

# Peach Disease Management Overview for Florida

2022 Peach Field Day, PSREU, Citra, FL

Wardatou Boukari, Ph.D.  
Post Doctoral Associate

&

Philip F. Harmon, Ph.D.  
Professor and Extension Specialist  
UF/IFAS Plant Pathology Department



# Overview

## Diseases challenges at all stages of production

- Plant propagation considerations
- Dormant to bud swell
- Bloom to petal fall
- Shuck split to 14 day pre harvest
- Harvest
- The rest of the year
  - Late spring through summer
  - Summer through winter/ “dormancy”



# IPM Guide

## 2022 SOUTHEASTERN PEACH, NECTARINE, AND PLUM PEST MANAGEMENT AND CULTURE GUIDE

Senior Editors: Brett Blauw, Phil Brannen, David Lockwood, Guido Schnabel, and David Ritchie

### Section Editors:

Disease Management – Phil Brannen, David Ritchie, Rebecca Melanson, and Guido Schnabel

Insect Management – Brett Blauw and Aaron Cato

Weed Management – Wayne Mitchem and David Lockwood

Vertebrate Management – David Lockwood

Culture – David Lockwood, Dario Chavez, and Juan Carlos Melgar

Pesticide Stewardship and Safety – Milton Taylor

### Contributors:

Auburn University Wheeler Foshee Mike Patterson Ed Sikora	University of Florida Pete Anderson Phil Harmon	University of Georgia Brett Blauw Phil Brannen Dario Chavez Milton Taylor	North Carolina State University Wayne Mitchem Mike Parker David Ritchie Jim Walgenbach	Texas A&M University Jim Kamas Monte Nesbitt Kevin Ong
Clemson University Juan Carlos Melgar Greg Reighard Guido Schnabel	University of Arkansas Aaron Cato	Mississippi State University John Byrd Rebecca Melanson	University of Tennessee David Lockwood Zachariah Hansen	USDA-ARS, Byron, GA Chunxian Chen Ted Cottrell Clive Bock

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# Peach Diseases

## □ Bacterial spot

□ Caused by  
*Xanthomonas*  
*arboricola* pv.  
*pruni*.

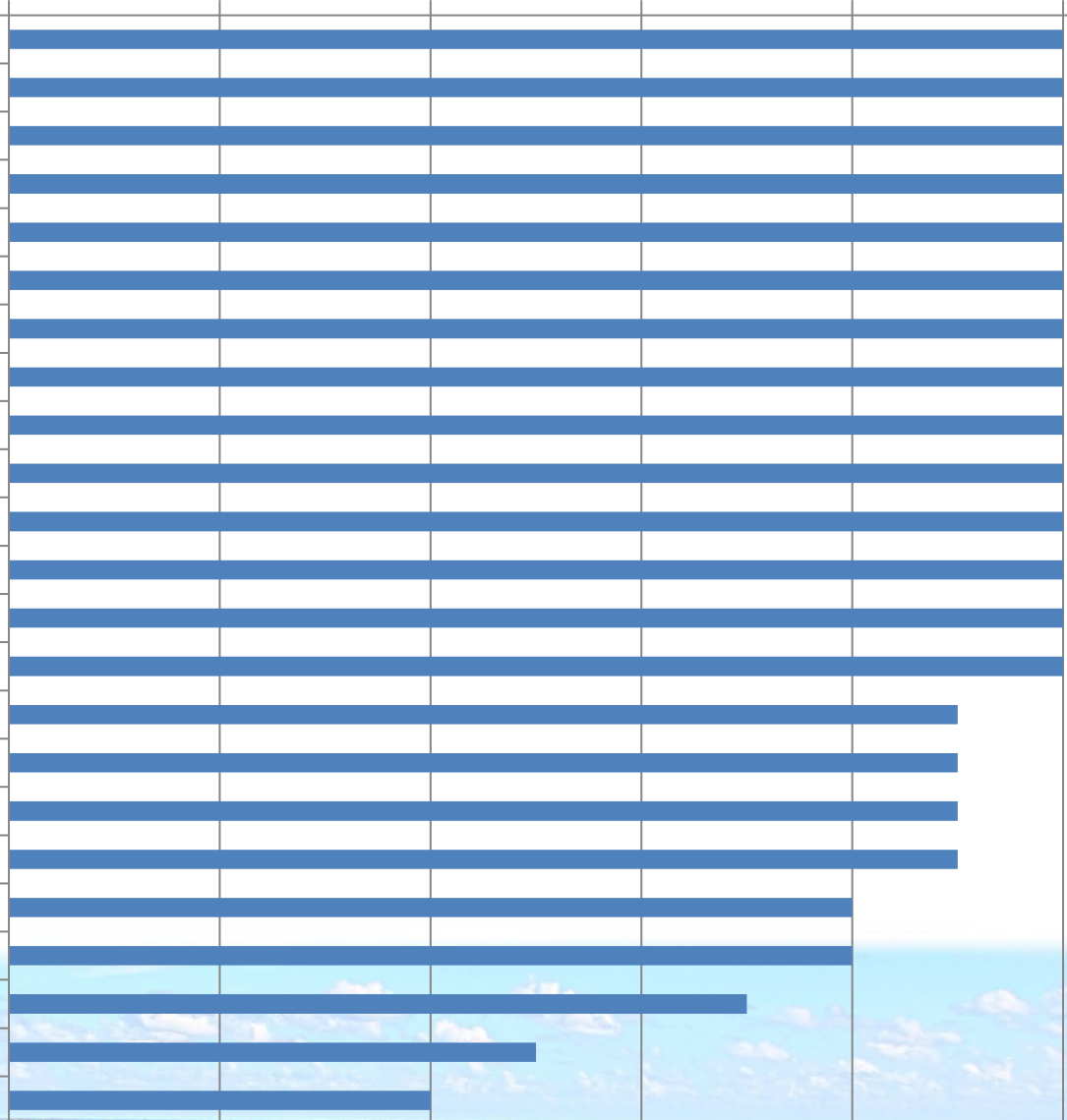
□ Peach varieties  
vary in their  
susceptibility



