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UF UNIVERSITY of FLORIDA
IFAS Extension

The Florida Plant Diagnostic Network[1]

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Introduction

The University of Florida Institute of Food and Agricultural Sciences (UF/IFAS) has a long and trusted relationship with those involved in agriculture. UF/IFAS has an existing infrastructure, the Cooperative Extension Service that interacts closely and rapidly with growers, industry and urban clients. It makes good sense to capitalize on IFAS expertise—a staff of plant scientists with vast experience in integrated pest management and well-equipped plant pest diagnostic labs. Given the enormous range of land over which Florida farms, forests, rangelands and agriculture related facilities are dispersed, it is critical that we have a similarly widespread capacity to detect, diagnose, and provide decision support in response to exotic plant pathogen, arthropod, nematode, and other pest introductions.

Federal and state agencies monitor U.S. borders for plant pest introductions and survey for pest outbreaks throughout the nation. Still, new pests often are first detected by those involved in crop production, and are identified by professionals at land-grant universities and state diagnostic labs. Since 2002, the National Plant Diagnostic Network (NPDN, http://www.npdn.org/) and the Southern Plant Diagnostic Network (SPDN, http://spdn.ifas.ufl.edu/) have provided support for a cohesive system to quickly detect and identify pathogens and other pests that have been accidentally or deliberately introduced into agricultural and natural ecosystems. When warranted, the NPDN reports pests to appropriate state and federal responders and decision-makers. Strengths of the NPDN system include:

1. rapid evaluation and reporting of potential pest threats;

2. quick response time for diagnosis, specifically real-time consultation with experts through DDIS (Distance Diagnostics and Identification Systems);

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3. web-based, secure communications links among regional and national diagnostic labs;
4. established links to regulatory agencies including APHIS and FDACS;
5. high-quality and uniformity of information associated with samples;
6. high-quality recordkeeping and reporting of pest outbreaks; and
7. a trained network of "First Detectors" (or First Responders).

The SPDN and collaborators within Florida conduct training, produce and distribute educational materials, and provide diagnostic equipment and guidance to Extension faculty. This system creates a distributed network of capable people trained to detect, identify, and respond to new and emerging pests and pathogens. The first UF/IFAS Plant Disease Clinic was established in the 1950s. Since the 1980s, satellite disease diagnostic clinics have been established in Quincy, Immokalee, and Homestead. Recently, the Gulf Coast Research and Education Center at Wimauma, Florida joined the network as a new disease diagnostic clinic.

For high-risk arthropod or unusual samples in need of identification, the Insect Identification Laboratory in Gainesville, Florida consults with the Florida State Collection of Arthropods (FSCA, http://www.fsca-dpi.org/) and the appropriate curatorial taxonomic specialists employed by the Florida Department of Agriculture, Division of Plant Industry (FDACS-DPI).

The UF Nematode Assay Laboratory in Gainesville, Florida has been operational since the 1950s and provides professionals with identification services and population numbers of plant parasitic and soilborne nematodes present in samples. This information can provide a basis for IFAS recommended IPM strategies. More information is available at: http://edis.ifas.ufl.edu/SR011.

The Florida Plant Diagnostic Network

In 2004, UF/IFAS formally established the Florida Plant Diagnostic Network (FPDN). FPDN is a member of the SPDN and NPDN and comprises a plant pest diagnostic and reporting system, which will help growers, agricultural industry personnel, county agents and all other first detectors submit plant samples, digital images, and detailed crop information for pest diagnosis. Please visit the following website for more information: http://fpdn.ifas.ufl.edu.

The FPDN focuses on diagnostics, digitally assisted diagnostics through DDIS, and the creation of a statewide real-time FPDN database, training of first detectors, and coordination of plant biosecurity activities with state and federal agencies.

