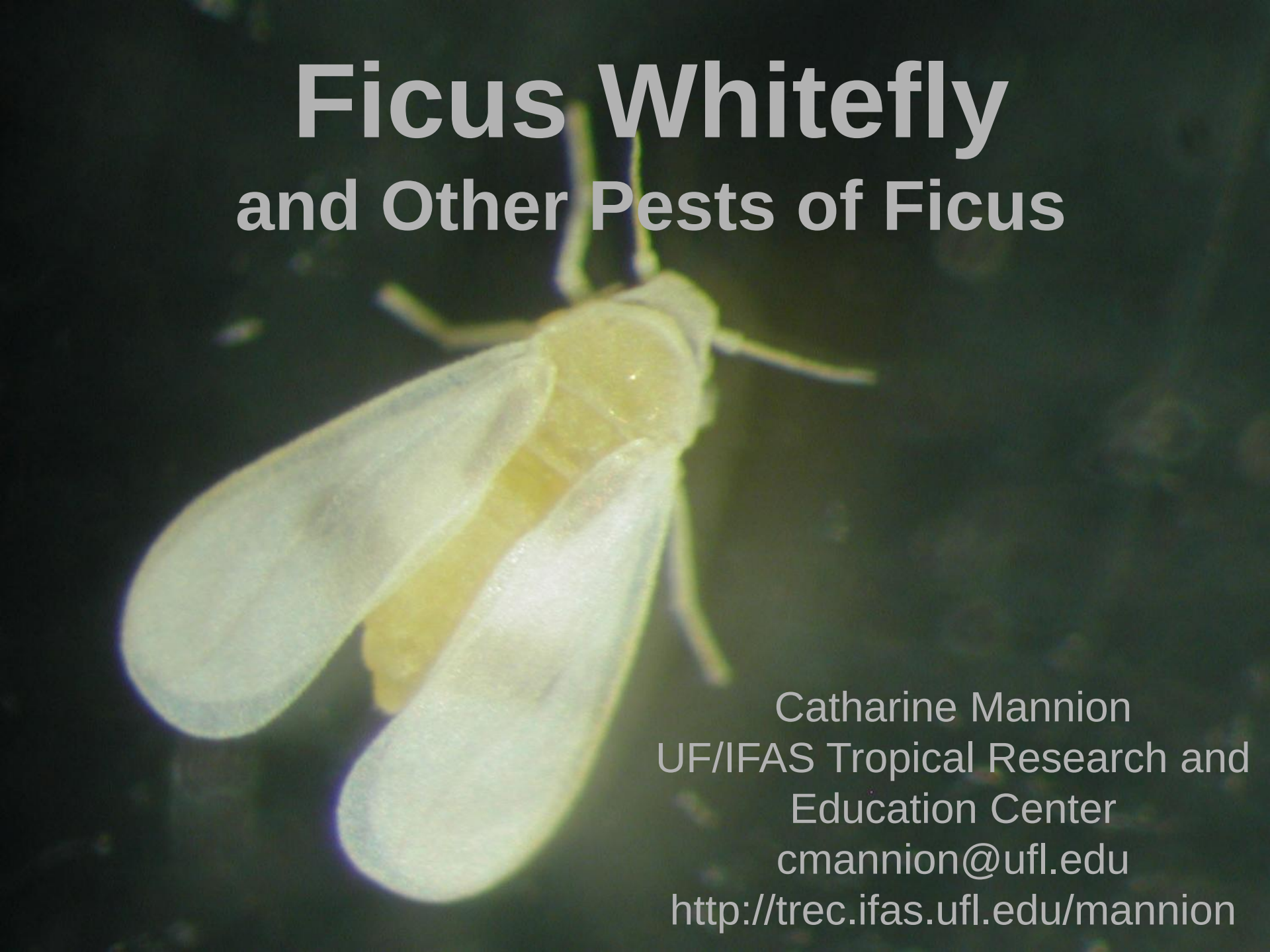
Ficus Whitefly
and Other Pests of Ficus



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Whiteflies

- Approximately 75 species of whiteflies in Florida.
- Piercing-sucking mouthparts; feed on the phloem
- Adults are small, moth-like, usually with white wings.
- Typically cause yellowing and leaf drop

Photos: H. Glenn, UF/IFAS

Whiteflies

- Immatures and eggs are typically found on underside of leaves






Photos: H. Glenn, UF/IFAS

Ficus Whitefly

Singhiella simplex (Hemiptera: Aleyrodidae)

- First observed in 2007
- New U.S. continental record
- Currently in Miami-Dade and Broward Counties
- Faint grey band on the middle of the wings

Photo: H. Glenn, UF/IFAS

Photo: A. Roda, USDA APHIS

Ficus Whitefly

Singhiella simplex (Hemiptera: Aleyrodidae)

