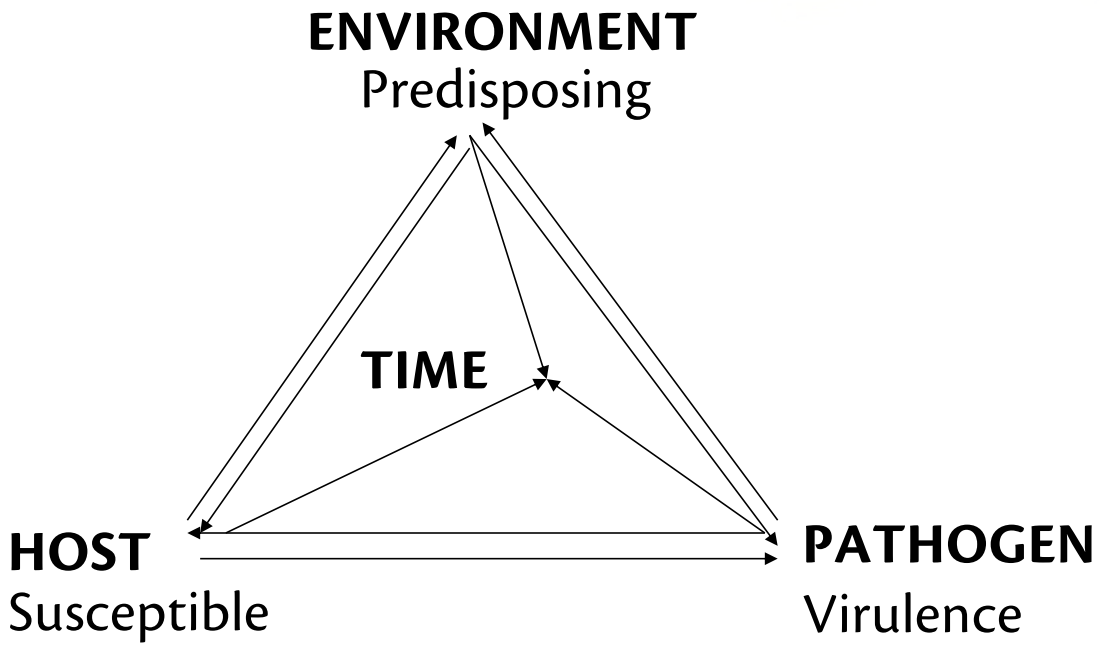
Avocado Cankers And Management

Avocado Disease in California

- Minor Diseases (Unless they happen to be in your grove!)
- The Major Disease: Avocado Root Rot

Disease Tetrahedron

- Biotic
- (Abiotic)



Disease/Disorder/Damage

ABIOTIC – environmental factors that set up a plant for disease

- heavy crop load
- *salinity – specific (Cl, Na, B) and total*
- *water – too much, too little, frequency*
- freeze
- grafting
- pruning
- insect attack
- sunburn

Fire Damage

- heat causes sap to burst through bark

Fire and Sun Damage

- Fire exposed trunk to sun
- Often it's sun that destroy the tree

Sunburn damage that is healing

- Notice the fresh tissue along the margins of the wound.

Tractor Blight

- White stuff is the sap that is beginning the healing

Woody Woodflicker

Woodpecker damage
Healed over

Kid damage is common

Quiz #1

Disease can be caused by:

- Primary pathogen – kills outright - Armillaria
- Secondary pathogen – plant can be turned around – many tree diseases

Chronic – can live with it – not in the best of health, but survives (Root Rot)
Catastrophic – rapid collapse of plant – boom, it's gone (Verticillium)

If the canopy is thinning, with dieback and staghorning
This is an ongoing problem

Avocado Root Rot is the most common disease
Occasionally aerial cankers, more commonly canopy collapse

Trunk Cankers are NOT associated with rapid collapse.
Cankers are chronic, longer term symptoms (usually).

