

Working with Regulated Pests in Cooperative Extension

Spring 2021



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Presenters

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- Beatriz Nobua-Behrman, Urban Forestry and Natural Resources Advisor, Orange and Los Angeles Counties
- Lucia Varela, IPM Advisor Emerita, Sonoma, Napa, Mendocino and Lake Counties
- Moderator-
 - Jim Farrar, Strategic Initiative Leader for Endemic and Invasive Pests and Diseases



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Outline

- Outcome: Learn good practices for remaining a trusted resource for science-based information during invasive pest outbreak.
- Case Study 1: Cucumber Green Mottle Mosaic Virus
- Case Study 2: Invasive Shothole Borers / Fusarium Dieback
- Case Study 3: European Grapevine Moth
- Common Themes in Case Studies
- Question and Answer

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Cucumber Green Mottle Mosaic Virus (CGMMV)

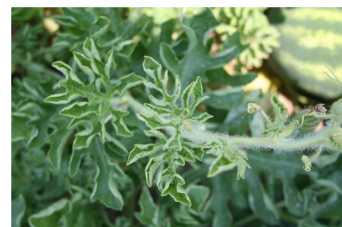
- Seedborne and mechanically transmissible
- Established in some countries where cucurbit seed is grown
- International seed testing protocol
- First U.S. report was in cucurbit seed field in Sacramento Valley in 2013
- California A-rated pest as of July 2014
- Federal Actionable Pathogen: “transient, actionable, and under eradication” in the U.S.
- Value of CA cucurbit crops ~\$500 M in 2018



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Cucumber Green Mottle Mosaic Virus (CGMMV)

- Mid-July 2014: found in San Joaquin County watermelon field during a routine farm call
- By August, additional four fields found, about ~230 acres subject to “abatement” notices
- \$ X,000,000 loss for grower
- Later in season found in other San Joaquin Valley counties
- Found in other CA fields in future years, but unrelated “reintroductions” via seed (still considered “not established” in CA)



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Knowledge gaps we faced – research needs

Immediate (to prevent spread out of first fields)

- Field equipment sanitation methods

Short-term (to get fields released from 2-year hold)

- Infectivity of crop debris and soil from infested field?

Medium- and long-term (to reduce risk of future outbreaks)

- Seed transmission rates?
- Development of diagnostic tools (antibody-based)
- How are outbreaks related? Where is virus coming from?

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Research on virus survival in soil & crop debris

- Soil sampling
- 42 sentinel host plant plots
- These became plots from which both “regulatory samples” and research samples were taken
- Not at all like a typical research project!

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asta
first-the seed™

A Seed Production and Commercial Growers Guide

This information is provided to growers, commercial and seed crop researchers with information about CGMMV and to provide recommendations for reducing the risk of occurrence of the disease in their crop production. Contributions to the fact sheet include research and testing by CIMMYT, supported and funded by the Mexican Seed Law, Amendment (2012), and was included as a response to the 2011 occurrence of the disease in California. This is the first published edition of CIMMYT in the United States. © 2014, AgriSource.

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National Plant Disease Recovery System

Plant Diseases That Threaten U.S. Agriculture

Identified and Prepared For Under the National Plant Disease Recovery System

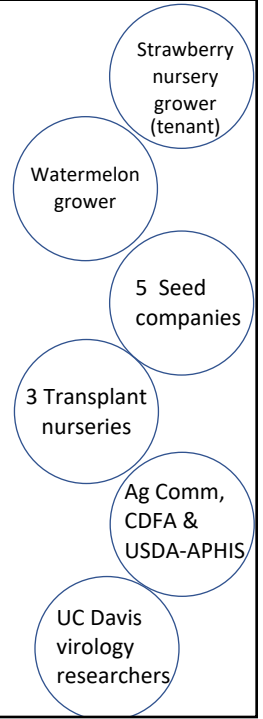
The National Plant Disease Recovery System (NPDRS) is called for in Homeland Security Presidential Directive Number 9 (HSPD-9) which was issued in February of 2004. The purpose of the NPDRS is to ensure that the tools, infrastructure, communication networks, and capacity required to mitigate the impact of high consequence plant disease outbreaks are such that a reasonable level of crop production is maintained in the U.S.

Each recovery plan listed below is intended to provide a brief primer on a threatening disease, assess the status of critical recovery components, and identify disease management strategies including research, extension, and education priorities. These recovery plans are not intended to be stand-alone documents that address all of the many and varied aspects of a plant disease outbreak and all of the decisions that must be made and actions taken to achieve effective response and recovery. They are, however, documents that will help USDA and others

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Roles for extension?

