

NPDN News

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TEXAS PHOENIX PALM DECLINE CONFIRMED IN LOUISIANA

Raghuwinder "Raj" Singh, Assistant Professor, Plant Diagnostic Center, Louisiana State University Agricultural Center

Texas Phoenix palm decline (TPPD), also known as date palm lethal decline has been positively confirmed from Canary Island date palm in New Orleans during December of 2013. Until recently, the disease has only been found in Florida and Texas. The TPPD got its name from Texas where it was first identified from *Phoenix canariensis*. It is a fatal disease that rapidly declines and kills the infected palms (Figure 1)

The disease is caused by a phytoplasma, *Candidatus Phytoplasma palmae*, an unculturable bacterium

with no cell wall. The TPPD phytoplasma strain 16SrIV-D is closely related to but genetically distinct from phytoplasma strain 16SrIV-A, that causes lethal yellowing of palm (Figures 2 and 3). The pathogen is known to cause decline in Canary Island date palm (*Phoenix canariensis*), edible date palm (*Phoenix*

Other diseases and disorders of palms may produce similar symptoms...Molecular detection of the pathogen from symptomatic tissue is required for positive confirmation.

dactylifera), silver date palm (*Phoenix sylvestris*), wild date palm (*Phoenix reclinata*), cabbage palm (*Sabal palmetto*) and queen palm (*Syagrus romanzoffiana*). The pathogen colonizes in the phloem tissue where it spreads systemically to new plant parts. It is suspected that TPPD is vectored by sap feeding insects with piercing-sucking mouthparts such as plant hoppers, psyllids or tree hoppers, however, exact species of insect vector is not known.

Symptoms of TPPD start with discoloration of tips of the oldest leaves. Infected leaves turn reddish brown



Figure 1. Dead Canary Island date palm infected with Texas Phoenix palm decline.

Issue Highlights

- Rose rosette disease in Florida
- 2014 NPDN/USDA-APHIS advanced diagnostic workshops
- Star-D implementation booklet—step 5
- Record breaking SPN workshop in the northeast
- GPDN webinar series
- Webinar on irrigation pathogens and water quality