The FPDN clinics are facilities of the Department of Plant Pathology and several Research and Education Centers at University of Florida/IFAS. This partnership allows the clinics to maintain a strong connection with the leading Extension specialists and researchers in the fields of plant pathology, entomology, nematology, horticultural sciences, and agronomy.

Diagnostic Services

Diagnosis is the process of identifying a pathogen based on a combination of the symptoms of disease and signs of causal agent. Efficient integrated pest management is dependent upon accurate knowledge of causal agents such as pathogens or pests. In many situations, pest management programs have been unsuccessful because of incorrect diagnosis.

FPDN clinic services include analysis of plant material for fungal, bacterial and viral pathogens and providing appropriate control recommendations when available based on UF/IFAS pest management guides. In addition to classical diagnostic techniques, PCR (polymerase chain reaction) and ELISA (enzyme-linked immunosorbent assay) are being used for specific and sensitive detection and identification of plant pathogens. Extension faculty, growers, IPM providers, pest control and landscape

maintenance companies, retailers, golf courses, researchers, and homeowners submit samples to FPDN clinics.

Entomology-related FPDN clinic services primarily focus on morphological identification of specimens, but in some cases, the FPDN communicates and collaborates with various groups to facilitate molecular identification of specimens on an as-needed basis. The collaboration of FPDN with specialist expertise at FDACS-DPI is integral to the quick, timely, and accurate identification of unusual specimens.

The FPDN works primarily through county Extension offices in Florida. If there is an office near you, you may want to contact them for assistance with your plant disease or pest problems.The University of Florida/IFAS Extension personnel will be able to help you immediately.The clinics provide accurate plant disease diagnosis, professional services, and up-to-date control recommendations. Please follow the instructions at the following link for submitting samples carefully http://edis.ifas.ufl.edu/SR007. It is very difficult to make a diagnosis if a sample is improperly collected, packed, and/or shipped.

Distance Diagnostic and Identification System

A web-based Distance Diagnostic and Identification System (http://ddis.ifas.ufl.edu/), for the diagnosis of pest problems based on the electronic transmission of digital images has been created and is currently operational in Florida counties. Extension agents, specialists and the faculty of UF/IFAS Information Technology jointly developed this web-based system. In 1999, several clinic and Extension specialists began receiving digital images of plant samples to enhance diagnostic capabilities. If you would like to learn more about how to submit plant pest samples using DDIS please contact your county Extension office. DDIS allows users to submit digital samples obtained in the field and related descriptive text provides a tool for rapid diagnosis and identification of plant pests. The system provides an environment for agricultural Extension agents and specialists to share information on plant insects and diseases. Through interactions on the internet between Extension agents and specialists, problems can be quickly communicated and assessed. Specialists around the state can perform diagnosis and identification and provide best management practice recommendations to the users. DDIS creates a digital image library with associated site, crop, and pest or disorder data that could be used in educational programs, assisted diagnosis, and data mining. The following link will guide you to the DDIS website: http://ddis.ifas.ufl.edu/.

First Detector Training

The FPDN is establishing a “First Detector” network to enhance monitoring the introduction of pests or unusual pest outbreaks. First detectors are an integral part of the system and include:

- Growers;
- Cooperative Extension Service personnel;
- Crop consultants and pesticide applicators;
- Master Gardeners; and
- Commercial chemical and seed representatives.

The FPDN provides training to first detectors on proper techniques for sampling, monitoring, and identifying pests and procedures for reporting pest problems. Through their county Extension service, first detectors will have access to the web-based diagnostic system and can report unusual pest occurrences, existing crop conditions or other information through the distance diagnostics and identification system (DDIS) and FPDN database. Currently, FPDN first detectors receive the SPDN newsletter and alerts of new pest information when available.

The following is a list of plant pest and disease diagnostic and identification services provided by UF/IFAS, in conjunction with the Cooperative Extension Service.

Gainesville

Florida Extension Plant Diagnostic Clinic

(This is the regional lab for the SPDN and IFAS hub for FPDN.)

