter of time until the African honeybee population reached the United States.”

To the untrained eye, African (left) and European (right) honeybees look the same. The African honeybee (*Apis mellifera scutellata*) is adapted for survival in Africa’s harsh environment where climate, predation and other factors have produced a hardy race. The European honeybee (*Apis mellifera*) has been managed by commercial and hobby beekeepers worldwide for many centuries, selected for desirable traits such as gentleness, honey production, tendency not to swarm, winter hardiness and disease resistance. **PHOTO BY JERRY HAYES**



Movements of African honeybees have been tracked more closely than any other invasive insect, he said. First detected in the southernmost counties of Texas in 1990, they quickly spread to New Mexico, Arizona and California by 1993. Since then, they have invaded Nevada and Utah.

Now, all of the wild colonies of honeybees in these states are of African descent, making it difficult for beekeepers to manage European honeybees and keep out African honeybee genes. In areas colonized by African honeybees, regular beekeeping operations with European honeybees are disrupted and costs of management are increased.

Because of urbanization in Florida, public fears over African honeybees and increasing liability, apiary sites could be more difficult to obtain in the future, Hall said. These concerns – along with the marginal income from beekeeping – could discourage beekeepers in the future. That would decrease the availability of bees and increase the price of renting bee colonies that are essential for the pollination of crops.

“Large populations of European honeybees managed by beekeepers are probably our best defense against African honeybees,” Hall said. “The European honeybees compete with African honeybees for food sources. When they interbreed with the African honeybees, the defensive stinging behavior of their offspring is reduced.”

LEARNING TO LIVE WITH AFRICAN HONEYBEES

In July 2005, Charles Bronson, commissioner of the Florida Department of Agriculture and Consumer Services in Tallahassee, announced a public education program to address risks associated with the African honeybee problem in the state. He said the department is working with UF’s Institute of Food and Agricultural Sciences on response and control training for first responders and pest control operators, and developing an Ag in the Classroom curriculum on safety matters related to African honeybees.

“It has become clear that the African honeybee population has grown and will continue to grow in Florida due to its numerous pathways into the state and the lack of effective eradication products or techniques,” Bronson said. “The department, in cooperation with other agricultural

stakeholders, is developing tools to protect the beekeeping industry and educate the public on how to learn to live with this potentially dangerous insect.”

The Honeybee Technical Council, established by Florida statute to study beekeeping and make recommendations on changes to laws, met in July to discuss the status of African honeybees in the state. At the meeting, the department presented evidence of the continuing crossbreeding habits, or hybridization, of African and European honeybees in Florida. African honeybee DNA was detected in 40 of 93 samples taken in early May from honeybee colonies in La Belle, Fla. These African honeybees had been implicated in a stinging incident of a horse earlier this year.

Bronson said Florida has been surveying for the insect over the past decade and established the nation’s first

African honeybee detection program. The program involves placing swarm traps in ports and educating ship crews and dockworkers to identify and report suspicious swarms. Today, nearly 500 traps are in place throughout the state, primarily in port areas, along Interstate 10 and on the Florida/Alabama border.

Jerry Hayes, chief of apiary inspection for the department’s Division of Plant Industry in Gainesville, said the African honeybee problem is also linked to commercial bee-

We have intercepted hundreds of swarms in our traps over the years. These are not pure 100 percent African honeybees, but hybrids from mating between European honeybees and African honeybees. All of our finds have some level of cross-mating, which lessens the natural defensiveness of this race. If a swarm is found, it is eradicated and samples are preserved for diagnosis.

— JERRY HAYES

keepers who move their hives around the country for pollination of crops and honey production.

“Colonies of managed European honeybees may be moved into areas that are dominated by feral populations of African honeybees, which allows these aggressive bees to take over the managed colonies in a few months,” Hayes said. “When these colonies are brought back to Florida for the winter, the Africanized bees come with them.”

He said Southwestern states, particularly Arizona, California and Texas, can serve as examples for what living with a hybridized honeybee in Florida might be like.

“In Florida, African honeybees are becoming well adapted because of our climate and abundant plants, flowers and agricultural crops,” Hayes said. “We feel that education is one of our most effective tools for



dealing with potentially more defensive, hybridized honeybees. We already live with risks of insect bites from fire ants, yellow jackets and other critters, and through public outreach programs, we can learn to adapt to a hybridized honeybee population.”