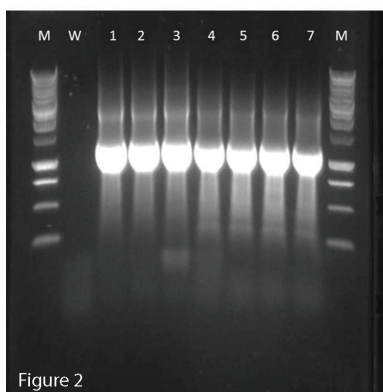


Figure 2

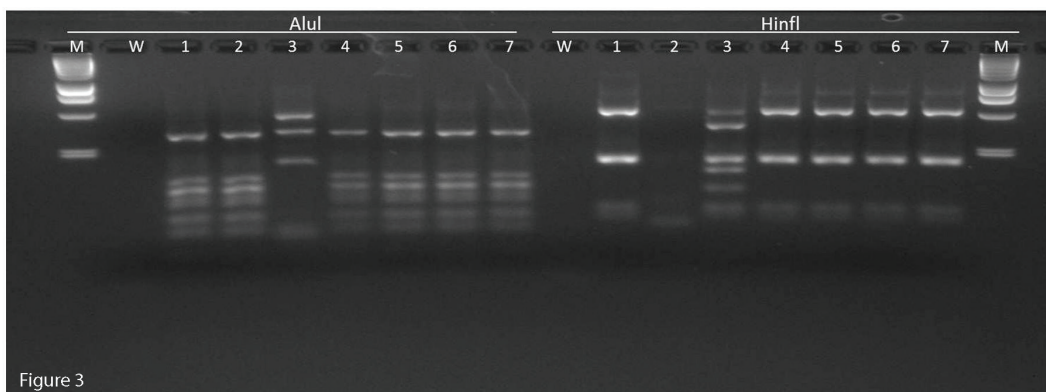


Figure 3

Figure 2. Nested PCR to detect Phytoplasmas in palms (Texas PDDL-WI-2-9 work instruction for PCR to detect Phytoplasmas in palms). Lane M: Marker (1Kb); W: Water Ctrl; 1 & 2: +ve Ctrl 2387 and 2389 Texas Phoenix palm decline (source: Kevin Ong, TX A&M); 3: +ve Ctrl 1584 Lethal Yellow (source: Kevin Ong, TX A&M); 4 & 5: Palm A (LSU AgCenter PDC13558); 6 & 7: Palm B (LSU AgCenter PDC13560). **Figure 3.** Restriction digestion of Nested PCR product with enzymes Alul, Hinfl to distinguish Texas Phoenix palm decline from Lethal yellowing (Texas PDDL-WI-2-10 Palm Phytoplasma (TPD-LY) Restriction Enzyme Digest Assay). Lane M: Marker (1Kb); W: Water Ctrl; 1 & 2: +ve Ctrl 2387 and 2389 Texas Phoenix palm decline (source: Kevin Ong, TX A&M); 3: +ve Ctrl 1584 Lethal Yellow (source: Kevin Ong, TX A&M); 4 & 5: Palm A (LSU AgCenter PDC13558); 6 & 7: Palm B (LSU AgCenter PDC13560).

to dark brown and eventually die. Palms infected with TPPD exhibit a large proportion of discolored leaves in the lower region of the canopy (Figure 4). The spear leaf dies and turns tan colored after approximately one-third of the lower leaves have discolored (Figure 5). Infection on mature palms leads to premature drop of majority of fruits in a few days. Root rot may also occur in infected palms.

Management of TPPD in infected palms is not possible. Symptomatic palm with dead spear leaf must be removed immediately, as it may serve as a source of the pathogen for the insect vectors to transmit to healthy susceptible palms. Successful disease management in landscape where TPPD is prevalent can be achieved by preventative treatment of healthy susceptible palms with antibiotic oxytetracycline hydrochloride. The antibiotic should be administered as a trunk injection every three to four months. Long term disease management through host resistance can be achieved but lack of information on TPPD's complete host range prevents it from being widely used. Accurate identification of TPPD in the field is required for effective disease management. Other diseases and disorders of palms may produce similar symptoms which can make it hard to identify the disease based solely on symptoms. Molecular detection of the pathogen from symptomatic tissue is required for positive confirmation. 🌿



Figure 4. Canary Island date palm infected with Texas Phoenix palm decline exhibiting large proportion of discolored leaves in the lower region of the canopy.



Figure 5. Declining Canary Island date palm with no spear leaf.

TIP OF THE MONTH



New diagnostic resources available!

3.05 Diagnosing Signs of High and Low pH

While signs of high pH induced iron deficiency commonly occur, do you know what to look for when the substrate pH is too low?

3.06 Bedding Plant Troubleshooting eBook

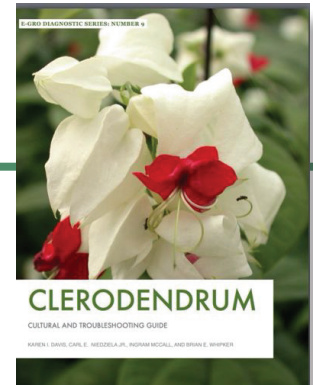
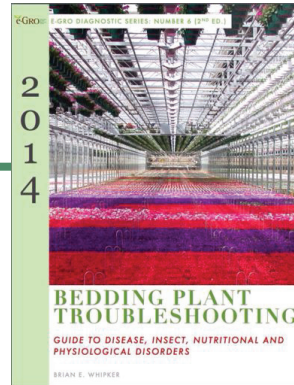
A new troubleshooting guide to Bedding Plant disorders has been published by the NC State University's Floriculture group. This iPad viewable book has 177 photos and 249 pages and highlights ageratums, begonias, celosia, impatiens, marigolds, salvia and snapdragons.

3.07 Clerodendrum Cultural and Troubleshooting eBook

A new cultural and troubleshooting guide to Clerodendrum has been published by the NC State University's Floriculture group. This iPad viewable book has over 100 photos and 110 pages and highlights. Chapters include cultural information, diagnostics and research updates.

