



## Distance Diagnostic and Identification System (DDIS) : A New Tool for Extension Diagnostics<sup>1</sup>

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### Introduction

Extension and research faculty at the University of Florida / Institute of Food and Agricultural Sciences have developed a system that uses digital cameras, microscopes and the World Wide Web to send digital images of plant pests and agricultural situations from the counties to the specialists located at the Gainesville Campus and Research and Education Centers for rapid diagnoses and identification. The Distance Diagnostic and Identification System (DDIS) is used to transmit digital images with related information to enhance plant disease, insect and weed diagnostic capabilities. Images, by themselves, are one aspect of a diagnosis. They should be used in conjunction with laboratory assays if necessary. Sending digital images rapidly over long distances can reduce the turn around time for some diagnoses. Thus, earlier implementation of control may be possible. It can also provide opportunities for teaching and professional improvement. By themselves digital images and photographs should be considered as tentative for plant disease diagnoses.

Traditionally, if clients need to identify a cause of disease or identify a damaging insect on their plants, they send biological samples to their county agents or to a plant diagnostic clinic. Turn around times for answers range from a day or two to weeks. The other option is to describe the problem to an expert on the phone or send info about the situation by fax or e-mail. With DDIS, our clients access statewide consultation by text and with digital images. "A color picture is worth a thousand words." A specialist may be able to retrieve the photos and related information and send a response within minutes or hours. In addition, DDIS has the advantage of associating the images and their related descriptions to a searchable-object database, which allows agents and specialists to archive samples for future educational use.

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1. This document is PP-188, one of a series of the Plant Pathology Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Original publication date October 2000. Revised March 2001. Reviewed March 2008. Visit the EDIS Web Site at <http://edis.ifas.ufl.edu>.

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## **Benefits to Growers, Consultants, Nurseries, Agricultural Industry, Landscape Companies, and Homeowners**

*-Statewide consultations with digital images will result in quick turn around time for some samples.*

Example 1: This is very important if the timely application of pest management recommendations is needed to reduce crop losses from diseases, insects, and weeds.

Example 2: It will be effective in situations where toxic mushrooms are concerned. Digital images may be adequate to determine the identity of poisonous or edible mushrooms.

*-Deterioration of sample tissues in transit may be a problem for some biological samples. If positive diagnosis will be possible through DDIS this problem could be avoided.*

*-Communication between clients and county faculty may be improved.*

*-Educational opportunities may be created for clients by showing digital images of plant pathogens, insects and weeds.*

## **Benefits to County Faculty**

*-More statewide consultations can be done with digital images.*

*-A quick turn around time is more likely to provide prompt service to clients.*

*-Communication and collaboration between county faculty and state specialists may be improved.*

*-Educational opportunities are created for county faculty through in-service training on diagnostics, digital imaging of biological materials, and use of Web-based technologies.*

*-Through DDIS projects, county faculty have more opportunities for enhancement of technological tools and funding for microscopes, digital cameras, high speed Internet links, and diagnostic literature (e.g. APS Disease Compendia).*

*-Web-based tracking of samples may be available.*

*-A database for future reference and educational activities may be established.*

*-Extension program planning and reporting can be categorized as DDIS activities under the state major program FL131.*

## **Benefits to State Specialists**

*-Because of the ability of statewide consultations with digital images, taxonomists and research faculty can be reached for consultation.*

For example: a fungus could be identified at the species level by sending digital images of fungal spores and structures to a mycologist at the University of Florida.

*-Because of the quick turn around time with some samples, better service to counties and clients may be attained.*

*-Communications and collaborations among county faculty, state specialist, and diagnosticians can be improved.*

*-Implementation of DDIS in Florida Extension created educational opportunities to teach more plant pathology, entomology, weed sciences, and other aspects of agriculture to county faculty through organizing in-service trainings with hands-on sessions.*

*-Samples can be tracked using Web-based technology.*

*-The DDIS database may be used for future references, educational activities, and EDIS publications.*

## **Concluding Remarks**

Enhancement of identification of pests combined with IPM recommendations and Web-based interactive learning opportunities will be an important cornerstone of any IPM efforts in Florida for both commercial producers and urban clientele. To learn more about DDIS, please visit the Web site at <http://ddis.ifas.ufl.edu>