# Bacterial spot

0 2 4 6 8 10

- 'UFBest'
- 'UFOne'
- 'UFBeauty'
- 'UFO'
- 'UFBlaze'
- 'Flordadawn'
- 'Flordacrest'
- 'Gulfking'
- 'Gulfsnow'
- 'UFGlo'
- 'Gulfprince'
- 'Gulfcrimson'
- 'Flordaking'
- 'Gulfcrest'
- 'UFGold'
- 'Flordabest'
- 'UF2000'
- 'UFSharp'
- 'Flordaglo'
- 'TropicSnow'
- 'UFSun'
- 'TropicBeauty'
- 'Flordaprince'



**Most Resistant**



**Least**

Florida Peach and Nectarine Varieties, EDIS

# Peach Diseases

## Bacterial spot management

### ❑ Dormant copper applications

- Peaches are sensitive to copper, follow label rates, and consult the SE guide for precautions
- Some copper products are also options for organic production

### ❑ Oxytetracycline at shuck split

- Mycoshield
- FireLine



# Peach Diseases

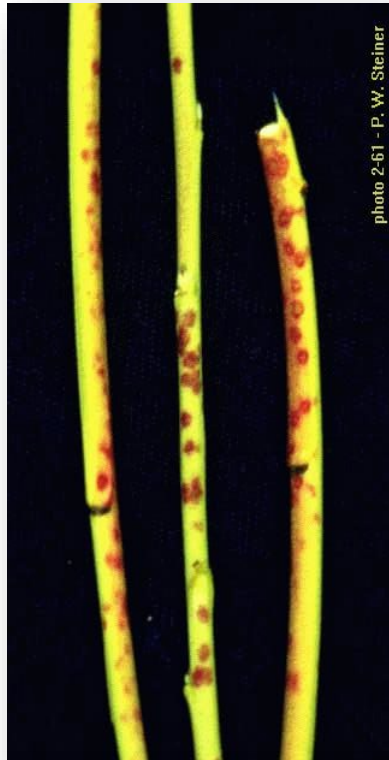
## □ Leaf Curl

- *Taphrina deformans*
- Occurs sporadically
- Fungicide applications can control it where it occurs regularly
- Two dormant apps of Ferbam give good control, Ziram, Thiram, Bravo, copper may also give control





# Peach Diseases



## ❑ Scab

- ❑ Caused by *Cladosporium carpophilum*
- ❑ Symptoms: spots on fruits and twigs
- ❑ Affects fruit quality

