Florida Small Farms and Alternative Enterprises Conference

Vegetable Diagnostics 101: Insects and Diseases
The 2013 Educational Program Committee is pleased to share conference educational materials with you under the condition that they are used without alteration for educational and non-commercial use only. All materials are protected by copyright law. The authors kindly request their work is properly cited, including the date of publication.

For more information on Small Farms, visit our website at: http://smallfarms.ifas.ufl.edu/ or contact your local County Extension Agent.

For inquiries about this topic, please contact:
Danielle Treadwell, Educational Program Chair.
Phone: (352) 273-4775
Email: ddtreadw@ufl.edu

Suggested Citation: Author Full Name. Title of Presentation or Handout. 2013 University of Florida-IFAS and Florida Agricultural and Mechanical University-CAFS Florida Small Farms and Alternative Enterprises Conference. August 2-4, Kissimmee, FL.
Vegetable Diagnostics 101:
Insects and Diseases
Resources for Pest Identification

Norm Leppla, Director
UF/IFAS Statewide IPM Program
University of Florida
Cooperative Extension Service

University of Florida IFAS Extension

SOLUTIONS for your LIFE

Find Your Local Office

UF/IFAS has Extension Offices in each of Florida's sixty-seven counties. Twelve Research and Education Centers (RECs), Research and Demonstration Sites (RDSs), and several other offices are located throughout the state. Use the links below to find your way to local offices and their Web sites.

County Extension Offices | Research Centers & Demonstration Sites (RECs & RDSs) | Florida Map

County Extension Offices


http://ifas.ufl.edu
Cooperative Extension Service

- Agent consultation
- Pest diagnostics
- Training programs
- Plant clinics
- Master gardeners
- Access to Extension specialists
- Local and UF library (literature searches)
- Pesticide applicator licensing
- Information dissemination (newsletters)
How to Send a Sample to Gainesville and Receive the Results?

Maybe if I put enough stuff in this box, put a stamp on it, and send it to Gainesville someone will tell me what’s wrong with my plant?

I can’t determine your problem here, but I can get your sample to the right laboratory for an accurate and timely diagnosis.
An Updated Web-based Distance Diagnostic and Identification System for Extension

J. Xin, T. Momol, L. Buss, P. Vergot III, L. Halsey, A. J. Palmateer

- Florida Plant Diagnostic Network (FPDN) (http://fpdn.ifas.ufl.edu)
- Southern Plant Diagnostic Network (SPDN) (http://spdn.ifas.ufl.edu)
- International Plant Diagnostic Network (IPDN) (http://www.intpdn.org)
- National Plant Diagnostic Network (NPDN) (http://www.npdn.org)
DDIS and Diagnostic Laboratories

http://ddis.ifas.ufl.edu
START here

Observe a disorder or pest

Take a digital picture

Report results to grower

Access the DDIS website

Online diagnosis by specialists

Send sample to a specialist

Submitting DDIS Samples
Amanda Hodges, Ph.D. & Jiannong Xin, Ph.D.
UF/IFAS Extension

The DDIS Process
IPM Florida provides statewide, interdisciplinary and inter-unit coordination and assistance for UF/IFAS integrated pest management research, Extension and education faculty.

http://ipm.ifas.ufl.edu
Direct Access to IPM Information

- Habitat-specific IPM guides, fact sheets.
- EDIS articles, Featured Creatures, etc.
- Links to specialized websites with IPM management information specific to a crop or situation.
- Key contacts for expert advice on managing pests.
- Additional resources for pest identification and management, e.g., diagnostic services.
Extension Guides

http://nfrec.ifas.ufl.edu/vegetable_handbook.shtml

UF
University of Florida
 IFAS Extension
 EDIS

Powdery Mildew on Tomato¹
Gary Vallad, Pamela Roberts, Timur Momol, and Ken Pernezny²
Guidelines for Purchasing and Using Commercial Natural Enemies and Biopesticides in Florida and Other States

Norman C. Leppia and Kenneth L. Johnson

This guide provides assistance in selecting, purchasing and using commercially available natural enemies and biopesticides for managing accurately diagnosed pest problems. It therefore applies only to situations in which the cause of a pest problem is known and a biological control solution is sought. To choose a commercial natural enemy product, first use Table 1 to select the habitat of your plant or animal pest problem and identify the insect or mite pest. Then, select the types of natural enemies (parasitic nematodes, predatory mites, predatory insects, and parasitic wasps) and biopesticides available to manage these pests. The reference numbers correspond with the numbered scientific names of natural enemy and biopesticide products in Tables 2-6. Table 6 provides the scientific and product names and target pests for some of the most common microbial insecticides, nematicides and fungicides that often can be used alone or, if compatible, in combination with insect and mite natural enemies. Biopesticides included in Table 6, but not referenced in Table 1, are an insecticide for mosquito larvae (#62), another for grasshoppers (#64), a nematicide for nematodes that damage plants (#69), and eight microbial fungicides (#70-77). The biological control companies named in these tables are listed alphabetically in Table 7, along with their websites. Sources of information on obtaining and using commercial natural enemies follow in the next section.

How to Use this Guide

1. Identify your pest habitat.
2. Identify your insect or mite pest.
3. Select a type of natural enemy.
4. Select a specific natural enemy.

Table 1

Table 2
Parasitic Nematodes

Table 3
Predatory Mites

Table 4
Predatory Insects

Table 5
Parasitic Wasps

Table 6
Biopesticides

Table 7
Commercial Biological Control Companies

- Obtain guidance from supplier.
- Purchase appropriate natural enemy.