- Life cycle - 3 to 4 weeks
- Adults probably live a few days
- Immature stages can be found on both the upper and lower surface of the leaf
- Some of the nymph stages are very difficult to see
- The eggs are attached to the leaf

Ficus Whitefly

Photo: H. Glenn, UF/IFAS

Ficus Whitefly

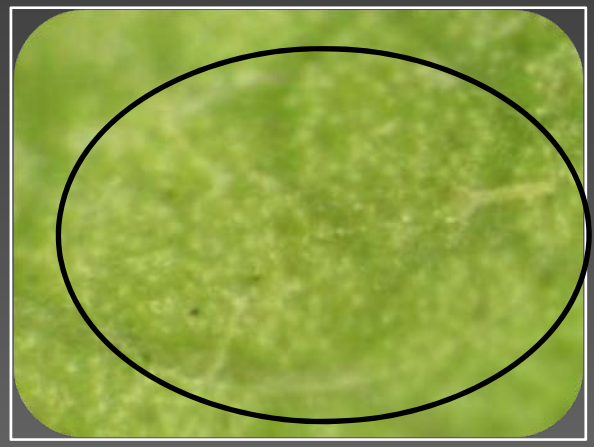


Photo: H. Glenn, UF/IFAS

Ficus Whitefly Hosts

- *F. benjamina* (weeping fig)
- *F. altissima*
- *F. bengalensis* (“banyan tree”)
- *F. aurea* (strangler fig)
- *F. microcarpa* (Cuban laurel)
- *F. maclellandii* (banana-leaf fig)





- Leaf yellowing
- Rapid leaf drop


Photo: H. Glenn, and C. Mannion, UF/IFAS

Predators Collected in Miami on Ficus Infested with Whitefly

Harmonia axyridis

Olla v-nigrum

Exochomus childreni

Chilocorus nigritis

Curinus coeruleus

Photos: H. Glenn, UF/IFAS

Parasitoids Collected in Miami on Ficus Infested with Whitefly

Encarsia protransvena

Amitus bennetti

Photos: H. Glenn, UF/IFAS

Another Whitefly Also on Ficus

Tetraleurodes fici

Photo: H. Glenn, UF/IFAS

Fig Whitefly Management in the Landscape

- Monitor for early signs of infestation and natural enemies
- When pruning trees and hedges
  - Allow leaves to dry before removing
- Current pesticide recommendations
  - Subject to change as more information is gathered
  - Apply a systemic insecticide to the soil
  - Limited foliar recommendations

Insecticide Selection

Professional Use (Landscape and Nursery)

– Soil Application (Systemic insecticides)

- Clothianadin (Arena, Aloft*)
- Thiamethoxam (Flagship, Meridian)
- Imidacloprid (Merit, Marathon, Coretect, Discus*, Allectus*)
- Dinotefuran (Safari)

What is common to these insectcides?

1. In the same chemical class – neonicotinoids
2. Do not rotate these products
3. Do not use as a soil and foliar treatment

Soil Applied Neonicotinoids

- The goal is to get the insecticide to the roots around the base of the tree
- Use as much water as possible (0.5 to 2.5 gallons of water per tree)
- Apply at the base of the tree; splashing on to the trunk is okay
- Prior to drench; remove mulch or leaf litter to increase uptake
- Apply as best you can around the trunk, however, with hedges with trunks less than 3 feet apart, you can apply a band along the tree row.

Insecticide Selection

Professional Use (Landscape and Nursery)

Foliar application

Abamectin (Avid)

Acetamiprid (TriStar)

Azadirachtin (Azatin XL)

Bifenthrin (Talstar)

Buprofezin, (Talus)

Clothianidin (Arena)

Endosulfan (Endosulfan; Thiodan)

Flonicamid (Aria)

Horticultural oil

Imidacloprid (Merit, Marathon, Discus, Allectus)

Pymentrozine (Endeavor)

Pyriproxyfen (Distance)

Spiromesifen (Judo)

Insecticide Selection

Professional Use (Landscape and Nursery)

Foliar application

Although these insecticides may provide some quick control, they will not provide long-term control. Some of these insectcides (i.e. bifenthrin) may disrupt the natural enemies and should be used very selectively.

Fig Whitefly Management Landscape

What is your current need?