3.08 e-GRO University

In mid-2013, faculty from five different universities launched one of the latest facets of e-gro.org. e-GRO University is an online educational opportunity for seasoned and beginning growers. Over 50 FREE videos covering insects, diseases, PGRs, nutrition and culture are available for your viewing. This project was sponsored by the Fred C. Gloeckner Foundation.



Rose Rosette Disease in Florida

Symptoms including witches' broom, excessive thorns, abnormal red discoloration of shoots and foliage, distorted leaves, deformed buds and flowers, shoot proliferation and leaf discoloration characteristic to the rose rosette disease caused by *Rose Rosette Virus* (RRV) were observed on roses in a commercial nursery in Florida in November 2013. RT-PCR assay using RRV specific primers followed by sequencing confirmed the presence of the virus in the infected samples. The details of the pest alert issued can be found at http://nfrec.ifas.ufl.edu/paret/u-scout/Pest_Alert.html

Submitted by:

Mathews Paret, Binoy Babu, Hank Dankers & Gary Knox, NFREC, University of Florida, Quincy
Tim Schubert and Carlye Baker, Division of Plant Industry-FDACS, Gainesville
Carrie Harmon, SPDN/Department of Plant Pathology, University of Florida, Gainesville



NPDN/USDA-APHIS; 2014 Advanced Diagnostic Workshops – Update #2 TIME IS RUNNING OUT BUT WE STILL HAVE OPENINGS!

Are you hoping to fit a diagnostic technique workshop into your schedule this spring? We still have openings in most of the workshops being offered this spring. Please see below for trainings sessions and dates of the workshops being offered in March of 2014:

Week 1: Bioinformatics, March 4–6, 2014, 3 days—only 1 space available

Week 2: Phytophthora, March 11–14, 2014, 3.5 days—sorry, we are FULL!

Week 3 (first part of week): Potato Wart, March 17–18, 2014, 2 days

Week 3 (second part of week): Citrus Greening-HLB, March 19–21, 2014, 3 days

Week 4: Citrus pathogens, March 25–28, 2014, 4 days

If you are interested in any of these workshops, please contact Karen Snover-Cliff, ks13@cornell.edu, as soon as possible.

Using the Get Started Implementation Booklet to Establish the STAR-D Laboratory Accreditation System in your Laboratory; Step 5



Karen Snover-Cliff and Dawn Dailey O'Brien, Department of Plant Pathology and Plant-Microbe Biology, Cornell University

So far we have review steps 1, 2, 3, and 4 of the “STAR-D: How to Get Started in Your Laboratory” booklet. Hopefully those articles were helpful and have given you a few ideas about planning for the implementation of the STAR-D laboratory accreditation quality management system in your laboratory. We understand that the idea of implementing such a complex system can be daunting. It is much easier to implement if it is broken down into manageable segments, therefore, we are continuing the review of each page within the booklet by providing this information in the *NPDN News*, under the STAR-D quality corner section.



Step Five builds on Step One, Two, Three and Four. Step Five guides you through tracking equipment

purchases, as well as inventorying equipment including items such as unique identifiers and records of preventive maintenance and repair activities. Equipment logs, manuals and records are an essential part of the quality management system. Keeping good equipment records can save time in the long run. Remember to begin this process you should set a goal for each activity in this section. When completed, post the date. Checking off each item provides a great sense of accomplishment!

Activities:

- ★ Evaluate any system(s) currently in place and ask yourself if it is an effective way of tracking equipment purchases and maintenance.
- ★ If non-existent or inadequate, select a method to be used. Consider using the templates available on the STAR-D web page regarding section 5.5 Equipment.
- ★ Create any needed 5.5 Equipment QPs, WIs and Forms.
- ★ Inventory the equipment in each section of your laboratory that falls under the scope of your accreditation.
- ★ Record details of the inventory in your selected equipment tracking system. Include unique identifiers, location, and date of significant events. The record should show calibrations and

maintenance. Keep these and manuals readily available.

- ★ Create a calibration schedule. Consider using the template available on the STAR-D web page regarding section 5.5 Equipment.