He said European honeybee colonies are placed within 20 feet of vegetable crops and co-exist peacefully with farm workers. Because of their defensive nature, African honeybee hives would need to be placed as far as 1,000 feet away from farm workers. The Florida Department of Agriculture and Consumer Services is working closely with the beekeeping industry to address how pollination practices will need

to be modified due to the increase of African honeybees, Hayes said.

In case of an attack by a swarm of defensive African honeybees, get away from the bees by going inside a building or car, or run in a zigzag pattern until the bees disperse (usually no more than a quarter of a mile), Hayes said. In all cases, report swarms of defensive bees to local pest control companies, emergency responders or the state’s toll-free helpline number 888-397-1517. ■

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Jerry Hayes, standing next to a honeybee swarm trap used to identify and survey African honeybees, holds a vial containing a chemical pheromone, or artificial scent, that attracts the insects to the traps. He says the Florida Department of Agriculture and Consumer Services has more than 500 traps in port locations and other areas where the bees are likely to enter the state and become established. **PHOTO BY THOMAS WRIGHT**





WASTE NOT, WANT NOT

UF's Suwannee Valley Livestock Waste Testing Laboratory in Live Oak is helping change animal waste into a valuable resource.

by Chuck Woods

PHOTO BY JOSH WICKHAM

According to the “Poop Scoop” newsletter – published by UF’s Institute of Food and Agricultural Sciences to help farmers manage waste from thousands of dairy cows and millions of chickens – manure can be a good thing.

“We try to take a light-hearted view of the problem, but managing all that waste to protect the environment is no easy task,” says Cliff Starling, coordinator of nutrient management programs at UF’s Suwannee Valley Livestock Waste Testing Laboratory in Live Oak.

The lab, which is the first of its kind in the nation, serves livestock producers throughout the state. In the environmentally sensitive Suwannee River basin of North Florida, there are about 25,000 dairy cows and 38 million chickens. Statewide, there are about 142,000 dairy cows.

“After all the jokes about it, manure actually has a lot of good things in it,” Starling said. “These include valuable organic matter and nutrients that can be applied to crops to reduce fertilizer costs and protect water resources.”

The price of fertilizer is increasing rapidly, and the goal of the lab is to help change animal waste into a valuable resource by analyzing it for different nutrients, he said.

Cow manure and chicken litter – which contain valuable plant nutrients such as nitrogen, phosphorus and potassium – can help farmers save money by reusing and recycling nutrients. Use of animal waste may also lower production costs by reducing the need for commercial fertilizer, he said.

In North Florida, careful application of manure to crops also helps reduce the movement of nutrients into ground and surface waters in the 13 counties that comprise the Suwannee River Water Management District. Because of the region’s porous soils and active hydrology, every effort must be taken to protect water resources from pollution by animal wastes as well as human wastes and fertilizers, Starling said.

“In order to apply manure to crops at the proper rate, farmers need to know what levels of nutrients are present in the waste, and our lab can provide them with that information,” he said. “The actual nutrient concentration in manures may vary from one livestock operation to another, depending on the animal feed, season of the year and design of the waste collection system.”

John and Doug Carter, father and son owners of C&C Farms in McAlpin, Fla., said they rely on the lab to test chicken litter for various nutrients.

“By having the lab test our poultry waste for nutrients, we know what rates and amounts to apply to crops such as corn, hay, oats and sorghum,” John Carter said. “As a result, we have been able to reduce our fertilizer costs by about 90 percent.”

Starling said manure should be sampled at the lab before each field application is made, or at least twice a year, preferably in winter and late summer to measure seasonal nutrient variations in the waste. The free lab service is provided by UF’s Institute of Food and Agricultural Sciences.



Cliff Starling (left) and John Carter discuss fertilizer requirements for silage corn. By having the lab test poultry waste for nutrients that benefit crops such as corn, hay, oats and sorghum, C&C Farms has reduced fertilizer costs by about 90 percent.
PHOTO BY JOSH WICKHAM

“Our lab report, which takes about two or three weeks to prepare, provides detailed information that can be used in the overall nutrient management program of any farm operation,” Starling said. “In addition to providing the analytical results and nutrient availability estimates, the report includes fertilizer recommendations for the selected crop as well as supplemental nutrients that are needed and the economic value of the waste being utilized.”