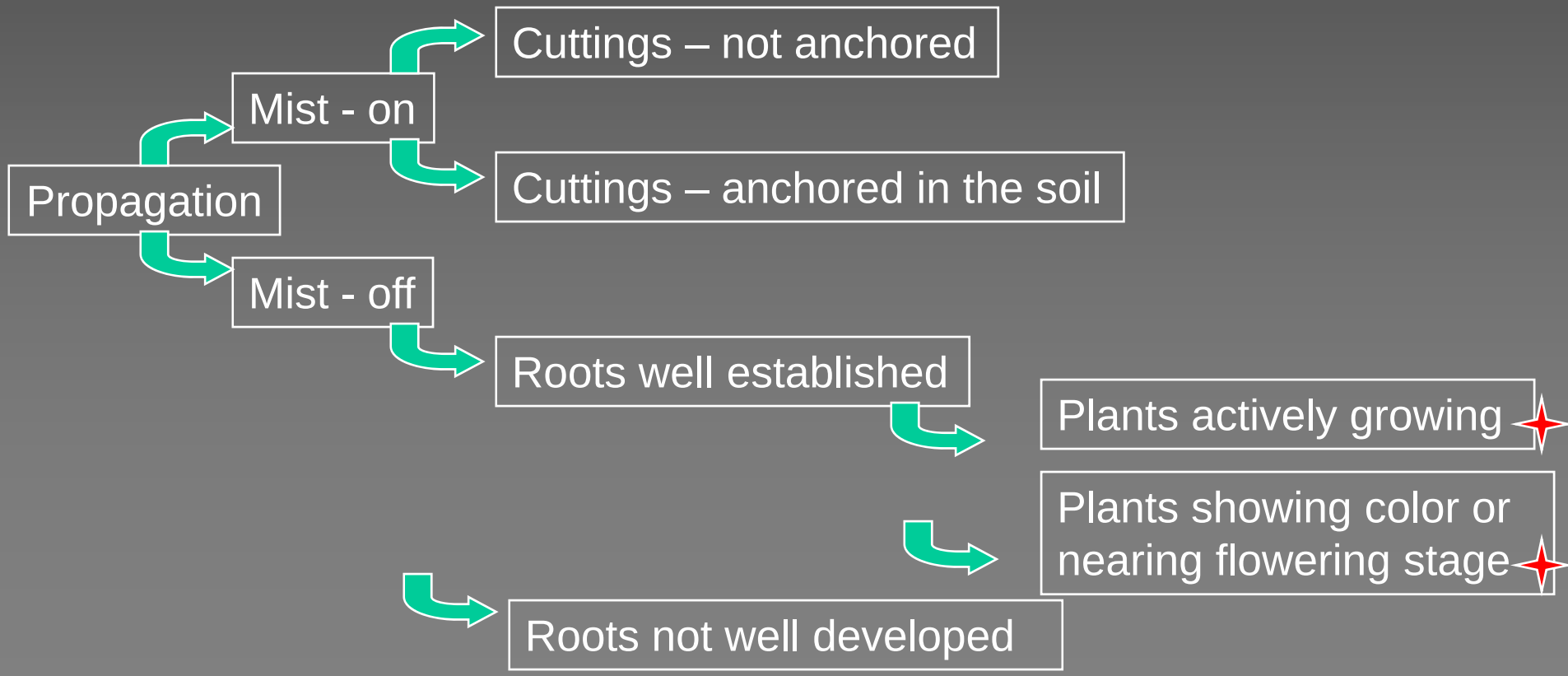
- Major defoliation
  - Apply a soil applied neonicotinoid when the plant starts to put on new leaves
- Whitefly present; little or no defoliation
  - May want to consider one of the more water soluble neonicotinoids for faster control depending on size of the tree
- Little or no whitefly; no defoliation
  - Apply any of the recommended neonicotinoid products

Hedges

1. Determine the number of trees within the hedge
   - If hedge is not very long, count the trees
   - If hedge is long, determine the length of the hedge and divide by the space between the trees.
     - Example: Hedge length is approximately 150 feet. The space between trunks is approximately 3 feet. 150 divided by 3 is 50. There are approximately 50 trees in this hedge.
2. Determine total shrub height by multiplying the number of trees by the approximate height of the hedge.
   - Example: If there are 50 trees in the hedge and the hedge is approximately 6 feet, you have 300 feet of shrub height.

Fig Whitefly Management in the Nursery

Program developed by Dr. Lance Osborne and others for management of whiteflies with emphasis on insecticide resistance – based on growth stage (http://mrec.ifas.ufl.edu/lso/IAWG/FIG/default.asp)



Plants are Actively Growing

Suggested Products	IRAC Class	Notes
Neonicotinoid Soil Drench: Celero (clothianadin) Flagship (thiamethoxam) Marathon (imidacloprid) Safari (dinotefuran)	4	After drenching, apply foliar sprays as needed if whiteflies are present. Avoid repeated application with a single mode of action (products with the same number in the attached chart).
Foliar Applications:		**If plants have received a neonicotinoid drench, DO NOT spray with a neonicotinoid during this phase, if at all possible. If absolutely necessary, make only a single spray prior to shipping.**
Aria (flonicamid)	9C	
Avid (abamectin)	6	
Azadirachtin	18	
Beauveria bassiana	n/a	
Celero (clothianadin)	4	Tank mixes of pyrethroids with abamectin, azadiractin, or acephate may provide a suitable way to manage whiteflies when other pests need to be managed at the same time.
Distance (pyriproxyfen)	7C	
Endeavor (pymetrozine)	9B *	
Endosulfan	2	
Enstar II (kinoprene)	7A	
Flagship (thiamethoxam)	4	* IRAC Class 9B exhibits cross resistance with IRAC Class 4