Avocado Black Streak

- All Guatemalan varieties are susceptible (Hass, Reed, Nabal)
- Only found in California
- Symptoms: canker exuding white powder (sugar) on trunk and main branches

Avocado Black Streak

- Beneath powder are shallow reddish brown lesions that rarely extend into cambium
- Trees rarely die
- Other symptoms: chlorosis, early bloom, branch die-back, leaf blotching, zinc deficiency, bunchy growth, rapid death of new foliage

Avocado Black Streak

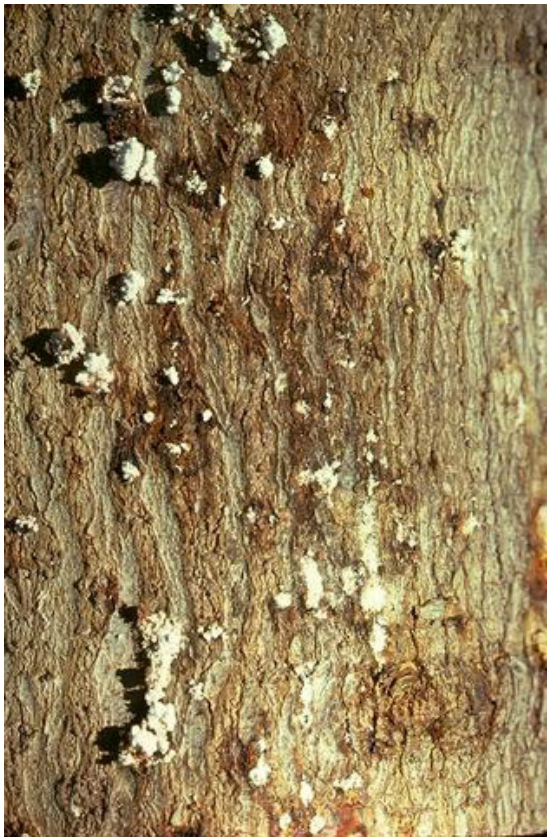
- Disease seems to be brought on by prolonged periods of environmental or cultural stress – salinity, drought, irrigation practices
- Once the stress has been identified and corrected, tree recovers
- Exact cause of disease: unknown but now thought to be related to Botryosphaerias
- Fix irrigation practices and tree recovers

Quiz #2

Stem and Leaf Blight
"Salt & Pepper Syndrome"
Dothiorella Canker

- Indicates underwatering
- Symptoms show up a few days after a heat spell
- Can kill young trees
- Cut out dead material, into fresh green wood.

Botryosphaeria Canker



- Cause: fungus *many species,* same fungus that causes fruit rot. Was Called Dothiorella canker
- Symptoms: white powder that exudes from the bark and cracking and shedding of the outer bark
- Symptoms disappear after problem corrected

Botryosphaeria Canker

- Disease favored by water stress
- Guatemalan varieties are most susceptible
- Most pronounced at end of irrigation line, top of hill, during droughts
- Correct irrigation schedule

Avocado Bacterial Canker

Xanthomonas campestris

- Water/Salt related stress
- Can often be corrected by simply correcting irrigation distribution
- Pocket of fluid builds up under the white exudate.
- When dried up there is a little flap of bark left.

The Big Bad B's

- Black Streak
- Bot Canker
- Bacterial Canker

- Disease organisms are everywhere looking for a water/salt stressed tree
- Fix water which fixes stress and reduces disease incidence

Abiotic or Biotic?

