

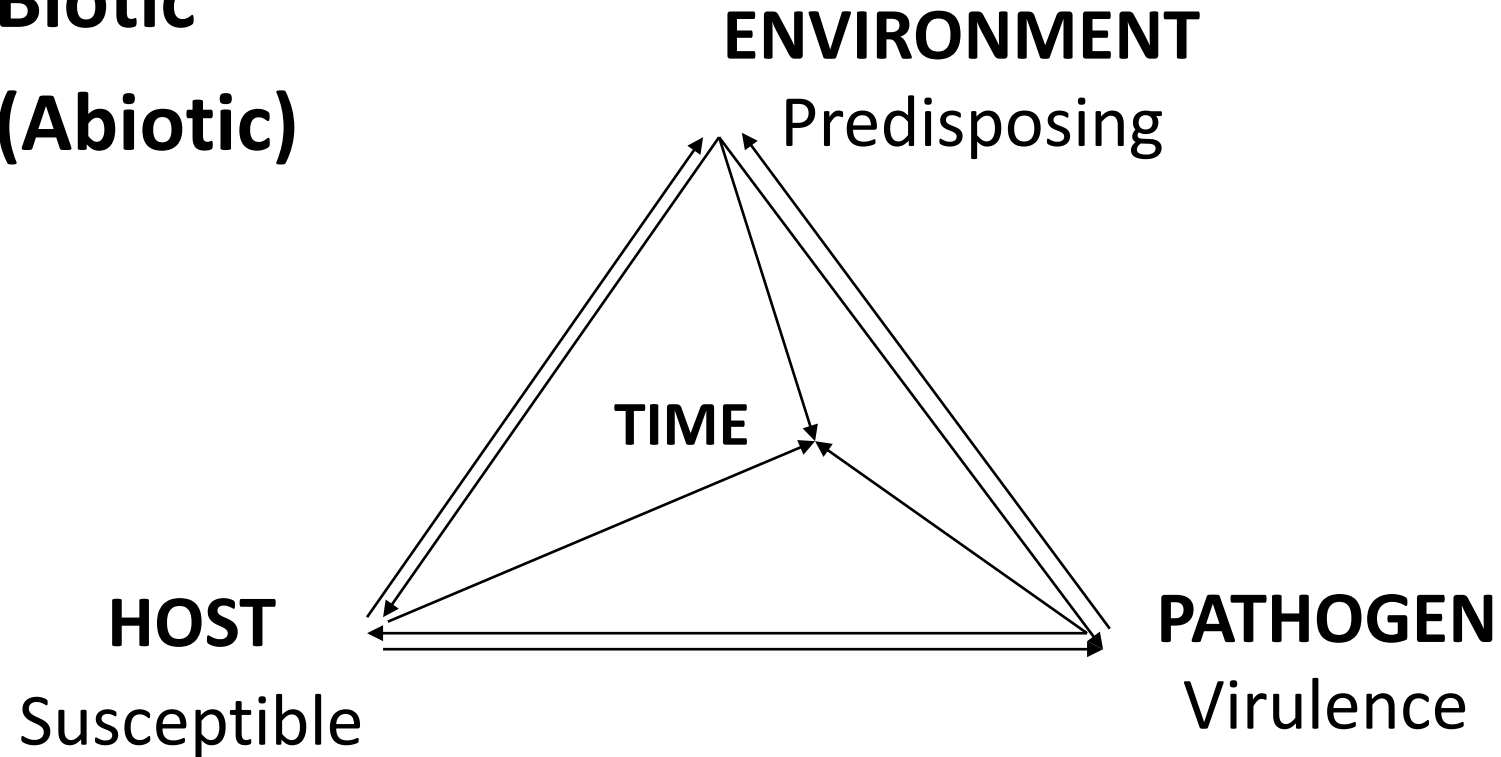


# Citrus Disease ID and Control

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# Disease

- Biotic
- (Abiotic)



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

/heat wave

/fire

/tractor blight

Disease can be caused by:

