Pacific Pest Detector News

A Quarterly Newsletter for First Detectors

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In This Issue

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https://www.wpdn.org/newsletters

Pests in Brief

Coconut rhinoceros beetle. When CRB invaded Guam in 2007, two successful biological control agents were applied: an *Oryctes* nudivirus to kill adult beetles and a *Metarhizium* fungus to kill both adults and larvae.

Neither biocontrol agent has stopped the severe damage caused by CRB on Guam, however. Not only do adult beetles test free of the virus, they are more damaging and have a different genotype from most other populations in the world. This new genotype, currently referred to as biotype Guam, is also present in Papua New Guinea, the Solomon Islands, and Hawaii.

This new CRB biotype poses a potential threat to the economy and daily lives of Pacific Islanders.

Phakopsora rust. This disease was reported on Oahu, Hawaii in August 2015. It causes premature leaf drop and damaged fruits on Tahitian gooseberry (*Phyllanthus acidus*). We are highlighting the disease because plants in this family (Phyllanthaceae) grow on most islands and may be susceptible.

Rapid ohi'a death. The fungus identified as causing the wilt and death of ohi'a trees in Hawaii is *Ceratocystis fimbriata*. It is considered a "species complex," consisting of several strains or types. These types may infect one host plant or several. Because of this variable nature and broad host range, it could pose a threat to agriculture and forests on most Pacific islands.

Courtesy J. B. Friday, University of Hawaii

NOT WANTED

Coconut Rhinoceros Beetle biotype Guam

(*Oryctes rhinoceros* biotype Guam)

A: Adult Courtesy of M. Schmaedick, American Samoa Community College **B. Larva**

A new biotype. The coconut rhinoceros beetle (*Oryctes rhinoceros*) invaded Guam in 2007 and defied containment and eradication efforts. These efforts included release of the *Oryctes* nudivirus that weakens and kills adults. Later testing showed that the nudivirus was not effective against the beetles on Guam and that they were a genetically different biotype. This biotype is more vigorous and destructive than the commonly occuring rhinoceros beetle. Recent scouting also noticed they were more likely to reproduce in the crowns of trees, making destroying breeding sites a less effective control.

Distribution. The rhinoceros beetle probably originated in Southeast Asia and was introduced into Samoa in 1911 on a shipment of rubber trees from Ceylon (Sri Lanka). Damage caused by this beetle is usually less severe than the Guam biotype and limited to the notching of leaves, a reduction in yield, and occasional death of young palms. It is found throughout tropical Asia and the Middle East, much of Oceania, and Mauritius and Reunion in the Indian Ocean. The newer biotype Guam has been identified in Guam (2007), Papua New Guinea (2009), and Hawaii (2014). It was recently (2015) reported in the Solomon Islands, but is thought to have been present since 2013. Palau has both biotypes.

Current detection and monitoring methods. If quarantine efforts fail, local inhabitants become the First Detectors. Once identified, traps are set to define the extent of the invasion followed by routine scouting for damaged palms, adult beetles, and larvae. Breeding sites (green waste, coconut logs, etc.) are destroyed or monitored. The fungus *Metarhizium anisopliae* may be introduced for biocontrol.

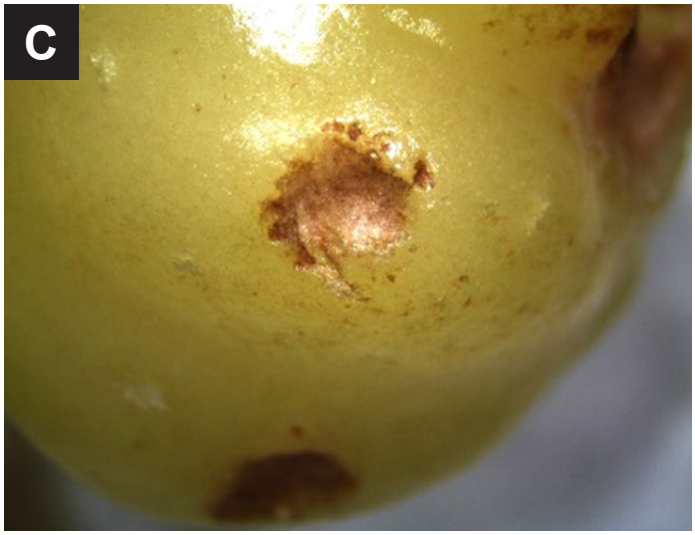
For more information:
SPC Alert: http://www.spc.int/lrd/plant-health-publications/doc_download/2374-ph-agalertno51
LRD-News: http://www.spc.int/lrd/lrd-publications/doc_download/2350-lrd-newsvol11-no1april15
IAAPS News: https://www.plantprotection.org/Portals/0/documents/Newsletters/2015/IAPPS%2011-2015.pdf