## ❑ Management:

- ❑ Organic options include weekly sulfur and/or reduced rates of copper
- ❑ Bravo app(s) through shuck split
- ❑ Captan every 14d after shuck split
- ❑ Abound (or similar) can be substituted for a Bravo or Captan apps







# Peach Diseases

## □ Blossom blight and brown rot

- Both caused by *Monilinia fruticola*
- Usually not an issue at bloom in Florida
- Only consider these management options if it an concern:
  - Bloom up until shuck split apps of Bravo
  - Bloom through harvest apps of Captan
  - Reduced rates of Copper for organic production (SE guide)



# Peach Diseases

## ❑ Brown rot

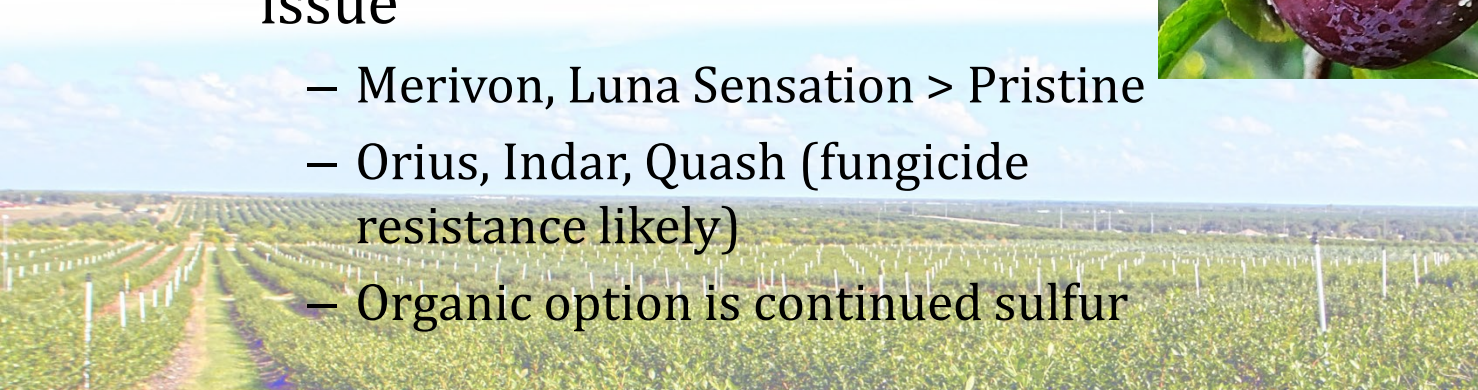
❑ Sporadic issue more common in north FL than farther south

## ❑ Management

❑ Pre-harvest applications of multiple fungicides

❑ 2 weeks and just before harvest where the disease has been an issue

- Merivon, Luna Sensation > Pristine
- Orius, Indar, Quash (fungicide resistance likely)
- Organic option is continued sulfur



# In-vitro assays with pure EO products

- ❑ Three *Monilinia fructicola* isolates
- ❑ Five replications per EOs concentrations and per isolate
- ❑ Relative fungal growth at each EO concentration was calculated in relation to fungal growth on non-amended control plates