The guide is limited to 56 commercial natural enemy products (nematodes, mites and insects) and 21 biopesticide which appear to be useful and available from 49 primary sources for use in Florida.

1. This document is IPM-146 (INSE9), one of a series of the Entomology and Nematology Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Original publication date: May 2010. Visit the EDIS Web Site at http://edis.ifas.ufl.edu.

The use of trade names in this publication is solely for the purpose of providing specific information. UF/IFAS does not guarantee or warrant the products named, and references to them in this publication does not signify our approval to the exclusion of other products of suitable composition.
How to Use this Guide

Table 1
Pest Habitat
- Identify your pest habitat
- Identify your insect or mite pest
- Select a type of natural enemy
- Select a specific natural enemy

Table 2
Parasitic Nematodes

Table 3
Predatory Mites

Table 4
Predatory Insects

Table 5
Parasitic Wasps

Table 6
Bio-pesticides

Table 7
Commercial Biological Control Companies
- Obtain guidance from supplier
- Purchase appropriate natural enemy
UF/IFAS Extension
Solutions for Your Life
http://solutionsforyourlife.ufl.edu

Agriculture
Aquaculture, Citrus, Crops, Forest Resources, Livestock, Nursery & Greenhouse, Organic, Safety, Small Farms, Turf/Sod

Environment
Ecosystems & Species, Insects, Water, Recreation, Getting Involved

Families & Consumers
Aging & Caregiving, Children, Food Safety, Health & Nutrition, House & Home, Money Matters, Relationships, Workplace

Lawn & Garden
Calendar, Getting Started, Maintenance & Care, Plants & Grasses, Problems, Types of Gardens, Industry Professionals, A-Z Index

Sustainable Living
Agriculture, Environment, Lawn & Garden, Consumers, Involved Citizens, Government Issues, Building & Construction, Land Use & Development

Disaster Prep & Recovery

4-H Youth Development
The EDIS website is a comprehensive, single-source repository of all current UF/IFAS peer-reviewed publications (about 7,500).
Electronic Data Information Source (EDIS)

- Agriculture
- Community Development
- Environment
- Families & Consumers
- 4H Youth development
- Lawn & Garden
- Aquaculture
- Crops
- Livestock
- Nursery & GH
- Organic farming
- Agricultural safety
- Small farms
- Turf & sod
Subtopics:

- Commercial Vegetable Production - Subtopics
- Vegetable Gardening
- Specific Vegetables A-Z
- Vegetables by Type
- Vegetable Industry

- Cultural Practices for Vegetables
- Economics of Vegetables
- Vegetable Irrigation
- Nutrition and Fertilizers for Vegetables
- Vegetable Pest Management
- Vegetable Post-harvest and Processing
- Vegetable Production Handbook
- Florida Greenhouse Vegetable Production Handbook
- Vegetable Production -- Miami Dade Vegetable Production (en)
Vegetable Pest Management

Subtopics:
- Greenhouse Pest Management
- **Vegetable Diseases**
- Vegetable Garden Pest Management
- Vegetable Pest Insects
- Vegetable Pest Nematodes
- Vegetable Pest Management by crop
- Vegetable Pesticides
- Vegetable Weeds

Vegetable Diseases- Subtopics
- Vegetable Diseases by crop
- Alternaria
- Anthracnose
- Plant Disease Management Guide- Vegetable Crops
- Rhizoctonia and Brown Patch
- Tospovirus
- Vegetable Publications
Featured Creatures provides in-depth profiles of insects, nematodes, arachnids and other organisms. The site is a cooperative venture of the University of Florida's Department of Entomology and Nematology and the Florida Department of Agriculture and Consumer Services' Division of Plant Industry. All articles are official publications of the University of Florida's Institute of Food and Agricultural Sciences.
PEST ALERT

This page provides links to alerts about pests that have arrived in Florida or that may arrive soon.

Recent and Important Pest Information

- Tomato Leafminer, *Tuta absoluta* (Meyrick) (Lepidoptera: Gelechiidae), a devastating pest of tomatoes.
- Mexican Rice Borer, *Eoreuma loftini* (Dyar) (Lepidoptera: Crambidae: Crambinae) in Florida.
- *Chrysopacon aciculatus* - golden false beardgrass, lovegrass, Mackie’s pest, a noxious weed new to the continental United States.
- Davilfly Leafminer, *Ophiomyia kwasonis* Sasakawa (Diptera: Agromyzidae), new to North America, including Florida.
- Paraleurodes bondari*, Bondar’s Nesting Whitefly, a whitefly (Hemiptera: Aleyrodidae) New to Florida Attacking Ficus and Other Hosts.
- Downy Mildew on Impatients.
- *Aleuridius nigopercularis* Martin, a New Exotic Whitefly in South Florida (Hemiptera: Aleyrodidae).
- Giant African Land Snail and Giant South American Snails: Field Recognition.
- *Planococcus minor* (Maskell), The Passionvine Mealbug, a New Exotic Mealbug in South Florida (Hemiptera: Pseudococcidae).
- *Ecrophthalmus similis* Drury (Coleoptera: Curculionidae), a Jamaican citrus pest newly discovered in the Bahamas.
- *Halvomorpha halys* (Stål), The Brown Marmorated Stink Bug.
- *Mikania micrantha*, the Chinese creeper, bitternbine or mile-a-minute, an invasive vine new to the continental United States.
- Xyleborus glabratus, Redbay Ambrosia Beetle.

Our pest alerts are organized by type. Please scroll down or select a type from the list below.