Step Five includes a Helpful Hints section. The hints are a collection of items gathered from a few of the diagnosticians that have started this process. They provided their most helpful messages for you. All you need to do here is review the hints, think about if any of the hints pertain to you or your laboratory and if you like one of the provided hints, discuss it with your laboratory members.

Helpful Hints:

- ★ Use labels attached to instruments to indicate the need for service or calibration date. Place labels where they can be easily seen by users.
- ★ Conduct all calibrations at the same time each year so that it becomes routine.
- ★ Logs are an important part of your equipment monitoring system. Save time by using templates.

Please contact us with any questions! Next month we will proceed to Step 6...How to Get Started-Sample Handling! 🌱

Irrigation Pathogens and Water Quality



Upcoming Webinar

How do we determine whether irrigation water is clean or contaminated?

Presenter: Dr. Gary W. Moorman, Professor of Plant Pathology, Pennsylvania State University

Tuesday, February 4, 2014, Noon to 1:00 pm (Eastern)

To participate in this webinar, please go to

<http://connect.extension.iastate.edu/irrigation-water/>

and dial 1-888-619-1583 then enter pass code: 491981

Visit the project site at www.irrigation-pathogens.info for recordings of past webinars and for other ongoing educational programs and exciting research activities. For more information about the webinar, or questions, contact Chuan Hong at chong2@vt.edu.

Record Breaking Sentinel Plant Network Workshop in the Northeast

Rachel McCarthy, NPDN-SPN Manager, NEPDN, Cornell University

On January 21 and 22 the Sentinel Plant Network (SPN) hosted its northeast workshop for public garden professionals at the New England Wildflower Society's Garden in the Woods. The northeast SPN workshop last June in Morristown, NJ had been the largest with 40 participants but this winter workshop drew an even bigger crowd--making it the largest SPN workshop to date. This event served 50 participants from nine states and included representatives from 20 public gardens, NPDN, USDA-APHIS and Massachusetts Department of Conservation and Recreation (DCR). With eight reps from USDA and two from DCR, it was the highest participation from our regulatory partners to date! Clearly, the off-season is a great time for professional development and an equally good time to look for signs and symptoms of invasive insects and pathogens

A fundamental objective of SPN has always been to encourage and promote relationship building not only with NPDN diagnosticians but with state and federal regulatory officials.

in the garden. Garden in the Woods proved to be a perfect venue for our wintery retreat and was truly spectacular in full snow cover.

Funded through the Farm Bill by USDA-APHIS, the SPN is a collaborative project with the NPDN and the American Public Gardens Association (APGA), to leverage public garden professionals, volunteers and visitors in the early detection of high-consequence

plant pests and pathogens. Gardens who participate in the Sentinel Plant Network have agreed to regularly monitor their collections for high-consequence pests and pathogens and submit suspect samples to their state's NPDN laboratory for diagnosis. Our aim is to provide training and early detection materials to improve the proportion of significant samples being sent

to our labs. "I was so glad to attend the SPN meeting in spite of the weather forecasts and airport delays. The meeting gave me a better understanding of the NPDN's role in the Sentinel Plant Network and showed me how

the NPDN National Repository can benefit from these collaborations," said Eileen Luke, director of Center for Environmental and Regulatory Information Systems (CERIS-NPDN's National Repository). "With the interactions between the NPDN and SPN, samples will be sent to the diagnostic labs which otherwise may not be sent and will contribute to the robustness of the repository data."

A fundamental objective of SPN has always been to encourage and promote relationship building not only with NPDN diagnosticians but with state and federal regulatory officials. With record participation from USDA-APHIS, this workshop was a great opportunity to meet, learn from and work alongside federal and state regulatory officials from both MA and NY. The northeast is home to two active Asian longhorned beetle (ALB) quarantines (MA and NY) and with the workshop taking place in Massachusetts, we seized the opportunity to learn more about ALB and the Massachusetts ALB program. Julie Coop, Massachusetts



photos © D. Clement, University of Maryland. Photo of Dave McCarthy, Cornell Univ.



Clockwise from top left. Participants on the pest walk. Dave Clement talks to the group. Golden canker on pagoda dogwood and a gypsy moth eggmass.

