

Pest du Jour: Red Alert

Red palm mite, *Raoiella indica* Hirst (Acari: Tenuipalpidae), is a serious pest of all palms, with significant outbreaks on coconut palms. Infestations have also been observed on banana plants, heliconias and ginger. The explosive appearance of the red palm mite in the Caribbean presents a serious pest risk for the subtropical areas of the United States, Central and South America. Mites are spread on wind currents or transported on infested plants. The red palm mite can be distinguished from spider mites by the red color and flattened bodies. Red mites are usually found on the undersides of leaves, often in groups of hundreds. Feeding mites cause localized yellowing of leaves followed by tissue necrosis. The first Western Hemisphere report of the red palm mite was in 2004 from Martinique and has been confirmed on Saint Lucia, Dominica, and Trinidad. U.S. Customs and Border Protection have heightened inspection of agricultural host plants destined for the US. A technical working group has been formed to identify methods and strategies for exclusion, early detection, identification and management of the red palm mite. The Cooperative Agricultural Pest Survey Program, a combined effort of USDA and DPI, is conducting survey as well as education and outreach activities aimed at the tourist industry.

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Infested palm tree. Inset: red palm mite (.32 mm)

Inside DPI Bureaus . . . Plant and Apiary Inspection

DPI's Bureau of Plant and Apiary Inspection is responsible for protecting Florida's agricultural industry from the introduction and spread of serious plant and apiary pests and diseases. The bureau is composed of a plant inspection section and an apiary inspection section. The bureau enforces Florida statutes and departmental rules pertaining to the movement of plants, plant products, honey bees and beekeeping equipment. **Plant Inspection** has approximately 137 inspectors in offices throughout the state. 2006 highlights include: 9,647 plant nursery inspections; survey activities that led to 265 pest records (new bugs or diseases identified), and the quarantine of over four million plants to prevent the spread of pests and diseases. **Apiary Inspection** also plays a vital role in Florida Agriculture as inspectors work to prevent the introduction and establishment of honey bee pests and diseases. A healthy and secure Florida honey bee industry is valuable to all; pollination from managed honey bee colonies is responsible for 1/3 of the food we eat. In 2006, DPI certified over 200,000 honey bee colonies and inspected 45,400 honey bee colonies. Apiary inspectors also maintain over 500 bait traps to monitor the number of Africanized honey bees (AHB) that are entering the state. DPI is playing a major role in educating the public about the risks associated with increased numbers of AHBs -- **Bee Aware of Your Environment.**



More DPI Highlights



Danny Phelps retires after 28 years with DPI. Starting as a plant inspector, for the last 10 years Danny served as plant inspection's assistant bureau chief. He'll be missed.



Dr. Patti Anderson joins DPI's botany section – Patti brings over 20 years of experience identifying Florida plant life.



Tyson Emory has been promoted to plant inspection assistant bureau chief – Tyson has been with DPI for over 10 years.

Florida Department of Agriculture & Consumer Services

Charles H. Bronson, Commissioner

Division of Plant Industry
Richard Gaskalla, Director

Plant Industry Update

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Plant Industry

Protection
through
Detection

UPDATE

Florida Department of Agriculture & Consumer Services
Charles H. Bronson, Commissioner

Gladiolus Rust . . . Stopping it in its tracks

Gladiolus, those tall colorful cut flowers purchased for home floral arrangements, or grown for their compactness and relative hardiness, are threatened by a serious fungus. The first detection of gladiolus rust (*Uromyces transversalis* on *Gladiolus x hortulanus*) in the US was made last spring at a floral farm in Manatee County, after the disease was detected on exported flowers that originated from the Manatee location.

Additional surveys found rust on a commercial gladiolus farm 100 miles southeast in Hendry County. A third smaller gladiolus farm in Calhoun County remains rust free. Outside of Florida, gladiolus rust was also detected at one commercial and three residential sites in California. In recent years, rust has been intercepted many times on cut gladiolus flowers attempting to enter the US from Mexico.

Of the six rust fungi that can infect gladiolus, *U. transversalis* is the most economically important. If uncontrolled, total yield losses can occur. Pustules form mostly on foliage, but can also form on flower spikes. Rust spores are spread by wind, water, on people and garden tools, and long distances by movement of infected plants. It is not harmful to humans or animals.

After the infestations were confirmed, all interstate movement of infected material was prohibited unless product had been inspected and found free of visible symptoms. Surveys conducted around the area indicated that gladiolus rust was limited to the commercial sites in Manatee and Hendry counties, and four private residential gardens in the urban areas around the Manatee County farm.