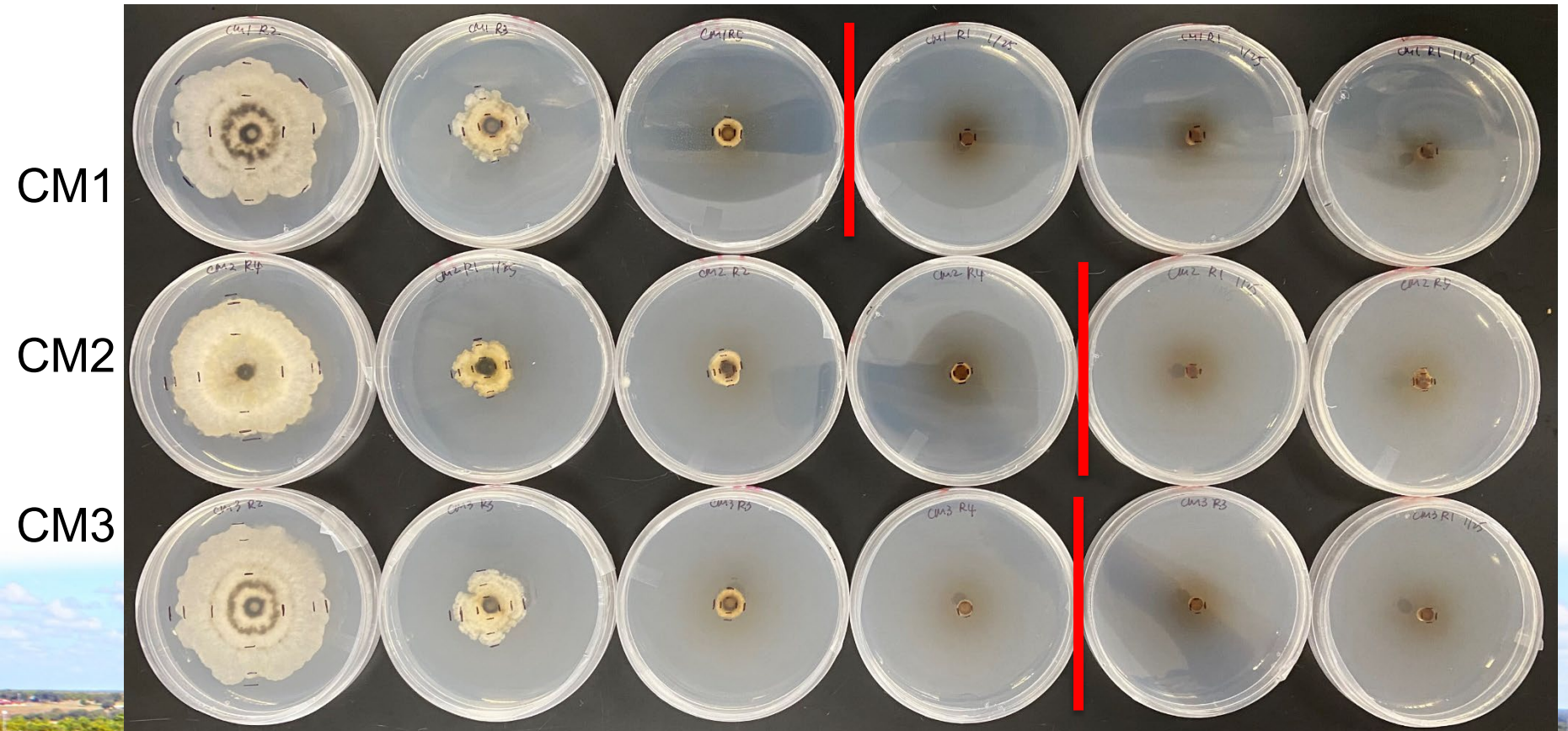
Compound	Selected EO concentrations ( $\mu\text{L}\cdot\text{L}^{-1}$ )
Thyme Oil	0 – 50 – 100 – 150 – 200 – 250
Oregano Oil	0 – 50 – 100 – 150 – 200 – 250

Selected EOs concentrations range for *in vitro* screening tests



# Thyme oil set: FL *Monilinia* isolates (Day 6)

0                      50                      100                      150                      200                      250 ppm