Quiz #3

Trunk Canker caused by *Phytophthora mengei (citricola)*

- Second most important disease in coastal CA
- Fungus has a wide host range: walnut, cherry, cherimoya, fir
- Occurs on the base of the trunk, usually lower than Bot Cankers
- Also called Collar or Crown Rot

Trunk Canker caused by *Phytophthora mengei (citricola)*

- Red resinous exudation, when dried will turn into a white crystalline deposit
- Beneath the exudation, (when cut with a knife) lesion will be orange-tan to brown
- Fungus will grow around the tree in the phloem and cambium and will ring-bark the tree
- Tree death can be very slow (years)
- Phos acid trunk sprays frequently corrects

Also called Collar Rot, Crown Rot, Citricola

- Canopy is full
- Leaves are normal sized, yellow sometimes
- Zinc deficiency occasionally
- Some leaf litter (very little w/ Root Rot)
- Roots – fine roots are normal (Not for RR)
- Digging around trunk, near soil line can often find cankers

To distinguish from Big Bad B's:

- Cankers are low and move around trunk, north side, wetted side

Sprinkler hitting trunk

North side, dew

Prunings stacked against trunk

Where water accumulates

Even if it is high DU, if it hits the trunk,

you are sunk.

Fruit Rot

Collar Rot is a fungus/brown algae
A Phyto-phthora,
and responds to phosphonates.
Like Root Rot does

- Best to get material on the canker
- Frequent treatments are best

Other Chemical Controls for Crown/Collar/Trunk Rot

Systemic fungicides

Metalaxyl (MetaStar2E, MetaStar4S}

- Metalaxyl resistance is a major concern in some areas

Mefenoxam (Ridomil Gold SL, Ultra Flourish)

Orondis (Oxathiapiprolin)

- may become available in the next year

In the past, common to see copper paints used. It is not systemic.
Phytophthora is systemic.

Quiz #4

Pest/Disease Complex w/ Cankers

Fusarium Dieback/Invasive Shot Hole Borer

- Pest/Disease Complex
- Slow dieback of canopy

Soon to be covered by Akif Eskalen

Polyphagous/Kuroshio borer

ISHB/Fusarium Dieback: Linked Life Cycles

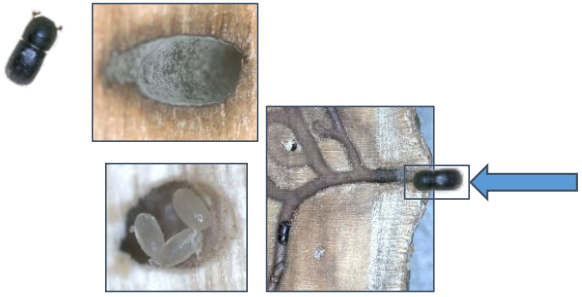
Developing larvae feed on the fungus in the gallery. Young adults mate with siblings.

Fungus continues to colonize the wood beyond the gallery wall.

Fungus causes branch dieback and tree mortality.

When the host dies, young adults leave the host to find a new host.