A technical committee has been organized to develop eradication techniques for the infested areas of FL and CA. Protocols consist of host-free fallow periods, increased use of fungicides, and frequent scouting of production and fallow fields and surrounding neighborhoods. A recurrence of the disease was discovered in one of the previously-infected production fields. An eradication program is underway.

To help stop the spread of the disease, the Department is recommending homeowners and commercial growers remove all gladiolus from their properties and not plant gladiolus through fall 2007.

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Fungus pustules on gladiolus leaves. Inset: gladiolus flowers

Communicating Risk

DPI's responsibilities include communicating about plant pests and diseases that threaten Florida agriculture and our natural environment. Occasionally, a nasty pest like the Asian citrus psyllid shown here, may look harmless, even beautiful in images produced at DPI. In reality, this insect is responsible for spreading huanglongbing (citrus greening), the most serious citrus disease now in Florida.



SPRING 07

Gladiolus Rust
Detected

Pea Leafminer
Intercepted

Cactus Moth
Biocontrol Program
Launched

Citrus Health
Response Program
Update

Pest du Jour



Of Note



Connie Riherd, DPI Assistant Director, received the 2006 National Association of State Departments of Agriculture's

James A. Graham Honor Award. Recipients are selected by an independent panel of judges. NASDA's mission is to represent state departments of agriculture in the development, implementation, and communication of sound public policy and programs which support and promote the American agricultural industry, while protecting consumers and the environment.

Friends of Agriculture

DPI announced recipients of the **Plant Protection Award of Eminence**. The award is given for significant contributions to Florida's plant protection programs and Florida agriculture.

• **Ben Bolusky** has served as the Executive Vice President for the Florida Nursery Growers and Landscape Association since 1998. Under his leadership, the Florida nursery industry and associated industries continue to grow and prosper.

• **Hugh Gramling** is the Executive Director for the Tampa Bay Wholesale Growers, a nursery growers association in Hillsborough County. Mr. Gramling has been active in efforts to increase horticultural research. He has also been active on issues involving invasive plant species and efforts to limit their production and distribution.

• **W. Garvie Hall** is the president/owner of Citrus Partners Management, Inc. He has been instrumental in facilitating research on both Mediterranean fruit fly and Caribbean fruit fly. He has served as Chairman of the Diaprepes Task Force since 2000. Diaprepes, a root weevil, is one of the most economically important citrus pests that plague our state.

• **Dr. Vernon Vandiver** is an Emeritus Associate Professor at UF. His area of expertise is aquatic weed science - working for the last 16 years with DPI on the eradication of wild rice from Everglades National Park. The plant is now considered eradicated from Florida - the only known eradication of a weed species once it has become established.

PEA LEAFMINER ...

Yet another new pest detection

DPI inspectors discovered an unwanted pest while examining lettuce shipments at a retail distribution center in Arcadia. The pea leafminer hitch-hiked into Florida from California. *Liriomyza langei* Frick is a dipteran (Agromyzidae) leafminer considered a pest of economic importance in California. Affected crops include field and glasshouse-grown vegetables and flowers. In Monterey County, California, this insect has gone from a sporadic fall pest, relatively easily controlled, to an uncontrollable pest in many crops throughout most of the vegetable growing season. Insecticide resistance and changes in farming practices may also have contributed to the problem.



DPI entomologist, Trevor Smith, inspects lettuce shipments

It is reported that lettuce is the worst affected crop, but nearly all of the fresh vegetables grown in the area are hosts for this leafminer. The pea leafminer is also reported from Hawaii.

Once the pea leafminer was discovered, DPI increased the inspection of all major produce distribution stores throughout Florida. To prevent establishment of the insect in Florida, if a live specimen was found,

infested lots were either shipped out of state or destroyed – the decision was the shippers. Positive samples were found throughout Florida on a variety of lettuce types from a range of wholesalers.



Adult pea leafminer (size 2-3 mm)

Females puncture leaves to feed on plant sap and lay eggs within the leaf tissues. The eggs hatch after two to four days and larvae feed between the upper and lower surface of the leaves, making distinctive winding, whitish tunnels or mines that are often the first clue that leafminers are present. Larvae emerge from the mines and pupate on the leaf surface or, more commonly, in cracks in the soil. Many generations occur each year and the entire life cycle can be completed in less than three weeks when the weather is warm. Leaf punctures and mines can reduce photosynthesis and may kill young plants.

There are two previous published records of pea leafminer in Florida – both in Lee County in 1981. The infestation probably originated on nursery stock received from an infested area of California. The infestation likely survived through Florida's cool winter months, but disappeared after May when the infested crop was destroyed. Subsequent intensive surveys were unable to detect its presence until the recent discovery.