Plants are Actively Growing (continued)

Suggested Products	IRAC Class	Notes
Horticultural Oil	n/a	
Insecticidal Soap	n/a	
Judo (spiromesifen)	23	
Marathon (imidacloprid)	4	
MilStop (potassium bicarbonate)	n/a	
Safari (dinotefuran)	4	
Sanmite (pyridaben)	21	
Talus (buprofezin)	16	
TriStar (acetamiprid)	4	
Foggers and other products whose use is not restricted by the label	Many	

Fig Wax Scale
Ceroplastes rusci

- First found in Florida in the mid 1990's; reported as a pest of *Ixora* spp.
- Broad range of host plants (22 plant families)
- Recent infestations in Miami - on large ficus trees; understory plants also infested
- Produce a large amount of honey dew which leads to excessive sooty mold

Fig Wax Scale

Adult females are found on twigs; eggs hatch to crawlers which move to feed on the leaves, after about one month the 2nd instar nymphs migrate to the leaf petioles or to new shoots.

Photo: H. Glenn, UF/IFAS

Fig Wax Scale

Parasitized – dying scale ?

Photo: H. Glenn, UF/IFAS

Fig Wax Scale - Management

- Parasites present (6 parasites have been identified)
- Light infestations
  - Horticultural oil or insecticidal soap
- Heavy infestations
  - Insecticides recommended for scale control
  - Large trees may require a soil application of a neonicotinoid to take advantage of the systemic properties and long term control

Other New Pests on Ficus

- Blister galls caused by a small wasp
  - Reported in 2007 in Naples only the Cuban-laurel.

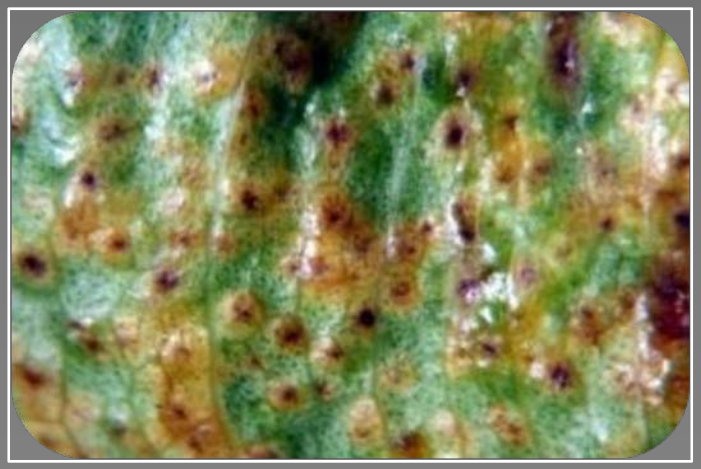
Photos: D. Caldwell, UF/IFAS

- Fig gall midge – reported in the Naples area on *F. microcarpa*

http://www.doacs.state.fl.us/pi/enpp/ento/fig_horidiplosis.html

Weeping Ficus Thrips
(*Gynaikothrips uzeli*)

- First noted in 2003 due to heavy damage on *Ficus benjamina* in south Florida
- Prefer tender, new foliage
- Feeding causes sunken, reddish spots on leaves. Leaves tend to curl and fold inward.



Photos: UF/IFAS MREC

Management - Ficus Thrips


Damage


Adults and nymphs


Predatory bug feeding on thrips

- Monitor new foliage which is what they prefer; remove folded leaves
- Landscape – may not be economic to control; presence of a predatory bug helps control this pest
- Populations peak during warm weather
- Oils and soaps would probably will not work well
- Pesticides that can be used include abamectin (Avid), acephate (Orthene), acetamiprid (TriStar), azadirachtin (Azatin), cyfluthrin (Decathlon), dinotefuran (Safari) imidacloprid (Merit), novaluron (Pedestal), and spinosad (Conserve).

Photo: H. Glenn, UF/IFAS

Website Resources

- http://mannion.ifas.ufl.edu
- http://mrec.ifas.ufl.edu/lso/IAWG/

- http://edis.ifas.ufl.edu/
- http://creatures.ifas.ufl.edu/

- Pest Alerts
  - University of Florida (http://extlab7.entnem.ufl.edu/pestalert/)
  - DOACS (http://doacs.state.fl.us/~pi/enpp/pi-pest-alert.html)

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