To use the lab’s services, farmers can contact their local county extension agent to discuss their manure management system and arrange for waste samples to be analyzed. In addition to coordinating the lab’s nutrient management programs, Starling conducts education programs, workshops and tours for farmers and other residents who want to utilize organic wastes on crops, pastures and pine trees.

He said many conditions affect the use of wastes on crops. Nitrogen, for example, is the most abundant nutrient in waste, and the nutrient must be broken down by microorganisms in the soil before it can be used by plants. This process – called mineralization – is affected by the type of soil as well as soil moisture, soil temperature and microbial populations. As the temperature increases during the summer, microbial activity increases.

All of these environmental factors are considered by the livestock waste testing lab, which is located at UF’s North Florida Research and Education Center. The center also works closely with the Suwannee River Partnership, which

includes local, state and federal government agencies that are helping farmers develop strategies for monitoring and managing waste and fertilizer in the basin.

Nitrogen, phosphorus and other nutrients in waste can degrade water quality in rivers and springs, causing algae blooms that consume oxygen needed by fish and other aquatic animals. High nitrogen levels can also affect human health.

George Hochmuth, director of the UF research and education center in Live Oak, said the partnership is being coordinated by the Florida Department of Agriculture and Consumer Services and the Suwannee River Water Management District in cooperation with UF, the U.S. Department of Agriculture Natural Resources Conservation Service, the Florida Department of Environmental Protection, the Florida Farm Bureau and other agencies, agricultural producers and related associations.

For more information on the Suwannee Valley Livestock Waste Testing Laboratory, visit <http://nfrec-sv.ifas.ufl.edu> ■

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FOOD DISTRIBUTION *From* FARM *to* FORK

by Chuck Woods



Jeffrey Brecht (left) and Jean-Pierre Emond check pineapples for freshness and quality after shipment from Costa Rica. Brecht said UF's new Center for Food Distribution and Retailing conducts research and education on the entire food distribution chain, with an emphasis on perishable food products such as produce, meat, fish and baked goods. Emond said the center also helps test and develop new technologies such as radio frequency identification tags that will eventually replace traditional bar codes on packages. PHOTO BY THOMAS WRIGHT

Described by researchers as the first of its kind in the world, UF's new Center for Food Distribution and Retailing helps the nation's \$950 billion retail food industry provide consumers with high-quality products at affordable prices.

The new center conducts research and education on the entire food distribution chain from farm to fork, with an emphasis on perishable food products such as fresh produce, meat, fish and baked goods, said Jeffrey Brecht, director of the center at UF's Institute of Food and Agricultural Sciences.

He said the center also focuses on improving packaging design and developing new technologies such as radio frequency identification on food products to replace the current bar code system and speed customers through the checkout counter.

"When it comes to perishable food products – which account for half of all retail food sales – high losses translate into razor-thin profits that average about 1.4 percent," Brecht said.

"For perishables, only 19 percent of the retail price represents the amount paid to growers," he said. "The balance covers marketing and distribution as well as losses, which means there are real opportunities for improving the process from growers to the shelves of a retail store."

One of the best ways for a retailer to keep or gain market share is by presenting a perfect produce section, he said. The positive image gives customers a better perception of the overall quality of the business.

"In the minds of many customers, if the store provides high-quality fresh



produce, it is probably maintaining the same high quality for other products in the store," he said.

"However, keeping this 'freshness image' requires an inventory turnover of almost 50 percent each day – the highest percentage in a retail store after the meat and fish sections."

As a result, the average lost revenue for a fresh produce section in a supermarket is about \$200,000 per year, said Brecht, who is also horticultural sciences professor.

The interdisciplinary center, which includes scientists from seven UF departments working in cooperation with major national food distributors and retailers, generates research-based

information for the food industry, consumers and students. Participating UF departments include agricultural and biological engineering; animal sciences; family, youth and community sciences; food and resource economics; food science and human nutrition; horticultural sciences and plant pathology.