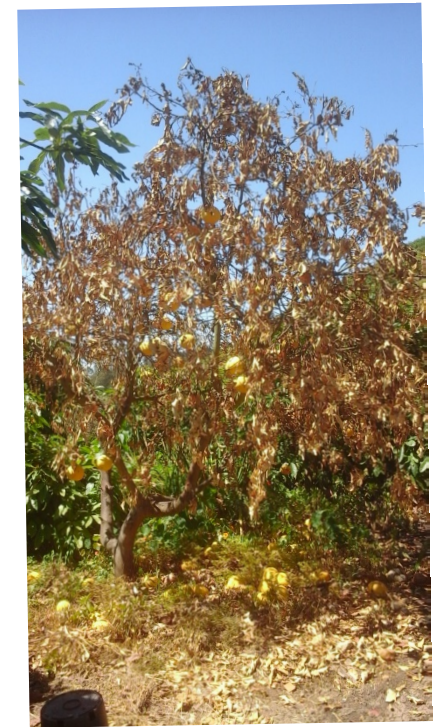
Primary pathogen – kills outright, no hope of saving

Secondary pathogen – plant can be turned around given time and money

In a given time frame

Chronic – can live with it

Catastrophic – rapid collapse of plant





Drought/salt damage leads to:

toxicity

deficiency

disease

death

pests

heat stress

tree growth

Often difficult to  
distinguish between  
the two and Disease

# Drought can lead to nutrient deficiencies



nitrogen

potassium



No amount of fertilizer is going to correct it because it takes water to move nutrient into plant



wilting



asphyxiation



root rot

# Common Water Problems



tip burn



leaf loss



sunburn

# Most Obvious Problems



endoxerosis



Rind stain

Sometimes damage is in fruit



## Navel Orange Split Wet/Dry/Wet/Split

All water management





Leaf blight



Stem blight



Leaf clearing  
'Star Ruby'



Bot gummosis

**More water stress**





Citrus Blights  
Botryosphaerias (Dothiorella)



# When it goes to the fruit, its really a problem



## Botryosphaeria that has gone from leaves to fruit



These are usually secondary issues (pathogens), usually chronic  
Growers only recognize the problem after it has been a problem  
for a while. Time





Hyphoderma sambuci  
pink rot, old trees,  
don't prune when wet  
Trichoderma – Plant Shield





Root Rot



Crown rot - Gummosis

## Phytophthora Diseases



Brown rot





But these are often diseases that are secondary pathogens, that if conditions are corrected and some other intervention can often be corrected.



# Fungicide vs Fungistat



Phosphite/Phosphonate/Phosphorous Acid  
Can be very effective at low concentrations

Resistance Issues with fungicides  
oxathiopiprolin – Orondis/mefenoxam – Ridomil Gold



Phytophthoras are really secondary pathogens

Need to Correct the Water Problem  
first for this to work!!!!!!!!!!!!







# Armillaria – Oak Root Fungus Affects Many Many Tree species



Expose Roots to Drying Air

Oak Root is close to a Primary Pathogen  
Hard to turn around – no chemical treatments







Dry Root Rot – rapid collapse





Combination of Problems:  
Stress

Wound – weeding, gophers,  
mice, kids

Fusarium fungus

Primary Pathogen –  
remove tree



Huang  
Long  
Bing



Yellow  
Shoot/Dragon  
Disease



Primary Pathogen





50% acreage lost – Florida  
California is now the largest  
\$ citrus producer





**Healthy**



**HLB**



**Zn Deficient**



**HLB & Zn Deficient**



# Soil pH and watering can cause these nutrient symptoms



Wet or Dry soils can cause Fe and Zn deficiencies  
Soil pH greater than 7.3, can be a problem

# Asian Citrus Psyllid ACP



Adult



Twisted leaves from feeding



Nymphs



# Learn to spot Asian Citrus Psyllids

## ACP Scouting Workshop

Moorpark, California

Friday, November 16, 2018

9:00 AM - 12:00 PM

Due to the low number of psyllids in the Central Valley, the workshop will be held in Ventura County.