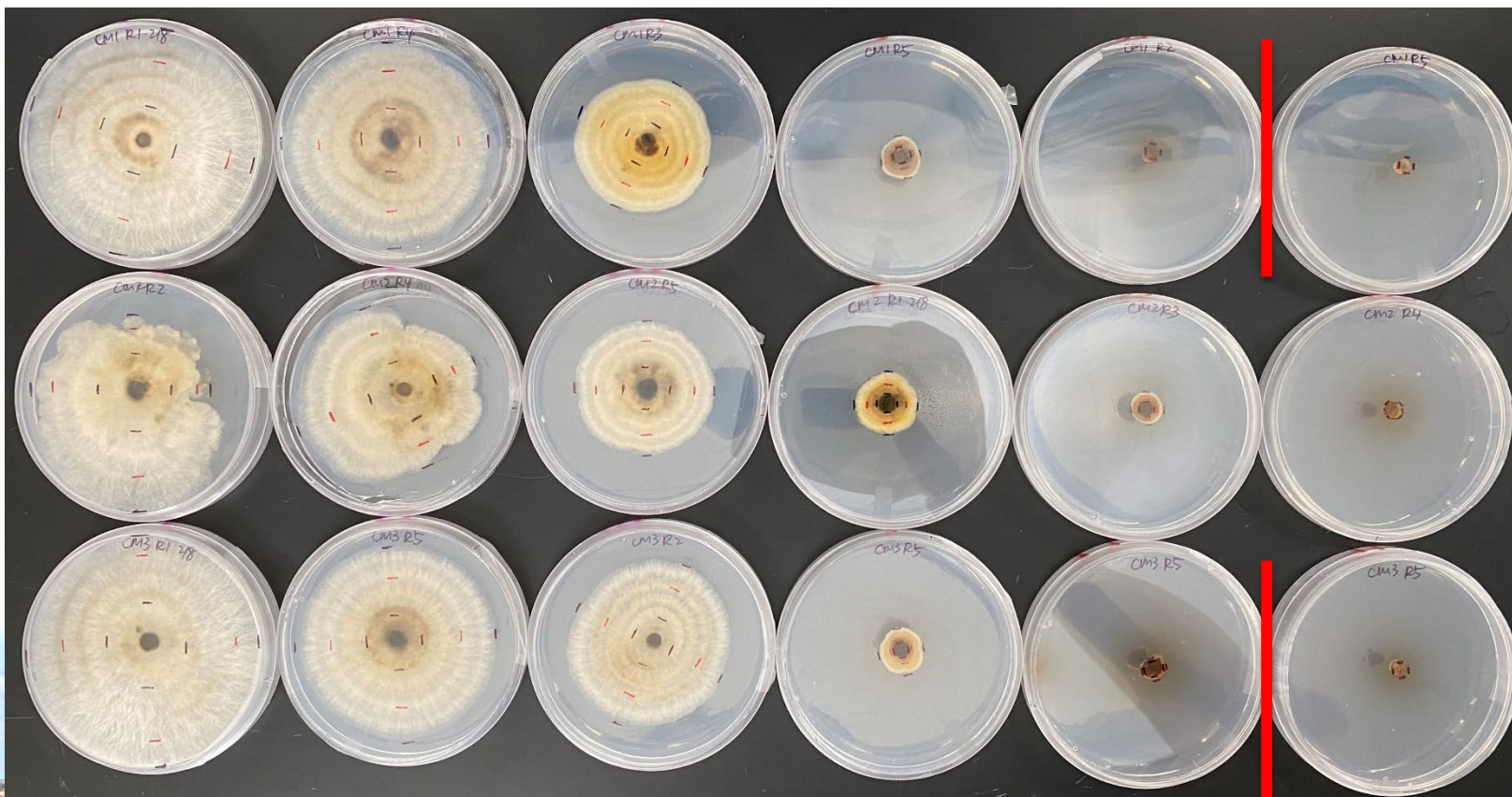
# Oregano oil set: FL *Monilinia* isolates (Day 6)

0                      50                      100                      150                      200                      250 ppm