Jean-Pierre Emond, an associate professor of agricultural and biological engineering and co-director of the UF center, said their advisory board includes executives from major supermarket chains such as Ahold, Publix and Wal-Mart. More than \$1 million in research support commitments have already been received from firms such

as Franwell Inc. in Plant City, Fla.; Ingersoll-Rand Co. Ltd., in Bridgeton, Mo.; and IPL Inc. in Quebec, Canada.

“While the primary focus is the Florida food distribution and retailing industry, the UF center will have an impact on the worldwide industry,” Emond said. “The center will also introduce new concepts in food distribution and retailing at the undergraduate and graduate levels as well as through continuing education programs.

“Outreach efforts will target the entire food industry, ranging from growers and packers to shippers and transportation services as well as warehouse operators, wholesalers and retailers.”

He said radio frequency identification – or RFID – is one of the hottest new technologies in the distribution and retailing industry, and it will eventually make bar codes on products obsolete.

“RFID tags will revolutionize the checkout counter,” Emond said.

“Instead of waiting for individual food items to be scanned, customers will be

able to have the cost of all their purchases totaled electronically in a matter of seconds.”

The tags contain a microchip and a tiny antenna that send the price and other information about the product to a computer. In the future, the technology will allow products to be tracked through every stage of the supply chain, recording temperature, shock and other conditions during shipping, Emond said.

“We are working closely with the industry to help them adopt these new technologies to limit losses and make further improvements in freshness, quality and safety,” Emond said.

He said 40 percent of the perishable produce from Central and South America enters the United States through Florida, making the state a logical site for the new center. Because of the rapid globalization of agricultural trade, the center is expected to become a valuable source of information for food distribution.

Scott Charlton, senior vice president of manufacturing and distribution at Publix Supermarkets Inc. in

Lakeland, Fla., said the UF center is “a valuable partner providing a unique level of expertise that is not readily available to our industry. It will help us improve overall quality and service to our customers.”

Jeff Wells, president and chief executive officer of Franwell Inc., said its relationship with the new food distribution and retailing center is an important strategic alliance.

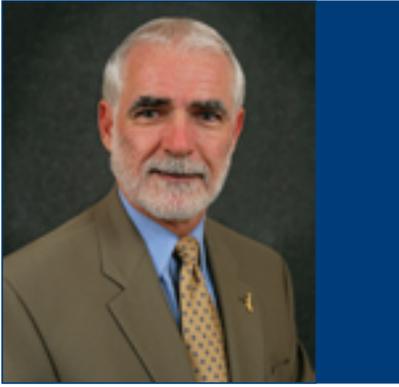
“The center provides a platform for our retailing customers who are competitors to collaborate in solving difficult problems that affect us all,” he said. “This shared cooperation would not be possible outside the center, which provides a framework for research on neutral ground for all its members.” ■

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PHOTO BY THOMAS WRIGHT





BARRICK LEADS COLLEGE OF AGRICULTURAL AND LIFE SCIENCES

R. Kirby Barrick, former associate dean for academic programs in the College of Agricultural, Consumer, and Environmental Sciences at the University of Illinois at Urbana-Champaign, is the new dean of UF's College of Agricultural and Life Sciences.

In announcing the appointment, which became effective Aug. 25, Jimmy Cheek, UF senior vice president for agriculture and natural resources, said Barrick will provide visionary

leadership of the college and will significantly advance its strategic goals in the coming years.

"Kirby Barrick is an outstanding teacher and scholar," Cheek said. "He has an impressive record of leadership in advancing educational and research programs wherever he has served.

"As a department chair at Ohio State University, Dr. Barrick successfully combined agricultural education and communications and rural sociology, restructured the faculty and focused the research agenda," he said. "As associate dean at Illinois, he made significant improvements to the undergraduate and graduate education programs, including the development of a strategic plan for moving the college forward."

Barrick has held the associate dean position at the University of Illinois since 1996. He was also a professor of agricultural education in the university's Department of Human and Community Development.

From 1980 to 1996, Barrick was a faculty member at The Ohio State University, where he was appointed chairman of the department of agricultural education and assistant director of OSU extension for the university's 4-H Youth Development Program.