**1-hour of "Other" Continuing Education (CE) units will be available.**

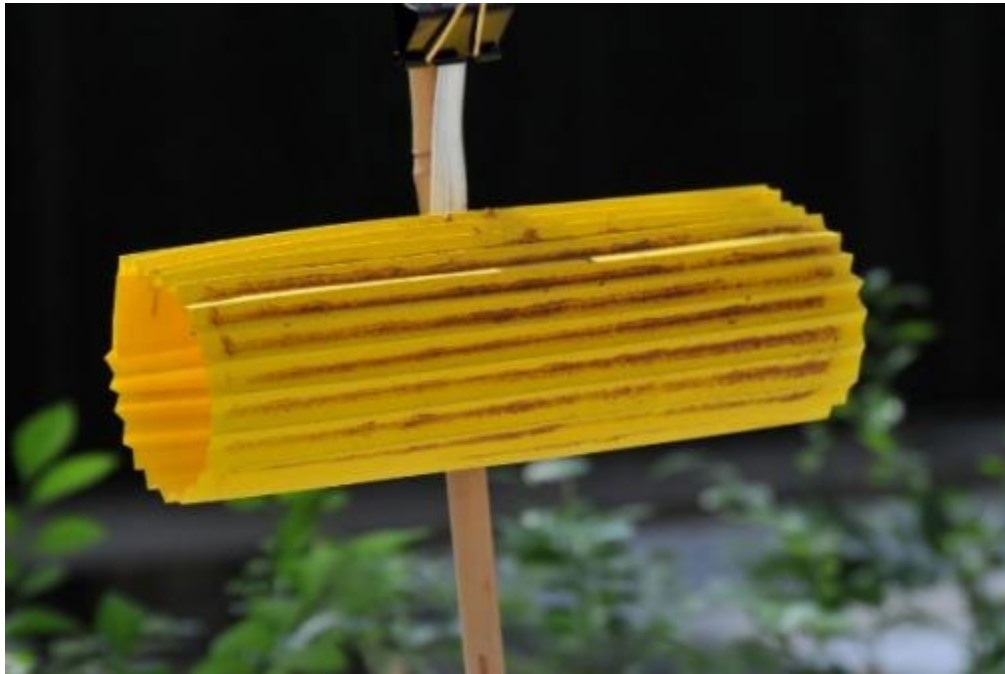
*Reservations are required.*

[Click here for psyllid workshop reservations](#)

Sandra Zwaal, Grower Liaison, at (949) 636-7089



# Sniffers for finding infected trees



Dispenser for spreading fungi  
to kill ACP

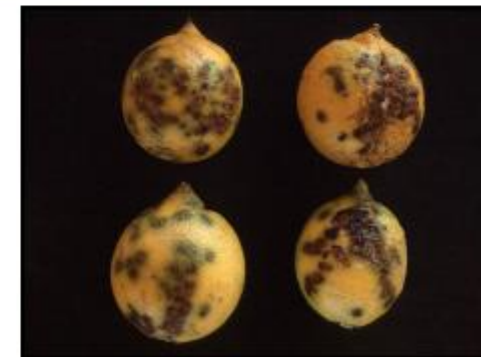
## Biocontrol?



Tamarixia

Diaphorencyrtus





Citrus Canker (in Florida and Mexico) – bacterial infection





Heat



Ash deposition



Ethylene maturation



Ethylene Drop

## Fire Related Problems A Biotic



Ember burn



Oil Spray Damage

# Before Assuming Disease Find Out What Was or Was Not Done - Biotic

Timing



Flood Irrigation







For more information on avocado  
and citrus pests and diseases:

<http://www.ipm.ucdavis.edu/>

For more information on citrus:

<http://www.citrusvariety.ucr.edu/>

<http://lib.ucr.edu/agric/webber/>

More reading:

[http://ceventura.ucdavis.edu/](http://ceventura.ucdavis.edu/newsletterfiles/newsletter653.htm)

[newsletterfiles/newsletter653.htm](http://ceventura.ucdavis.edu/newsletterfiles/newsletter653.htm)

<http://ucanr.org/blogs/Topics/>