CM1

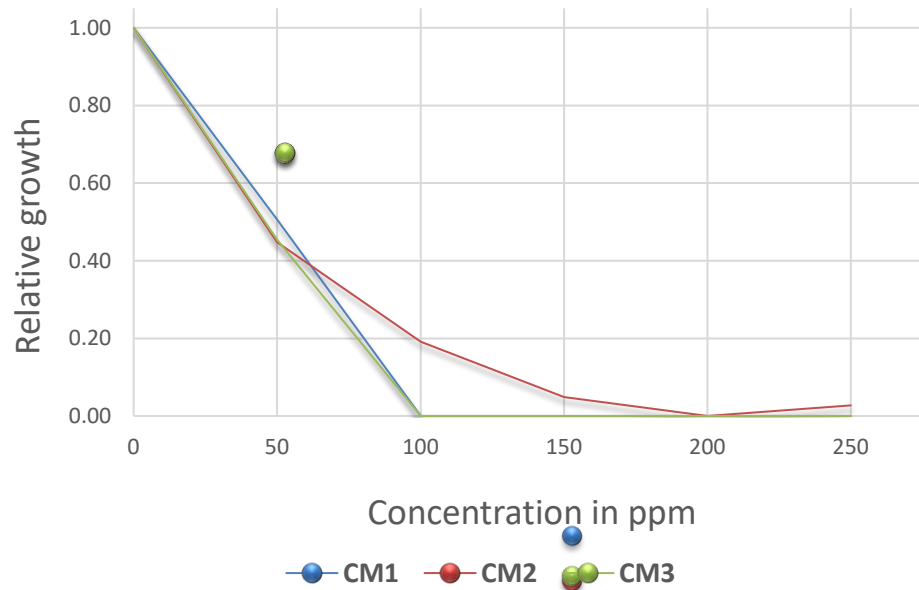
CM2

CM3

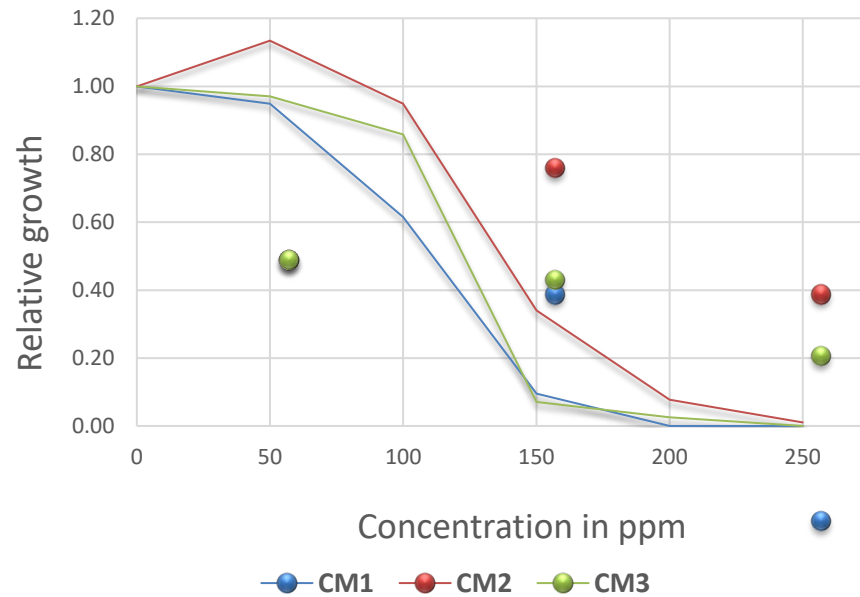


# Relative growth of *Monilinia* from FL isolates

## FL *Monilinia* – Thyme Oil



## FL *Monilinia* – Oregano Oil



# In-vitro assays with formulated EO product

- ❑ Three *M. fructicola* isolates used
- ❑ Five replications per EOs concentrations and per isolate
- ❑ Relative fungal growth at each EO concentration was calculated in relation to fungal growth on non-amended control plates



Product	[Conc]	Label	
		High rate	Low rate
Thyme Guard	23% oil	1150 $\mu\text{L}^{-1}$	287.5 $\mu\text{L}^{-1}$

Compound	Selected EO concentrations ( $\mu\text{L}^{-1}$ )
Thyme Guard	0 - 72 - 143.75 - 287 - 575 - 1150

