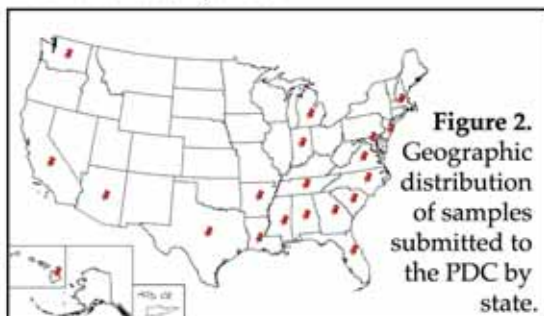




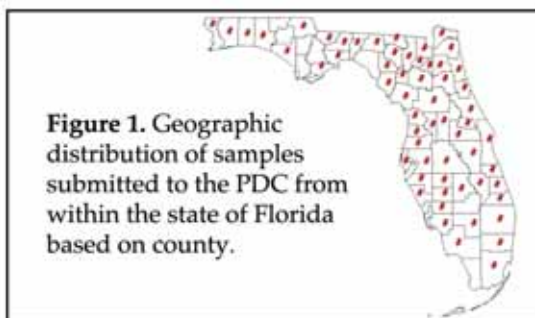
# UF/IFAS Plant Diagnostic Center 2015-2016 Report

## Laboratory Highlights

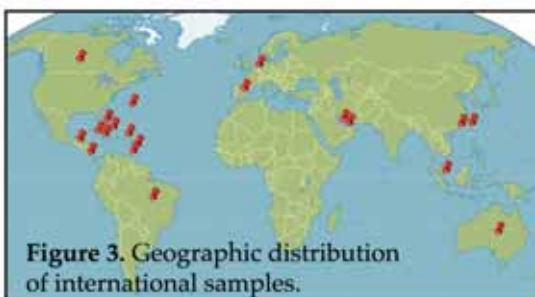
The UF-IFAS Plant Diagnostic Center (PDC) in Gainesville processed samples for clientele from 59 out of the 67 counties in the state (Figure 1) and 19 other states (Figure 2).



**Figure 2.** Geographic distribution of samples submitted to the PDC by state.



**Figure 1.** Geographic distribution of samples submitted to the PDC from within the state of Florida based on county.



**Figure 3.** Geographic distribution of international samples.

➤ Our international diagnostic service received samples from Antigua, Bahamas, Barbados, Belgium, Bermuda, Cayman Islands, Costa Rica, Guatemala, Jamaica, Qatar, Trinidad, Turks and Caicos, and United Arab Emirates (Figure 3). The Rapid Turf Diagnostic Service (RTDS) received samples from Australia, Brazil, Canada, China, Singapore, Spain, and Taiwan.



◀ Plant disease diagnosis is a critical part of food security as we work to ensure the food our farmers produce grows to successful harvest, makes it to market, and then to the consumers' dinner table. Plant disease can strike at every point in this process. Our director, Dr. Carrie Harmon, spoke about disease diagnosis when she was in Washington D.C. at the National Press Club in the spring of 2016.

➤ The PDC is an example of a successful USDA-NIFA-LGU partnership program. UF-IFAS spent \$1.7mill to establish critical infrastructure in plant disease diagnosis on a national and international level, in part because of the National Plant Diagnostic Network (a NIFA cooperative agreement project). UF supports personnel in this Center so we can serve our extension clientele, while NIFA helps us increase capacity with funds for equipment, training, and consumables. Combined with sample fees, we have the resources to detect new threats, and to help build international capacity through diagnostics and trainings. Trainings include those on Citrus huanglongbing (HLB), like one with scientist from Australia and New Zealand in May 2015; or on quality assurance, like one with researchers from Trinidad in September 2016.



◀ Dr. Sonny Ramaswamy, the director of USDA-NIFA, toured the PDC in May 2016 and discussed HLB and the importance of early detection and international collaboration in diagnostics.

➤ The national accreditation program requires diagnosticians to pass a blind Proficiency Test Panel to evaluate their proficiency of technical skills. PDC diagnosticians passed their panels for HLB and *Phytophthora ramorum* (Sudden Oak Death) in 2015 and 2016. The PDC serves as a regional and national resource for diagnosing these diseases.



## Samples

- The annual number of samples submitted for diagnosis has increased dramatically over the last 12 years (Figure 4). We processed 3,056 samples in 2015 and 2,463 by November of 2016.

## Sample Type

- ✓ General plant samples are categorized by host type: citrus, field crop, fruit or nut, herbaceous ornamental/indoor plant, palm, small fruit, turf, vegetable/herb, or woody ornamental. The majority of samples submitted to the General PDC were small fruit, followed by turf, and then palms in 2015 (Figure 5). In 2016, most samples were turf, palms, and then woody ornamentals. This increase in palm samples reflects an increased incidence of Texas Phoenix Palm Decline and *Fusarium*. These diseases are fatal and palms can die quickly.