Barrick has authored 116 journal articles, secured more than \$5.8 million in grants and contracts and chaired 20 graduate committees. He received bachelor's, master's and doctoral degrees in agricultural education from Ohio State.

Among his numerous awards, Barrick has received the Ohio State College of Food, Agricultural and Environmental Sciences Distinguished Alumni Award and the Distinguished Educator Award from the National Association of Colleges and Teachers of Agriculture. He has been named a Fellow in the American Association for Agricultural Education. ■

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MCLELLAN LEADS RESEARCH PROGRAM

Mark McLellan, former director of Texas A&M University's Institute of Food Science and

Engineering, is the new dean for research and director of the Florida Agricultural Experiment Station at UF's Institute of Food and Agricultural Sciences.

In announcing the appointment, which became effective June 28, Jimmy Cheek, UF senior vice president for agriculture and natural resources, said McLellan is an outstanding food scientist and administrator.

"At Texas A&M University, Mark McLellan significantly improved the effectiveness of their research and education program, and increased its extramural funding," Cheek said. "He also led the effort to create and build the university's

new \$10 million National Center for Electron Beam Food Research."

Cheek said McLellan has also demonstrated leadership abilities as president of the 28,000-member Institute of Food Technologists, a nonprofit scientific society with an annual budget of \$17 million.

During the search process, McLellan laid out a vision for future research at UF that combines traditional agricultural research with environmental stewardship and natural resource management as well as research on food, diet and human health.

"UF offers one of the most exciting opportunities to build an agricultural research program for the 21st century based on relevance, expanded directions and partnerships," McLellan said.

Prior to arriving at Texas A&M in 1999, McLellan served as associate director and director of Cornell University's Institute of Food Science and chairman of Cornell's Department of Food Science and Technology.

He received a bachelor's degree in food science from the University of Massachusetts, and master's and doctoral degrees in food science from Michigan State University. ■

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NACTA TEACHER FELLOW AWARDS

Two faculty members in UF's College of Agricultural and Life Sciences – Nick Place and Sandra Wilson – received Teacher Fellow Awards from North American Colleges and Teachers of Agriculture (NACTA) during the organization's annual conference in Wooster, Ohio, June 17.

Place, an associate professor in the agricultural education and communication department in Gainesville, was selected for the award because of his excellent teaching program. In addition to presenting courses in extension education, international extension, adult education, administration and supervision, Place is the department's graduate coordinator and organizes new faculty orientation for the UF extension service.

A UF faculty member since August 1999, Place completed his bachelor's degree in dairy science at Delaware Valley College. He earned his master's degree in animal science and

his doctoral degree in agricultural and extension education at Pennsylvania State University.

Sandra Wilson, an associate professor of environmental horticulture at UF's Indian River Research and Education Center in Fort Pierce, received the award for her outstanding education programs in environmental horticulture and innovation in teaching.

Wilson, who teaches five courses in environmental horticulture and has authored more than 70 articles for scientific and trade journals, has attracted nearly \$900,000 in teaching and research grants. One grant was used to develop a virtual greenhouse that includes interactive multimedia modules for education.

Wilson, who joined the UF/IFAS faculty in 1999, has a doctoral degree in plant physiology from Clemson University. She also completed postdoctoral programs at Clemson and Chiba University in Japan. Her bachelor's and master's degrees in animal and plant science are from the University of Delaware.

NACTA is a professional society that promotes, recognizes and rewards excellence in teaching agriculture and related areas at the postsecondary level in North America. Members of NACTA are from two-year and four-year colleges, both public and private. ■

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DISTINGUISHED ALUMNUS AWARD

Dempsey Sapp, a pioneer in Florida's \$2 billion pest control industry, has been honored with the Distinguished Alumnus Award from the University of Florida for his achievements and contributions to the industry, state and students.

Sapp, 83, who completed his bachelor's degree in entomology in 1947 and

his master's degree in the same discipline in 1949, received the award from Jimmy Cheek, UF senior vice president for agriculture and natural resources, during August ceremonies at the UF Foundation in Gainesville. Sapp and his wife, Margie, were honored during a special dinner program at the foundation's Emerson Hall.