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Citrus Health Response Program Updates

For the 2006-2007 season, USDA prohibits the shipment of Florida citrus fruit to citrus-producing states. Under limited permit, disease-free commercially-grown citrus fruit can be shipped to non-citrus producing states and foreign markets, if it meets entry requirements. There are no restrictions for fresh fruit shipments within Florida. This season there is no regulatory mechanism for allowing the shipment of residential fruit out of Florida, and therefore it is prohibited.



Citrus Nursery Stock Regulations - New regulations are in place for Florida's citrus nursery industry to protect plant material from citrus canker, citrus greening, and other serious citrus diseases.

- ◆ As of January 1, 2007, all new citrus propagations must be conducted on sites and within protective structures that are approved by the Department.
- ◆ Field citrus nursery stock will be ineligible for sale or movement after 12/31/07.
- ◆ Strict decontamination and 30-day inspections are required.

CACTUS MOTH ...

Biological Control and Management

DPI is part of a regional management strategy to prevent the spread of the cactus moth, *Cactoblastis cactorum*, from the southeastern US to the southwest US and Mexico. A barrier along the US Gulf Coast will be established through the use of sterile insect technique (SIT) in conjunction with delimiting surveys and sanitation (host removal and destruction). The concept of control using SIT is to overwhelm the native population with sterile individuals; thereby drastically reducing the probability of native female's mating with fertile, native males.

The Biological Control Rearing Facility at DPI's Gainesville headquarters in collaboration with the USDA-ARS facility in Tifton, Georgia has started rearing a small colony of cactus moth to support the pest management program.

In the 1920s, the cactus moth proved to be a successful agent for the biocontrol of invasive *Opuntia* species in Australia and other places where these cacti are not endemic.



Infested *Opuntia* cactus (center); adult cactus moth (left, size 22-35 mm); larvae emerging from cactus (right, size 25-30 mm)

However, its introduction to the Caribbean in the 1950s and subsequent spread, led to detection in the Florida Keys in 1989. This has been cause for concern by the research community, conservation groups, and the Mexican government. Since arriving in Florida, the cactus moth has moved along both coasts, with an increasing rate of spread now nearly 100 miles per year along the Gulf Coast. It is now found on barrier islands in South Carolina and Alabama.

The impact of the cactus moth is already effecting the *Opuntia* ornamental industry. Another major concern is the impact it could have in the western US where *Opuntia* fruit and young plants are part of the diet of humans, and where the plants serve as cattle feed during droughts.

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DPI Goes Around the World

Finding Solutions to Plant Pest and Disease Problems



Gaskalla and Dixon (center) with ag officials in Brazil

Richard Gaskalla (DPI Division Director) and **Dr. Wayne Dixon** (DPI bureau chief) travelled to Brazil to see firsthand how citrus growers there are dealing with canker, and the newest bane to the citrus industry, citrus greening. Brazilian citrus growers were very helpful in providing information on citrus canker and greening control strategies that may be applicable to Florida as we work cooperatively to solve these new disease problems.

Jerry Hayes traveled to Nepal under the Farmer to Farmer Program to train Nepali beekeepers in pest, predator and disease control of the recently introduced honey bee, *Apis mellifera* – the same honey bee that is successfully managed by Florida beekeepers. Nepalese beekeepers do not have communication networks for sharing educational information. Programs such as this that bring knowledge and expertise to third world countries can jump start the ability to provide economic benefits through agriculture.



Jerry Hayes (center) with Nepalese friends



Abbie Fox in Brasilia, Brazil

Abbie Fox, Asst. Bureau Chief, Methods Development and Biological Control, attended the 7th International Symposium on Fruit Flies of Economic Importance in Brazil. The meeting was an opportunity to bring together experts on fruit flies that recognize the importance of research on tephritid in fruit and vegetable growing regions worldwide. More than 350 representatives from 58 countries were in attendance bringing more than 200 original research results for discussion at the meeting. Abbie presented the Evaluation of Chemical Soil Drenches for Control of Tephritid Fruit Flies using Laboratory and Field Bioassays.

DPI Samples Processed FY 2005-2006

Entomology	9,606
Nematology	23,150
Botany	7,638
Pathology	16,045
Advanced Diagnostics Lab	6,361
Fruit Fly Identification Lab	263,201
Total Samples	326,001

Update

Council Reconvened

The Plant Industry Technical Council is an advisory committee created by the Florida Legislature. Appointed by the Commissioner, the council is composed of industry representatives who consult with and advise Commissioner Bronson and DPI's director Richard Gaskalla about policies and issues related to their respective industries. The Council met last fall to revisit the Council's mission and to appoint a new chairman. Discussions centered on the need to prevent the introductions of new plant pests and diseases into the state. Pest exclusion initiatives will be the main focus of the council in the coming months.