- Supporting diagnostics as needed
- Providing research-based information and bridging communication gaps for all parties involved
- When feasible, conducting or facilitating research to fill the information gaps
- Working to help mitigate growers' future losses when possible
- Encouraging reporting for the sake of the industry as a whole



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Invasive shot hole borers – Fusarium dieback in urban trees


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Invasive Shot Hole Borers-Fusarium dieback

Insect-disease complex:


Insect vector: ISHB



Euwallacea fornicatus
(polyphagous shot hole borer)


Euwallacea kuroshio
(Kuroshio shot hole borer)

Fungal Disease: Fusarium dieback



Fusarium euwallaceae

Fusarium kuroshium




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65 species of reproductive hosts in California

Most susceptible hosts to ISHB-FD:

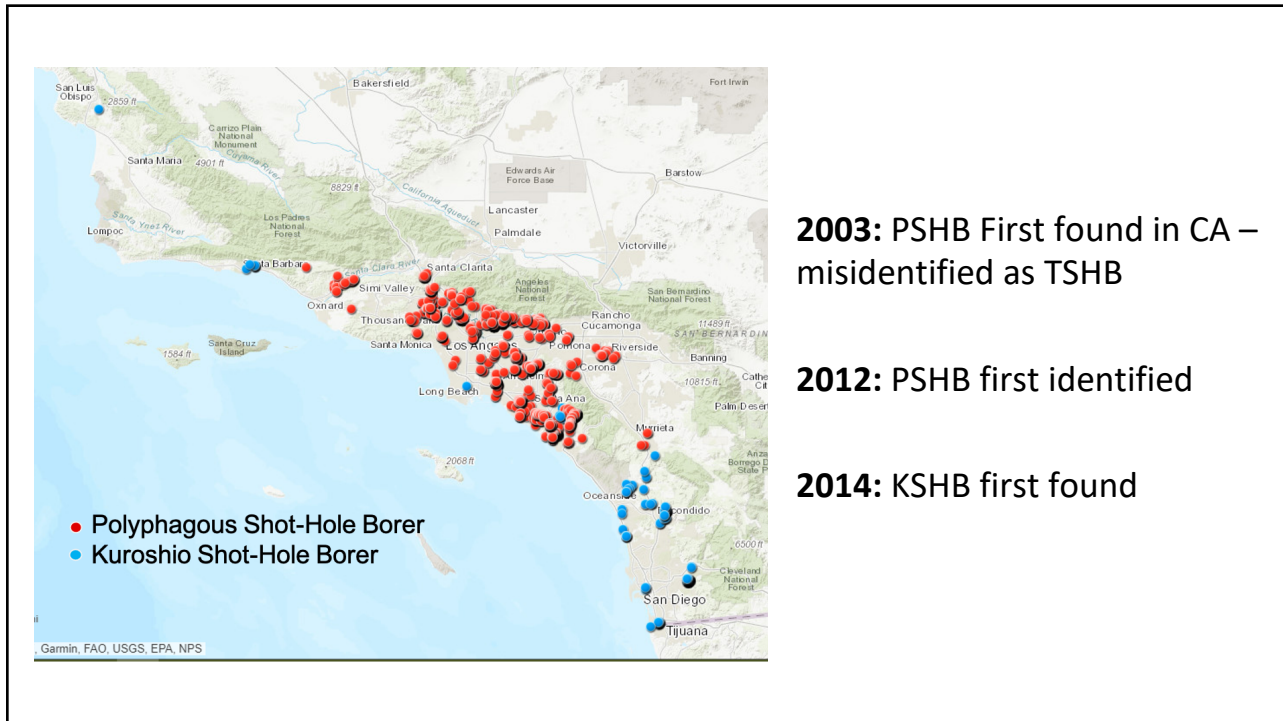
- Acer buergerianum* - Trident maple
- Acer macrophyllum* - Big leaf maple*
- Acer negundo* - Box elder*
- Parkinsonia aculeata* - Palo verde
- Platanus racemosa* - California sycamore*
- Platanus x hispanica* - London plane
- Populus fremontii* - Fremont cottonwood*
- Populus nigra* - Black poplar*
- Populus trichocarpa* - Black cottonwood*
- Quercus lobata* - Valley oak*
- Quercus robur* - English oak
- Ricinus communis* - Castorbean
- Salix gooddingii* - Black willow*
- Salix laevigata* - Red willow*
- Salix lasiolepis* - Arroyo willow*



* California natives

Find full list of reproductive hosts in California: www.ishb.org

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Invasive shot-hole borers

- Widespread in Southern California
- B-rated pest: eradication, containment, and control actions are **at the discretion of the individual county agricultural commissioner**

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The problem of urban tree pests

- Not a big threat to agriculture or human health
- Usually go unnoticed until widely spread and damage is obvious – B-rated
- Lack of coordinated statewide response
- We depend on county-level organization, usually working with small pots of money from many sources



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- Efficient local responses depend on cooperation between agencies...
- ... but a pest outbreak is not the time to start exchanging business cards
- Stakeholders should already have a working relationship before an outbreak happens!

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What can we do?

- Promote the creation of a local Emerging Tree Pests task Force
- Collaborate to identify and invite stakeholders
- Be a liaison between agencies and stakeholders
- Be the source of science-based information
 - Extend information about new research findings
 - Provide management recommendations for each particular case
 - Remember to bring in other UC experts!