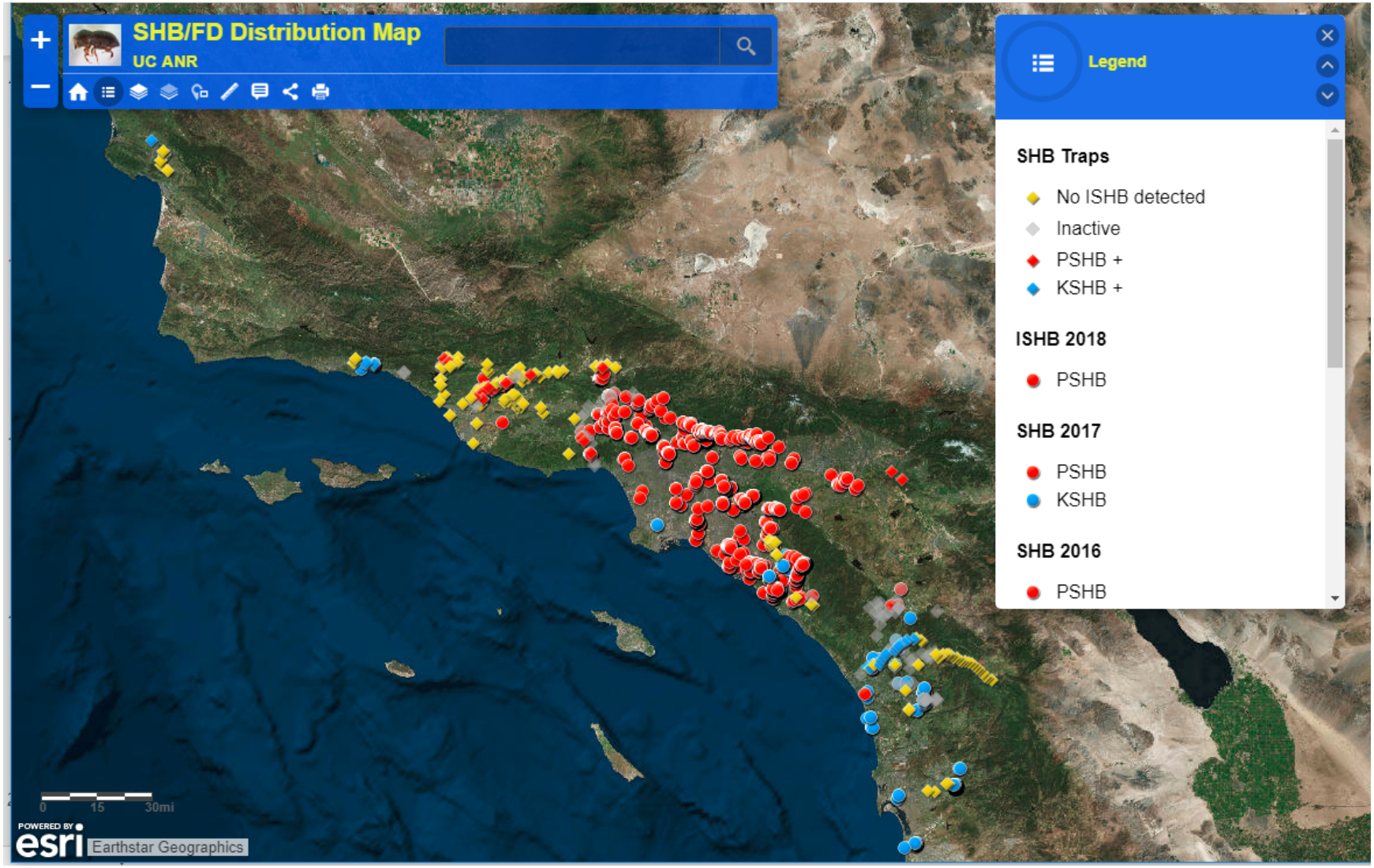
Female beetle attacks healthy host tree



Females make galleries in the wood, inoculate with fungus and lay eggs.

In Avocado, attack is typically in branches and not trunk.

From: Eskalen Lab


SHB/FD Distribution Map
UC ANR
Legend
SHB Traps
No ISHB detected
Inactive
PSHB +
KSHB +
ISHB 2018
PSHB
SHB 2017
PSHB
KSHB
SHB 2016
PSHB
0
15
30mi
POWERED BY esri
Earthstar Geographics

Avocado Cankers and Wounds,
as we know them now, are not
Primary, Catastrophic Diseases

In general, if situation is corrected
the tree cures the canker.