"Over the years, we have recognized many outstanding graduates from the College of Agricultural and Life Sciences, but the Distinguished Alumnus Award is reserved for those whose achievements and contributions to UF have made an enormous difference in our statewide teaching, research and extension programs," Cheek said.

He said Sapp has been a strong supporter of UF entomology and nematology programs, including the establishment in 1999 of a \$1 million endowed distinguished professorship in urban and structural pest control. The endowment supports the work of Phil Koehler, a professor of entomology who oversees UF's Urban Pest Management Laboratory.

Upon graduation in 1949, Sapp started Florida Pest Control & Chemical Company, which is now one of the largest pest control companies in the state. ■

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MAIN RECEIVES NATIONAL WETLANDS AWARD

Martin Main, an associate professor of wildlife ecology and conservation at UF's Institute of Food and Agricultural Sciences, received the 2005 National Wetlands Award for Education and Outreach during May 18 ceremonies in Washington, D.C.

The National Wetlands Awards program honors people who demonstrate extraordinary effort, innovation and excellence in wetland conservation, research or education through programs at the regional, state or local level.

Initiated in 1989, the program is co-sponsored by the Environmental Law Institute, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, U.S. Department of Agriculture Forest

Service, USDA Natural Resources Conservation Service, Federal Highway Administration, and National Oceanographic and Atmospheric Administration.

"Martin Main is at the forefront of efforts to protect America's valuable aquatic resources," said Benjamin Grumbles, assistant administrator for water at EPA in Washington, D.C. who presented the award. "His leadership, talent and commitment have helped realize the challenging goal that we have established of moving beyond 'no net loss' to achieving an overall increase in the nation's wetlands."

Nat Frazer, chairman of UF's wildlife ecology and conservation department, said Main's Florida Master Naturalist Program is the most rigorous, detailed and challenging program of its kind in the country. The program has produced 1,500 trained Master Naturalists in the first three years. The Master Naturalists have provided more than 25,000 hours of volunteer service and have reached over 250,000 people.

"Graduates of the program represent a grassroots coalition of informed and enthusiastic individuals who are motivated by their educational achievement," Main said. "These individuals get involved in their local communities by volunteering at nature centers, speaking to schoolchildren and

restoring natural areas. In addition to persons that volunteer community service, Master Naturalists include teachers, park rangers, ecotourism guides, elected officials and many others that are taking this program for its educational content to further their professional goals."

Because of the program, many graduates have obtained new jobs, received career advancements and gained continuing education credits, Main said. "Most importantly, graduates of the program help build a stronger conservation ethic among Florida citizens and visitors by sharing their enthusiasm for the world in which we live," he said.

Main, based at UF's Southwest Florida Research and Education Center in Immokalee, joined the UF faculty in 1996. He has a bachelor's degree in biology from Central Michigan University, a master's degree in biological oceanography from the Florida Institute of Technology and a doctorate in wildlife science from Oregon State University.

The Environmental Law Institute is an independent, nonprofit research and educational organization based in Washington, D.C. ■

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GLOBAL GATORS

Thanks to the "Global Gators" program in UF's College of Agricultural and Life Sciences (CALs), Tyrell Kahan recently spent six months in Brazil, where he

learned about goat farming and conducted research on the animals.

Kahan, a senior from Yalaha, Fla., majoring in animal science, visited the Universidade Federal de Vicosa in Brazil from January to June 2005. When Kahan graduates from UF in 2006, he plans to attend UF's College of Veterinary Medicine so that he can pursue a career that includes research on goats and the

goat industry in the United States. He also wants to work with other nations to improve their goat farming industries.

"Florida does not have a large goat industry, so I jumped at the opportunity to go to Brazil, which has one of the largest goat farming industries in the world," Kahan said. "In addition to taking a course on goat farming, I worked with the university's research and extension program."

Kahan, who is minoring in Spanish, said he was able to quickly learn Portuguese because the languages are similar. He said the experience allowed him to learn about Brazil's vibrant culture, including their annual Carnival celebration.

His travel was supported by a \$2,700 grant from UF's Natural Resources Exchange Program, which also makes it possible for Brazilian exchange students to attend UF's College of Agricultural and Life Sciences.