NOT WANTED

Phakopsora Rust

(*Phakopsora phyllanthi*)

Courtesy PPC, Hawaii Department of Agriculture



(A) Chlorotic rust spots on the upper leaf surface of *Phyllanthus acidus*. (B) Premature leaf drop caused by the fungus. (C) Rust spots on fruit. (D) Pustules of *Phakopsora phyllanthi* are produced on lower leaf surfaces.

Distribution. Asia, Caribbean, Central and South America; Reported in August 2015 on Oahu, Hawaii.

Hosts. *Phyllanthus* species reported to be susceptible include: *P. acidus*, *P. benguetensis*, *P. emblica*, *P. niruri*, and *P. phyllanthi*. Other plants in the family Phyllanthaceae grow on many Pacific islands and could be susceptible. For example: American Samoa, *Bischofia javanica*, *Flueggea flexuosa*; Guam, Saipan, *P. marianus*; Palau, Chuuk, Yap, *P. kanehirae*; Tonga, *P. amicorum*; Pohnpei, *P. cleistanthoides*.

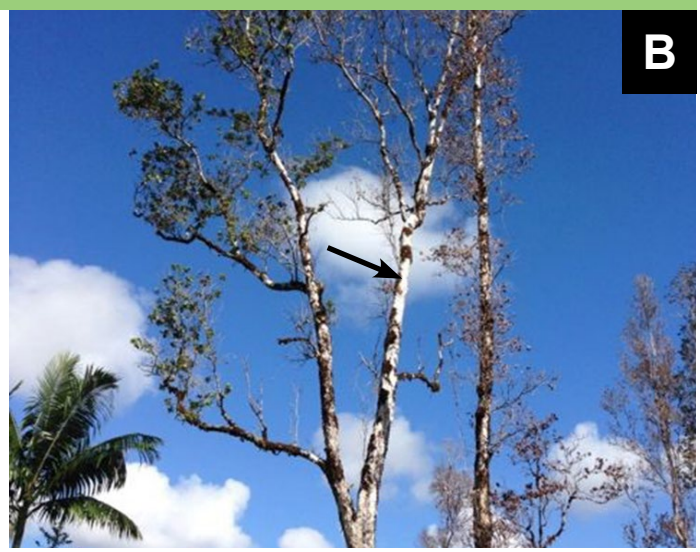
Impact. The family Phyllanthaceae may contain plants of importance to many island cultures or ecosystems. Their susceptibility to this fungus is unknown. Interest also is increasing for cultivation of *Phyllanthus* spp. for their edible fruits and for local medicinal uses.

For more information:

***Phyllanthus*, *Glochidion* in the Pacific:** http://phytokeys.pensoft.net/articles.php?id=1374

Hawaii pest advisory: http://hdoa.hawaii.gov/pi/files/2013/01/NPA-Phakopsora-phyllanthi-FINALversion.

NOT WANTED
Rapid Ohi'a Death
(*Ceratocystis fimbriata*)



Courtesy J. B. Friday, University of Hawaii Cooperative Extension Service

Courtesy J. B. Friday, University of Hawaii Cooperative Extension Service

This fungus usually enters plants through wounds, including those caused by wood-boring beetles, and through roots and root grafts. (A) Typical symptoms of crown dieback caused by *C. fimbriata*. Leaves usually wilt, discolor, and die quickly, but may remain on the tree for several weeks. (B) If an infection occurs on only one branch of a tree (arrow), that branch will show symptoms of the disease. (C) Crowns of dead ohi'a trees in the Puna and Hilo districts on the island of Hawaii (inset). (D) Stumps of ohi'a in the Puhimau thermal area on Hawaii island.

Hosts. Broad host range includes: cacao (*Theobroma cacao*), mango (*Mangifera indica*), sweet potato (*Ipomoea batatas*), coffee (*Coffea* spp.), *Eucalyptus* spp., *Citrus* spp, sunn hemp (*Crotalaria juncea*), rubber (*Hevea brasiliensis*), taro (*Colocasia esculenta*), dasheen (*Xanthosoma* sp.), giant taro (*Alocasia* sp.), arrowhead vine (*Syngonium* spp.), African tulip tree (*Spathodea campanulata*), *Acacia* spp., coral tree (*Erythrina* sp.), cassava (*Manihot esculenta*), and ohi'a (*Metrosideros polymorpha*).