An Ecological Disaster Coming our Way

Laurel Wilt Disease

6 months from infection to collapse

Symptoms

Sectorial - common

Typical symptoms

Ambrosia beetle symptoms

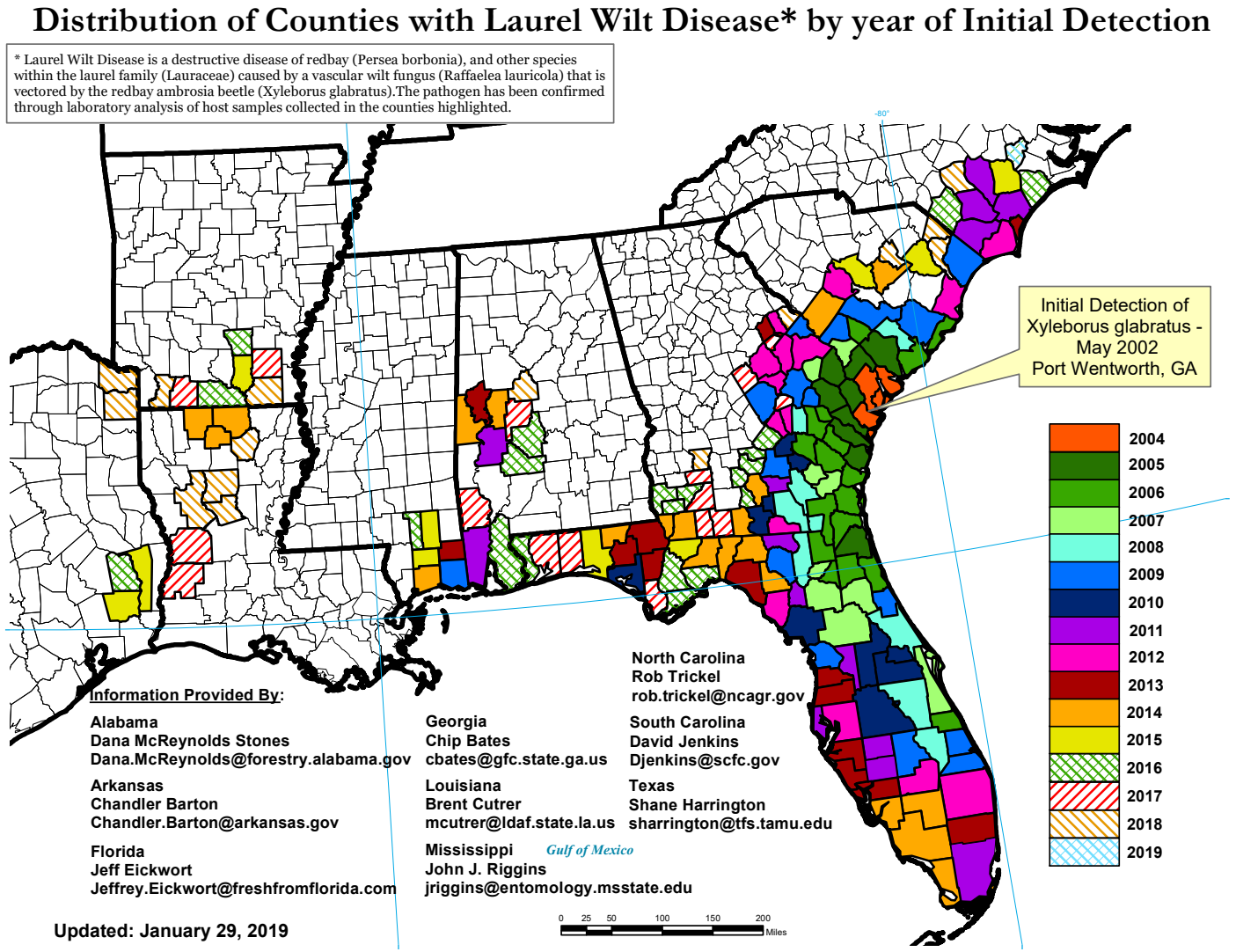
Photo credit: D. Carrillo, UF/IFAS TREC

Sawdust

Boring - galleries

Gallery intensity

LW has been detected in 11 southern states



University of California
UC Ag Experts Talk

Learn more about

Laurel Wilt Disease

by Dr. Monique Rivera (March 20, 2019)

https://ucanr.edu/sites/ucexpertstalk/

The End - Finis

Quiz #5