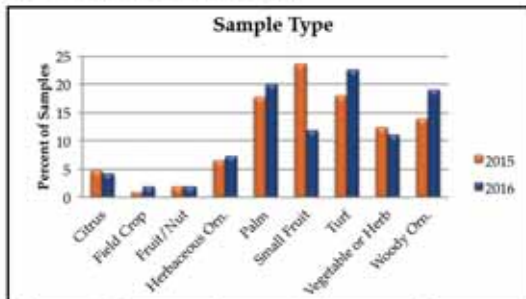


Figure 5. Percent of samples by sample type.

*Ralstonia solanacearum* was detected for the first time on a blueberry host in Florida in fall of 2016. This fatal disease exhibits symptoms similar to those of *Xylella*, wilting and marginal leaf burn.

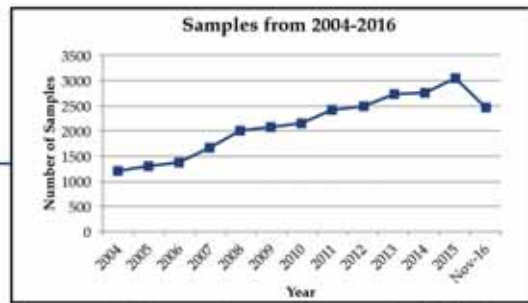


Figure 4. Diagnostic samples received 2004 through November 2016.

- ✓ Most RTDS samples were Bermudagrass in both 2015 (73%) and 2016 (63%) (Figure 6). Bermudagrass is a common turf for golf courses, while not common in lawns. The increase in St. Augustinegrass in 2016 reflects an increase in testing for Sugar Cane Mosaic Virus (SCMV). Occurrence of SCMV has increased since it was first detected in Florida in 2013. So few samples are Bahia, centipede, ryegrasses, smooth crabgrass and others, they are not represented on the graph.

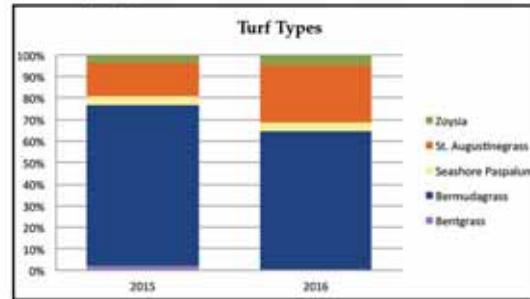


Figure 6. RTDS samples by turf type.

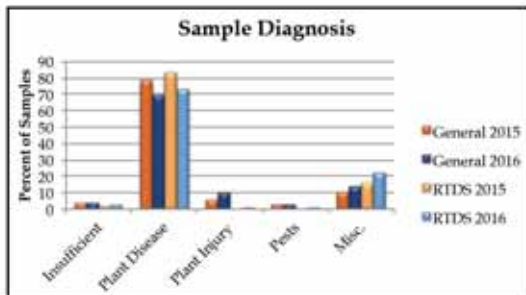


Figure 7. Percent of samples processed using a particular type of diagnostic procedure.

## Diagnoses

- ◀ While most samples the PDC received were affected by a plant disease, we receive a small number of samples each year that are insufficient for processing. Insufficient samples must be resubmitted, costing the client time and money. From 2015-2016, the percent of insufficient General samples was steady at about 4%, while about 2% of RTDS samples were insufficient. Our brochure (attached on the next page) outlines how to collect a good sample. Instructions can also be found on the PDC website. Sufficient samples reduce turn around time and improve accuracy of the diagnosis.

- Approximately 70-80% of samples the PDC received in 2015 and 2016 were diagnosed as being affected by a plant disease. Plant diseases include those caused by bacteria, fungi, oomycetes, phytoplasmas, and viruses. Fungi were the most common cause of plant disease in General and RTDS samples in 2015 and 2016 (Figure 8). Note: percent of samples for General and RTDS can total over 100% on the two graphs below because one sample may have multiple causes of health problems (primary and secondary pathogens).

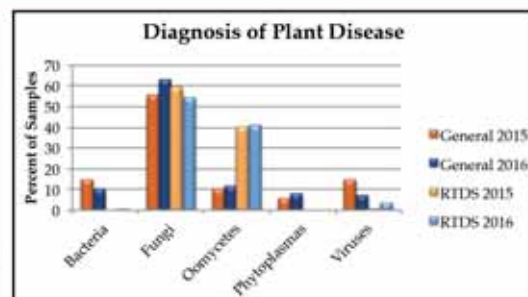


Figure 8. Percent of samples diagnosed as having a plant pathogen in 2015-2016 by type.