Department of Conservation and Recreation (DCR) Forester and ALB Supervisor and Tricia Sharp, Regulatory Supervisor ALB Eradication Program, USDA-APHIS-PPQ, spoke about their respective programs and how they are working together to eradicate ALB from MA. Their talks helped paint a picture of what it is like working in a state under federal quarantine. Ken Gooch, DCR Forest Health Program Supervisor for Massachusetts talked about the emerald ash borer and how they are managing the Massachusetts infestations.

This series of workshops is geared towards frontline horticulturists and plant healthcare professionals so most of the program was dedicated to updates and new resources on pests and pathogens. NPDN's Dave Clement and Mary Kay Malinoski, University of Maryland Extension, spoke about regionally significant threats and demonstrated their Mid-Atlantic Early Detection Network (MAEDN) app so tech savvy SPN members can report suspect pests and pathogens via smartphones and tablets.

Another record breaker was this particular scouting walk. Led by Dave and Mary Kay, with navigational help from Garden in the Woods' Director of Horticulture, Mark Richardson, this was SPN's first observational walk in snow. With winter storm Janis looming and a wind chill well below freezing, the scouting walk was shortened to an hour but was filled with great things to see like chestnut blight, beech bark disease and gypsy moth egg masses. In keeping with the theme of sharpening one's observation skills, Kevin



SPN managers Rachel McCarthy, NPDN (photo left) and Dan Stern, APGA, (photo right) on the pest walk.

© D. Clement, Univ. of Maryland

Freeman, Aerial Survey Supervisor, ALB Eradication Program, USDA-APHIS-PPQ, gave a very thorough presentation on ALB signs with special emphasis on how to distinguish them from other pests' signs. Kevin also showcased real wood samples of ALB signs on a variety of hosts as well as other forest pest damage. Awesome!

The SPN heads to the west coast for a workshop in Berkeley CA on February 25-26. If you are interested to attend this workshop please contact Rachel McCarthy at rachel.mccarthy@cornell.edu as soon as possible. ¿Habla usted español? The SPN will be hosting a workshop in Mexico this July for public gardens from Central America and the southern US. If you are interested to learn more about this unique opportunity please contact Rachel. Priority will be given to diagnosticians from southern states and those who speak Spanish. Don't be shy! 🍃

REGIONAL NEWS



GPDN 2014 Webinar Series
 Linnea Skoglund, Schutter Diagnostic Lab, Montana State University

The Great Plains Diagnostic Network is offering a webinar series again in 2014. Webinars are open to anyone who would like to attend and begin at 10 CT/9 MT. You will need a computer with an internet connection and speakers. To join go to <http://connect.ksre.ksu.edu/gpdnseminars>.

If you have any questions regarding this seminar series

or connecting, contact Linnea Skoglund (linnea.skoglund@montana.edu, 406-994-5150) or Sharon Dobesh (sdobesh@ksu.edu, 785-532-1340). All webinars are recorded and can be viewed later at www.gpdn.org along with those from 2008 through 2013. 🍃

DATE	SPEAKER	TITLE
2/5/14	Alison Robertson	Tips and Tricks for Diagnosing Goss's Wilt
2/12/14	Jim Jasinski	An Introduction to the Brown Marmorated Stink Bug
2/19/14	Sally Miller	International Plant Diagnostic Network
2/26/14	Alma Laney	Association and Detection of Rose Rosette Virus with an Old Disease
3/5/14	Nancy Gregory	Toward Single Scientific Names for Fungi and Oomycetes in Database Applications
3/12/14	Febina Mathew	Identification and Characterization of <i>Diaporthe</i> Species Infecting Sunflowers

UPCOMING EVENTS

Training/Workshops

May 2014

Bark and Ambrosia Beetle Academy

University of Florida

Gainesville, FL



September 29–October 3, 2014

The 19th Ornamental Workshop on Diseases and Insects

Hendersonville, NC

PHOTO OF THE MONTH

cinnabar moth

Tyria jacobaeae

Adult on tansy ragwort
(*Senecio jacobaea* L.)



Mark Schwarzlander, University of
Idaho, Bugwood.org

www.bugwood.org

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Rachel McCarthy, Editor
NEPDN, Training and Education Coordinator
Cornell University



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