Who to contact: Diagnostic Clinics and Diagnosticians — Page 7

Courtesy J. B. Friday, University of Hawaii Cooperative Extension Service

Courtesy J. B. Friday, University of Hawaii CES

Courtesy S. Nelson, University of Hawaii

(A, B, C) A disease of the water-conducting cells, Ceratocystis wilt turns the xylem dark reddish brown to black (arrows). The fungus clogs and destroys the xylem causing wilt and death of all plant parts above the infection site. (D) Rot of sweet potato tubers caused by *C. fimbriata*.

Note. *Ceratocystis fimbriata* is not a single fungus, but a "species complex." Its various forms attack a wide range of woody and herbaceous hosts in different geographic locations. Therefore, be aware that any disease with these symptoms may be caused by this fungus. It also causes black, sunken spots on sweet potato tubers and taro corms.

Origin & Distribution. Widespread on a number of hosts. Locally reported from Hawaii (arrowhead vine, taro, ohi'a), Australia (arrowhead vine), New Zealand (sweet potato), Fiji (dasheen), Papua New Guinea (sweet potato, rubber), Independent Samoa (taro).

Impact. (Economic) Wilt and death of woody plants: 50% of cacao plantings affected in Central and South America; severe losses on coffee plantations and citrus orchards in Columbia; major importance in mango and *Eucalyptus* plantations. (**Environmental**) Native stands of host trees are not usually damaged as severely as planted species (except for ohi'a in Hawaii). (**Social**) Species of the plane tree (*Platanus*) are popular street trees in Europe and the eastern USA and damage caused by this fungus has reduced the aesthetics of towns and cities.

For more information:
Ceratocystis: http://www.public.iastate.edu/~tcharrin/FimbDis.html
Sampling for Ceratocystis (video): https://www.youtube.com/watch?v=DKlRoisstD0

Pests of Concern

ARTHROPODS

Africanized honey bee (*Apis mellifera scutellata*) http://www.invasivespeciesinfo.gov/animals/afrhonbee.shtml

Asian citrus psyllid (*Diaphorina citri*) http://cisr.ucr.edu/asian_citrus_psyllid.html

coconut rhinoceros beetle (*Oryctes rhinoceros*) http://www.ctahr.hawaii.edu/adap/ASCC_LandGrant/Dr_Brooks/BrochureNo8.pdf **Oahu biweekly updates:** https://gallery.mailchimp.com/9a2eda30317f9dbc89fb881b9/files/CRB_2_13_2015.pdf

little fire ant (*Wasmannia auropunctata*) http://flrec.ifas.ufl.edu/entomo/ants/pest%20ants%20of%20fl/little_fire_ant.htm **Oahu biweekly updates:** https://gallery.mailchimp.com/9a2eda30317f9dbc89fb881b9/files/LFA_2_9_15_EM.pdf

naio thrips (*Klambothrips myopori*) http://cisr.ucr.edu/pdf/myoporum_thrips_hawaii.pdf

red imported fire ant (*Solenopsis invicta*) http://entnemdept.ufl.edu/creatures/urban/ants/red_imported_fire_ant.htm

red palm weevil (*Rhynchophorus ferrugineus*) http://www.aphis.usda.gov/import_export/plants/manuals/emergency/downloads/nprg-redpalmweevil.pdf

silverleaf whitefly (*Bemisia argentifolii*) http://www.entnemdept.ufl.edu/creatures/veg/leaf/silverleaf_whitefly.htm

varroa mite (*Varroa destructor*) http://entnemdept.ufl.edu/creatures/misc/bees/varroa_mite.htm

DISEASES

banana Xanthomonas wilt (*X. c.* pv. *musacearum*) http://apsjournals.apsnet.org/doi/pdf/10.1094/PDIS-93-5-0440

citrus canker (*Xanthomonas axonopodis*) http://www.apsnet.org/publications/imageresources/Pages/IW00011a.aspx

citrus greening (*Candidatus* Liberibacter asiaticus) http://www.crec.ifas.ufl.edu/extension/greening/index.shtml

coffee rust (*Hemileia vastatrix*) http://www.apsnet.org/edcenter/intropp/lessons/fungi/Basidiomycetes/Pages/CoffeeRust.aspx

downy mildews of corn http://maizedoctor.cimmyt.org/index.php?id=233&option=com_content&task=view

guava rust (*Puccinia psidii*) http://www.ctahr.hawaii.edu/oc/freepubs/pdf/PD-38.pdf

iris yellow spot http://aces.nmsu.edu/pubs/_h/H-255.pdf

lethal yellowing of palm (*Candidatus* Phytoplasma palmae) http://edis.ifas.ufl.edu/pp146

moko disease of banana (*Ralstonia solanacearum*) http://www.promusa.org/tiki-custom_home.php