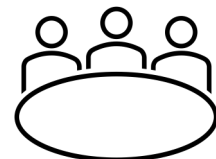
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Example: Creation of the Ventura County Emerging Tree Pests and Green Waste Stakeholder Group

- Lead by Ventura Co. Agricultural Commissioner

UC ANR extension professionals' role:

- Worked with the Ag. Com.'s office to identify and invite local stakeholders
94 representatives of different stakeholder groups (including growers, arborists, municipal, county, state, and federal agencies, non-government conservation and land trust groups, and academia)
- Continuously provides technical advice on ISHB detection and management
- Collaborates on outreach programs to create awareness among municipalities, homeowners, and tree care professionals



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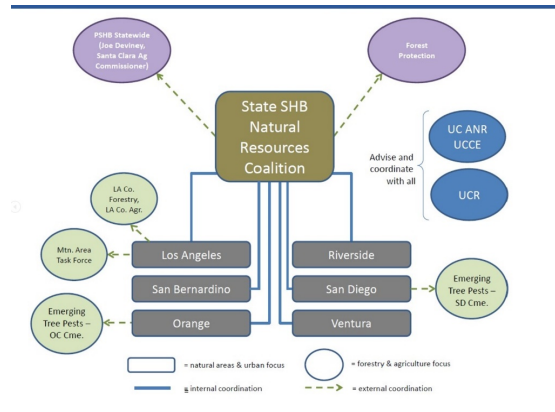
Statewide response can happen with B-rated pests...
 ... but they take more effort and more time

AB 2470:

- Codified the **Invasive Species Council of California**
- designated \$5 million to develop a plan to control ISHB-FD

CalFIRE:

- \$5 million to complement early detection and rapid response efforts



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Role of UC ANR extension in statewide response

- Development of statewide action plan through key participation in the committees that developed the ISHB statewide action plan

Action plan implementation

- Conducting high-priority research
- Coordinating trapping efforts (ISHB statewide trapping and surveying coordinator – UC IPM)
- Coordinating outreach efforts (ISHB statewide communications coordinator -UC IPM)
- Collaborating with local agencies in the development and implementation of early detection and rapid response plans
- Implementing trapping/surveying programs when counties couldn't take the task

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Curious about ISHB-FD?

- For more information www.ishb.org
- ISHB statewide action plan: <http://www.iscc.ca.gov/ishb.html>



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Case Study 3

- Lucia Varela, IPM Advisor Emerita, Sonoma, Napa, Mendocino and Lake Counties
- European Grapevine Moth in Grapes

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Should you get involved

- How important is it to your industry and how full is your plate?
- Is there industry support?
- If the pest affects the public, is there a PM tool that is least disruptive?
 - Is there public support, or at least no opposition?
 - It is important to inform the public at the beginning
- Are resources available for the program?

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What strategy is feasible

- Eradication
 - Case: European grapevine moth
 - Strategy based on two pest management approaches: a) mating disruption, b) insecticide treatments in areas 200 m from a find with organic insecticides available
- Containment
 - Case: Vine mealybug
 - Strategy: stop the spread through sanitation measures and communication via neighborhood groups
 - Buys time for research and development of an integrated pest management program

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Evaluate the program periodically

- Is the Pest Management strategy working?
- Is the industry behind the effort, is there public opposition?
- Is the population not substantially more widespread?
- Do control methods remain available for use by the program?

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Information on new pest

- Literature review
 - Depending on question – you will need to access primary sources
 - Older information may be in the language of the country
- Your international connections are priceless
 - For their expertise managing the pest
 - For access to literature
 - To critique ideas and suggest avenues of effort
 - To visit their areas for your education
- Professional Network
 - UC IPM, UC Specialists and Faculty, USDA ARS, USDA Aphis scientist, etc.

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Communication

- Among agencies and colleagues
 - Through:
 - APHIS Technical Workgroup
 - CDFA weekly calls
 - Communication with local Ag.Com. Personnel

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Communication

- With the industry and persons concerned
 - Growers, pest control practitioners, haulers, winery personnel, hobbyist wine makers, media
- Keep message simple and consistent across all agencies
- If possible, tailor the length and message to the particular audience:
 - Pest alerts, newsletters, webpages, talks
 - Repeat, repeat, repeat the message in as many venues as you can master. You should not be surprised if, after two years into the program, you encounter clientele that are clueless.

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Prevention

- How was the pest introduced?
 - In the case of European grapevine moth, we do not know
 - Thus, reminding clientele of the perils of bringing used machinery or plant material from outside the area, is the only tool available.
- Support of pest identification (personnel and laboratories) is critical
- Support of surveyance at federal, state and local levels
 - Advocate for pest management districts or other partnerships to set aside resources for surveyance
- Support of research on possible invasive pests

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Interactions between agency cultures

- Government Agencies (regulators) versus UCCE (educators)
 - Showing up to communication events is 90% of the job
 - Choose carefully whom to contact when UC has a difference of opinion

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Common Themes of Good Practices

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Questions

Please type questions in Q&A in zoom

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