Selected EOs concentrations range for *in vitro* screening tests



# Thyme Guard set: FL *Monilinia* isolates (Day 6)

0

72

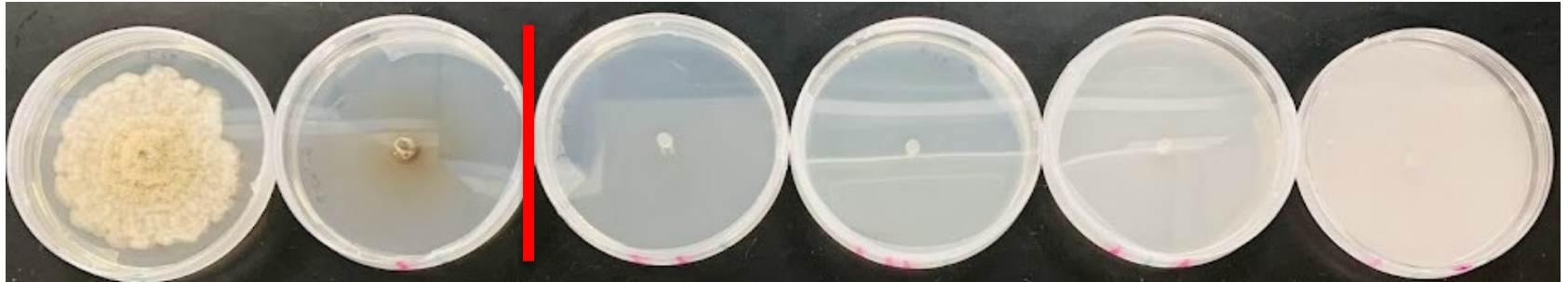
144

287

575

1150 ppm

CM1



CM2



CM3





# Peach Diseases

## ❑ Peach Leaf Rust

- ❑ *Tranzschelia discolor*
- ❑ Late summer/fall, wet weather
- ❑ Causes defoliation and early bloom in winter
- ❑ Not much research has been conducted
  - Not mentioned in the SE guide, a Florida problem



# Peach Rust Management

- ❑ Need to keep leaves on as long as possible
  - ❑ Growth, develop fruit buds for next season
- ❑ Controlled with fungicides
- ❑ Fungicides with efficacy include:
  - Abound and other QoIs
  - Orius, Quash, Indar, Orbit, Topguard and other DMIs
  - Bravo (5 to 6 apps per season total) and Captan (8 to 10 apps total per season)
  - Organic options include copper and sulfur

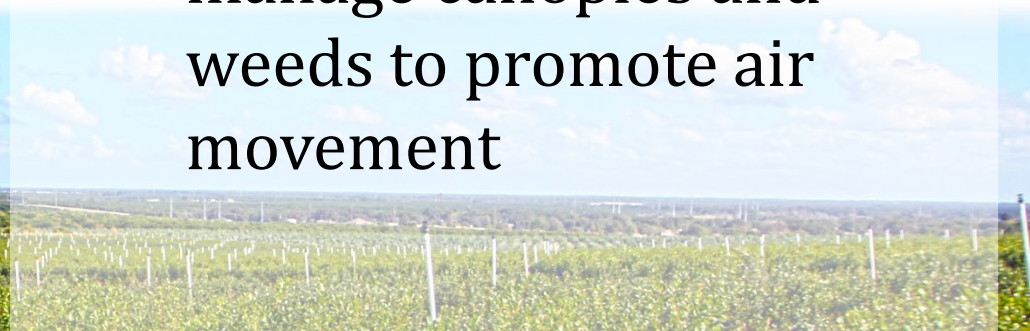


# Peach Rust Management



## □ Post harvest foliage and tree management

- Leaf rust is most important and can result in defoliation and may require fungicide applications
- Avoid overhead irrigation, manage canopies and weeds to promote air movement



# Peach Diseases

## ☐ Fungal Gummosis

- *Botryosphaeria dothidea*
- Amber colored sap oozes from cankers under bark
  - Flordaguard rootstock is highly susceptible

## ☐ Management

- Fungicide applications (Captan) to trunk early (yrs 1-3) may help
- Reduce stress, sanitation





# Peach Diseases

## ❑ Mushroom Root Rot

- ❑ *Armillaria spp.*, infect a wide range trees
- ❑ First symptoms range from a slow, gradual decline to rapid death
- ❑ Slow death of the tree in the aboveground parts is the most common



# Peach Diseases

## ❑ Phony Peach Disease (PPD)

caused by

*Xylella fastidiosa*

- ❑ Can be transmitted by grafting
- ❑ Spread primarily by a type of leafhopper known as sharpshooters
- ❑ Insects are commonly found in Florida in association with weeds, shrubs, and trees that serve as reservoirs for *X. fastidiosa*
- ❑ Symptoms can develop as late as 18 months or more after initial infection



# Symptoms

- ❑ Dwarfing, flattened tree canopy:
  - ❑ Compact and umbrella-like due to shortened internodes
- ❑ Early bloom and fruit set and reduced fruit size
- ❑ Fruit may be more colorful and will often ripen a few days earlier than normal
  
- ❑ 80-90% reduction in production
  - ❑ Trees that develop Phony Peach Disease (PPD) before bearing age never become productive
  - ❑ PPD does not kill, but may make trees more susceptible to other diseases and arthropods





# Management

- ❑ There is no cure for PPD or any other disease caused by *X. fastidiosa*
- ❑ Rogue trees once confirmed PPD
- ❑ Manage weeds
- ❑ Replanting in a PPD orchard not likely to be successful