Panama disease of banana TR 4 (*Fusarium oxysporum* f.sp. *cubense*, tropical race 4) http://www.agric.wa.gov.au/objtwr/imported_assets/content/pw/ph/dis/fn/fs01200.pdf

papaya ringspot http://www.apsnet.org/publications/apsnetfeatures/Documents/2004/ControllingPapayaRingspotVirus.pdf

sudden oak death (*Phytophthora ramorum*) http://www.suddenoakdeath.org/

tomato yellow leaf curl http://www.ctahr.hawaii.edu/oc/freepubs/pdf/PD-70.pdf

PLANTS

cogongrass (*Imperata cylindrica*) http://www.issg.org/database/species/ecology.asp?si=16&fr=1&sts=sss&lang=EN

fireweed (*Senecio madagascariensis*) http://www.hawaiiinvasivespecies.org/pests/fireweed.html

fountain grass (*Pennisetum setaceum*) http://www.nps.gov/plants/alien/fact/pdf/pese1.pdf

miconia (*Miconia calvescens*) http://www.hawaiiinvasivespecies.org/pests/miconia.html

Siam weed (*Chromolaena odorata*) http://plants.usda.gov/java/profile?symbol=CHOD

Pests listed in **'BOLD'** are not, to our knowledge, present in the American Affiliated Pacific Islands.

Websites

PEST INFORMATION

American Samoa: http://www2.ctahr.hawaii.edu/adap2/ascc_landgrant/technical_papers.asp#brochures

Bugwood (images): http://bugwood.org/

Crop Knowledge Master: http://www.extento.hawaii.edu/kbase/Crop/crop.htm

Hawaii Invasive Species Council: http://dlnr.hawaii.gov/hisc/

Plant Pono: http://www.plantpono.org/

Hawaii Department of Agriculture (new pest advisories): http://hawaii.gov/hdoa/pi/ppc/new-pest-advisories

Hawaiian Ecosystems at Risk (Pacific invasive species): http://www.hear.org/

Master Gardeners (national pest list): http://wiki.bugwood.org/npdn-mg-training

Western Micronesia Regional Invasive Species Council: http://guaminsects.net/gisac/index.php?title-Main_Page

DIAGNOSTIC CLINICS AND DIAGNOSTICIANS

American Samoa Community College, Land Grant: Mark Schmaedick (insects) m.schmaedick@amsamoa.edu (684) 699-1575; Ndeme Atibalentja (plant diseases) n.atibalentja@amsamoa.edu

University of Guam: Robert Schlub (plant diseases) rlschlub@uguam.uog.edu (671) 735-2089; Aubrey Moore (insects) amoore@uguam.uog.edu (671) 735-2141

Hawaii Department of Agriculture: Janis Matsunaga (insects) Janis.N.Matsunaga@hawaii.gov (808) 973-9536; Mann Ko (plant diseases) Mann.P.Ko@hawaii.gov (808) 973-9546

University of Hawaii at Manoa (diagnostic clinic): Honolulu adsc@ctahr.hawaii.edu, (808) 956-6706 ; Komohana Research Extension Center, Hilo komohana@ctahr.hawaii.edu, (808) 981-5199

ORGANIZATIONS

Guam Department of Agriculture: http://www.nasda.org/cms/7195/8617/8761.aspx

National Plant Diagnostic Network http://www.npdn.org/

Western Plant Diagnostic Network https://www.wpdn.org/index.php

Western Pacific Tropical Research Center (Guam) http://www.wptrc.org/

EDUCATION AND TRAINING

Extension Disaster Education Network http://eden.lsu.edu/Pages/default.aspx

NPDN First Detector Training Sites: http://www.npdn.org/first_detector

NPDN First Detector Newsletter: http://www.npdn.org/newsletter

Protect U.S. invasive species network http://www.protectingusnow.com/

WPDN Homepage: https://www.wpdn.org/index.php

WPDN and Pacific First Detector Newsletters: https://www.wpdn.org/newsletters

IF A LINK IS INOPERABLE, TRY COPYING AND PASTING IT DIRECTLY INTO YOUR BROWSER