# Submitting Samples

## 10 Tips for Collecting a Good Sample



Plant disease diagnosis depends upon the quality of the sample submitted and the information provided by the submitter. Please see the sample submission guide for more details on sample submission (<http://edis.ifas.ufl.edu/sr007>).



**1. Don't wait until it's too late:** Submit your sample before the problem becomes widespread, while the disease is still manageable.

**2. Sample before you spray:** Take samples before applying pesticides.

**3. No dead samples:** Your sample should be declining but still alive (green).

**4. More, more, more:** Submit generous amounts of plant material with a range of symptoms.

**5. Don't forget your roots:** Roots should be kept intact. Hand shake excess soil from root systems, leaving enough soil to keep roots moist.

**6. Keep them separated:** Bag roots and soil with a tie at the main stem. Wrap dry foliage in newspaper before placing the entire plant in a loosely tied bag. Do not mix different samples in the same submission bag.



**7. Attention to detail:** Complete the Plant Clinic Sample Submission form with all pertinent information. Include the name of plant, location, percent affected, symptoms of concern, distribution, soil type and drainage, and fertilizers and pesticides used recently. This information will expedite the diagnosis process.

**8. Cool and fresh:** Refrigerate samples after collection until submission. Mail or deliver samples as soon as possible after collection. Mail samples early in the week because plants will rot if in transit over the weekend. Use overnight mail for emergency samples.

**9. Handle with care:** Mail samples in crush proof boxes with packing material for protection.

**10. Extension Services can help:** There is a UF/IFAS Extension office in every county in Florida. Extension Educators, along with the Electronic Data Information Source (EDIS) website of UF/IFAS Extension, can be a great resource.

Extension office: <http://solutionsforyourlife.ufl.edu/map/>  
EDIS: <http://edis.ifas.ufl.edu>

Rapid Turfgrass Diagnostic Service example samples below.  
<http://turf.ufl.edu/rapiddiag.shtml>



## Diagnostic Services and Fees

We identify the infectious causal agent (e.g., fungus, bacterium, or virus) or other cultural or environmental factor that can cause plant symptoms. Specific tests can be found at: <http://plantpath.ifas.ufl.edu/Clinic/pricing.shtml>.

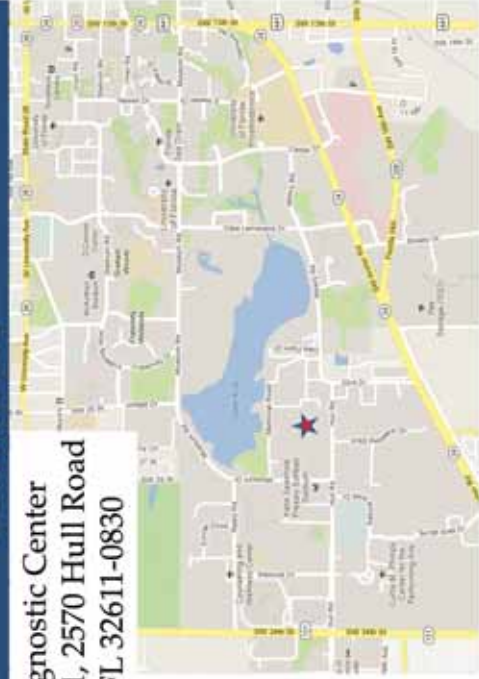
Per diagnostic sample:

- FEPDC- in-state \$40; out-of-state \$45; international \$125
- Rapid Turfgrass Diagnostic Service- \$75

Additional fees may apply for advanced diagnostics.

## Contact Us

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Building 1291, 2570 Hull Road  
Gainesville, FL 32611-0830



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Telephone: (352) 392-1795  
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Scan the QR code to the right to find us on Facebook.



## Hours of Operation

Monday-Friday 8:00AM to 5:00PM (except state and UF holidays)  
After hours drop-off available by courier or walk-in.

# Florida Extension Plant Diagnostic Center

University of Florida, Gainesville, FL  
<http://plantpath.ifas.ufl.edu/Clinic/index.shtml>

The UF/IFAS Plant Diagnostic Center is the resource diagnostic clinic for the citizens of the State of Florida, the Florida Plant Diagnostic Network, and is the location of the Rapid Turfgrass Diagnostic Service. FEPDC-Gainesville is also the hub clinic for the Southern Plant Diagnostic Network and a participating clinic in the National Plant Diagnostic Network. The FEPDC serves the state and region through diagnosis of commercial, homeowner, and extension plant disease samples submitted to the laboratory for turf, ornamentals, fruits and vegetables, and other plants. Specific areas of diagnostic expertise include: Asian soybean rust, citrus greening, turf, blueberry and palm diseases, and sudden oak death/ramorum blight.