Kahan's student activities at UF include participating in the Minorities in Agriculture, Natural Resources and Related Sciences Society (MANRRS). He is also a member of the National Society of Collegiate Scholars, the Golden Key Honor Society and the CALS Ambassadors outreach program. ■

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UF WINS "QUIZ BOWL" AGAIN!

For the fourth consecutive year, a team of students from UF's College of Agricultural and Life Sciences won the annual North American Academic Quiz Bowl competition at the national meeting of the American Agricultural Economics Association.

The undergraduate team from the food and resource economics department has won the national competition five times during the past six years. At the July 2005 AAEA meet-

ing in Providence, R.I., the UF team also won the Outstanding Chapter Award, presented by the national organization in recognition of the best student chapter in the nation.

Students on UF's winning team are (above, from left) Dusty Bass, a senior from Williston, Fla.; Kevin Johnson, a senior from Tampa; and David Ortega, a senior from Maracaibo, Venezuela.

James Sterns (right), an assistant professor with UF's Institute of Food and Agricultural Sciences and faculty advisor to the students, said the 2005 double-elimination tournament involved 31 teams, with students participating from 18 schools in the United States and Canada. He said the championship UF team, competing in

a 32-team bracket, won six consecutive games, never losing a round during the tournament.

The questions were divided into eight categories: microeconomics, resources/policy, macroeconomics, agricultural business/finance, marketing, management, quantitative, and potpourri (a mix from the other seven categories).

Other UF students participating in the competition included Michael Curtis, a senior from Alachua; Timothy Levis Johnson, a senior from Live Oak; Gary Schaefer, a senior from Plant City; Jason Beutke, a sophomore from Alachua; and Alicia Taylor, a sophomore from Myakka City.

During the meeting, AAEA also recognized Lisa House, an associate professor in UF's food and resource economics department, as the organization's Outstanding Teacher of the Year for 2005. ■

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DEVRIES LEADS DEVELOPMENT PROGRAM

Kenneth DeVries is the new assistant vice president for SHARE (Special Help for Agricultural

Research and Education) development, the private support program at UF's Institute of Food and Agricultural Sciences.

In announcing the appointment, which became effective June 27, Jimmy Cheek, UF senior vice president for agriculture and natural resources, said DeVries' experience and leadership in university development will be a valuable asset in UF's upcoming capital campaign, which begins later this year.

"Ken's extensive background in deferred and estate gift planning as an attorney, his fundraising experiences and successes, his reputation in dealing with alumni and his communications skills will serve IFAS well," Cheek said. "Ken is key to our future success."

Cheek also said that UF is fortunate to have many generous alumni and friends who support statewide IFAS teaching, research and extension programs. When it comes to developing private support, IFAS has consistently been one of UF's top two or three units.

For the last four years, DeVries was associate vice president for development at Western Michigan University in Kalamazoo, where he supervised the university's major gift program, planned giving services, and corporate and foundation relations. As a licensed attorney, he practiced law in Michigan and Illinois for more than 10 years before getting into the development field. He has more than 16 years of experience in development work.

"Private support through gifts of your time, talents and treasures truly provides the margin of excellence for our students, academic programs, and research and extension facilities," DeVries said. "I look forward to working with our supporters as we continue the great SHARE traditions of the past and explore new opportunities for the future."

DeVries earned his Bachelor of Arts degree from Western Michigan University and his Juris Doctor from Thomas M. Cooley Law School in Lansing, Mich.

He replaces Eugene Trotter, former assistant vice president for SHARE, who died in November 2004. ■

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DEVELOPMENT *News*

Louis E. "Red" Larson and his wife, Reda.
PHOTO BY MARISOL AMADOR

ENDOWMENTS RECOGNIZE DAIRY LEADER

Louis E. "Red" Larson's longtime leadership in Florida's dairy industry is being recognized by his four children, who are establishing three endowments at UF's Institute of Food and Agricultural Sciences.

The \$1.5 million gift, announced Nov. 5 at the College of Agricultural and Life Sciences' annual "Tail Gator" rally prior to the Florida-Vanderbilt football game in Gainesville, has prompted UF officials to name a building in Larson's honor. UF's dairy science building will now be known as the L.E. "Red" Larson Dairy Science Building.