Dr. R.J. McGovern

University of Florida

PO Box 110830

Building 78 Mowry Rd.,

Gainesville, FL 32611-0830.

Note: For overnight mail or package delivery service (UPS, Fedex, etc.), be sure to include the physical street address: "UF, Bldg. 78 Mowry Rd."

Phone: (352) 392-1795 or Suncom 622-1795

FAX: (352) 392-3438

E-mail: pdc@ufl.edu

Website: http://plantpath.ifas.ufl.edu/pdc/Default.htm

Nematode Assay Lab

Dr. W.T. Crow

University of Florida

Building 78 Mowry Rd

PO BOX 110820

Gainesville FL 32611-0820

E-mail: wtcr@ufl.edu

Website: http://edis.ifas.ufl.edu/SR011

Mycology Herbarium

Dr J. W. Kimbrough

University of Florida

1453 Fifield Hall

PO BOX 110680

Gainesville FL 32611-0680

E-mail: jwkimbrough@ufl.edu

Insect Identification

Mr. Lyle Buss

University of Florida

Building 970

PO BOX 110620

Gainesville, FL 32611-0620

(352) 392-1901 ext. 190

FAX (352) 392-5660

E-Mail: ufinsectid@ufl.edu

Website: http://edis.ifas.ufl.edu/SR010

Bacterial Identification and Fatty Acid Analysis Laboratory http://plantpath.ifas.ufl.edu/fame/ The Bacterial Identification and Fatty Acid Analysis Laboratory is equipped with state-of-the-art automated systems designed to identify bacteria, yeasts, and some fungi.

Herbarium

Mr. Kent D. Perkins

University of Florida Herbarium (FLAS)

Florida Museum of Natural History

379 Dickinson Hall

PO Box 110575

Gainesville, FL 32611-0575

E-mail: kperkins@flmnh.ufl.edu

Website:
http://www.flmnh.ufl.edu/herbarium/flasbryo.htm

* All plant samples for identification should be submitted to the local County Extension Agent first.

Quincy

Florida Extension Plant Diagnostic Clinic

Dr. M.T. Momol

North Florida REC,

155 Research Road

Quincy, FL 32351

Phone: (850)-875-7140

FAX (850) 875-7148

E-mail: tmomol@ufl.edu

Website: http://tmomol.ifas.ufl.edu/pdc.htm

Lake Alfred

Citrus Research and Education Center

Dr. Kuang-Ren Chung

Note: Specialize in citrus samples

University of Florida, IFAS

Lake Alfred, FL 33850

Tel: (863) 956-1151 x 1369

Fax: (863) 956-4631

E-Mail: krchung@ufl.edu

Website:
http://www.crec.ifas.ufl.edu/academics/faculty/chung/chung_kuang_ren.htm

Immokalee

Florida Extension Plant Diagnostic Clinic

Dr. P.D. Roberts

Southwest Florida REC,

2686 SR 29 North

Immokalee, FL 34142

Phone: (941) 658-3400 or Suncom 975-3400

FAX (941) 658-3469

E-mail: pdr@ufl.edu

Website: http://swfrec.ifas.ufl.edu/plant/

Wimauma

Florida Extension Plant Diagnostic Clinic

Dr. N. Peres

Gulf Coast REC

14625 C.R. 672

Wimauma, FL 33598

Phone: (813) 633-4133 or Suncom 514-6823

FAX (813) 634-0001

E-mail: naperes@ufl.edu

Website: http://strawberry.ifas.ufl.edu/

Homestead

Florida Extension Plant Diagnostic Clinic

Dr. A.J. Palmateer

Tropical REC

18905 S.W. 280th St.

Homestead, FL 33031-3314

Phone: (305) 246-7001 ext. 270 or Suncom 478-6340

FAX (305) 246-7003

E-mail: ajpalmateer@ifas.ufl.edu

Website: http://trec.ifas.ufl.edu/clinic/