In announcing the endowments and building dedication, Jimmy Cheek, UF senior vice president for agriculture and natural resources, thanked the Larson family for the generous gift and said it will enhance teaching, research and extension programs in dairy science and the 4-H Youth Development Program.

"The Larson children, with deep roots in Florida agriculture and strong family ties, have chosen to honor their dad in a very special way," Cheek said. "Red Larson and his wife, Reda, are the proud parents of four children – Woody, Barbara, Kathy and John – who have chosen to make a significant gift in their father's honor. Thanks to their generosity, three separate endowments are being established in UF's Institute of Food and Agricultural Sciences."

The sons, John Larson and Woody Larson, operate their own dairy farm businesses in Okeechobee. The daughters, Kathy Cooley and Barbara Stuart, reside in Ocala and Orlando, respectively.

Melda Bassett, senior director of development at the University of Florida Foundation Inc., said a \$300,000 gift will create an endowment to support teaching, research and extension programs, and a \$200,000 gift will create an endowment to support UF's statewide 4-H program.

A \$1 million gift will create an endowment to provide support for the Faculty Challenge Initiative, which will provide support for faculty and students in the animal sciences department.

The initiative, which was announced last year by UF President Bernie Machen, aims to raise \$150 million to meet the demands of educating Florida's growing population and make UF one of the nation's premier research universities.

Red Larson, owner and president of Larson Dairy Inc. in Okeechobee, Fla., has been a dairy farmer for more than 57 years. His farm covers 10,000 acres and includes more than 6,000 cows that produce 45,000 gallons of milk daily.

In October, Larson received the Southeast Farmer of the Year Award at the annual Lancaster-Sunbelt Expo in Moultrie, Ga. The Southeast region includes farmers in Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina, Tennessee and Virginia. His other honors include being elected to the Florida Agricultural Hall of Fame, Dairy Hall of Fame and Alumni of Distinction in UF's College of Agricultural and Life Sciences, and being named Dairyman of the Century. ■

— CHUCK WOODS



PHOTO BY MARISOL AMADOR

IFAS *Development*



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 and facilities. We greatly value the faithful support and commitment of our IFAS alumni, friends and corporate partners.

HOW GIFTS ARE USED

All gifts designated for IFAS are payable to the University of Florida Foundation and are generally tax-deductible. Your gift may support any IFAS academic program or faculty initiative, student scholarships, specific research or provide 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. It is also good to check with employers, who may match your contribution. Please complete a matching gift form provided by your employer's benefits office and enclose it along with your gift.

WAYS TO GIVE

There are several ways to help support IFAS students, faculty and programs.

- Cash
- 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 policy)

IFAS Development

My gift of \$ _____ is enclosed and designated for: _____

Please have an IFAS Development representative contact me.

Please send me more information on how to make a deferred gift through my estate plan.

I/We have already included IFAS in my/our estate plan, but have not previously informed you.

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ E-mail: _____

Mail to: IFAS Development Office • 1001 McCarty Hall • P.O. Box 110170 • Gainesville, FL 32611-0170

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FLORIDA YARDS & NEIGHBORHOODS ON BOB VILA TV SHOW

Home improvement guru Bob Vila (right) and Angela Polo discuss storm-resistant landscaping at a new home that was featured on Vila's popular "Home Again" television program in November

2005. Polo, who is the Florida Yards and Neighborhoods builder and developer coordinator at UF's Sarasota County Extension Service, promotes environmentally friendly landscaping in Charlotte, Manatee and Sarasota counties.

Polo said the home demonstration project in Punta Gorda, Fla., uses nine principles recommended by Florida Yards and Neighborhoods, the Southwest Florida Water Management District and other participating organizations. These principles include putting the right plant in the right place, installing efficient irrigation, applying mulch, recycling yard waste, proper fertilization, responsible management of yard pests, reducing storm water runoff, attracting wildlife and protecting the waterfront.

Florida Yards and Neighborhoods is an extension education program offered by UF's Institute of Food and Agricultural Sciences. Vila graduated from UF in 1969. **PHOTO BY**

THOMAS WRIGHT