**□ Any Questions?**  
**Please contact Philip**  
**Harmon at the**  
**University of Florida**  
**[pfharmon@ufl.edu](mailto:pfharmon@ufl.edu)**



## EFFECTIVENESS OF DISEASE CONTROL MATERIALS ON PEACHES, NECTARINES AND PLUMS IN THE SOUTHEAST

(+++++ = superior; +++++ = excellent, ++++ = good, +++ = fair, ++ = poor, + = suppression, - = no benefit)

See IPM Management Guide section for rate/disease particulars. These ratings are benchmarks, actual performance will vary.

Pesticide [MOA CODE]	Class	Leaf curl	Bacterial spot	Blossom blight	Scab	Anthracnose	Red spot	Sooty peach	Brown rot	Rhizopus rot
Abound [11] Gem [11]	QoI (quinone outside inhibitor)	-	-	-	++++ Resistance a threat	++++	-	-	++++ Resistance a threat	-
coppers [M1]	multi-site toxins	+++	+++ Resistance a threat	-	-	-	-	-	-	-
Botran [14]	multi-site toxin	-	-	+	-	-	-	-	+	++
Mycoshield [41] FireLine [41]	antibiotic	-	+++ Resistance a threat	-	-	-	-	-	-	-
captan [M4]	multi-site toxin	-	-	++	++++	+++	-	++	+++	+
Ferbam [M3]	multi-site toxin	+++++	-	-	-	-	+++	-	-	-
Thiram [M3]	multi-site toxin	+++	-	-	-	-	+++	-	-	-
ziram [M3]	multi-site toxin	+++	+	-	+	-	+++	+++	-	-
sulfur [M2]	multi-site toxin	-	-	+	+++	-	-	-	+	-
chlorothalonil [M5]	multi-site toxin	++++	-	+++	++++	-	-	-	-	-
Rovral [2]	dicarboximide	-	-	++++	-	-	++	++	-	-
Orius [3]	DMI (dimethylation inhibitor)	-	-	+++++	-	-	-	-	+++++ Resistance a threat	-
Quash [3]	DMI	-	-	+++++	-	-	-	-	+++++ Resistance a threat	-
Indar [3]	DMI	-	-	+++++	++	-	-	-	+++++ Resistance a threat	-
Cevya [3]	DMI	-	-	+++++	++	-	-	-	+++++ Resistance a threat	-
Rally [3]	DMI	-	-	+++	-	-	-	-	+ Resistance a threat	-
Orbit [3] PropiMax [3] Bumper [3]	DMI	-	-	++++	-	-	-	-	++++ Resistance a threat	-
Topguard [3]	DMI	-	-	++++	-	-	-	-	++++ Resistance a threat	-

**EFFECTIVENESS OF DISEASE CONTROL MATERIALS ON PEACHES, NECTARINES AND PLUMS IN THE SOUTHEAST (continued)**

Pesticide [MOA CODE]	Class	Leaf curl	Bacterial spot	Blossom blight	Scab	Anthracnose	Red spot	Sooty peach	Brown rot	Rhizopus rot
Topsin-M [1] Thiophanate Methyl [1]	MBC (methyl benzimidazole carbamate)	-	-	++++ Resistance a threat	++++ Resistance a threat	-	-	-	+++ Resistance a threat	-
Vanguard, Scala [9]	anilinopyrimidine	-	-	++++	-	-	-	-	-	-
Inspire Super [9, 3]	anilinopyrimidine and DMI	-	-	+++++	+++	?	-	-	+++++	?
Inspire Super [9, 3] plus Tilt [3]	Anilinopyrimidine and DMIs	-	-	+++++	+++	++++	-	-	+++++	?
Scholar [12]	phenylpyrrole	-	-	-	-	-	-	-	+++++	++++
Fontelis [7]	SDHI-pyrazole carboxamide	-	-	++++	++	+	-	-	++++ Resistance a threat	+
Merivon [11, 7]	QoI and SDHI-pyrazole	-	-	+++++	++++	++++	-	-	+++++	+++
Luna Sensation [11, 7]	QoI and SDHI - pyridinyl-ethyl-benzamides	-	-	+++++	++++	++++	-	-	+++++	+++
Pristine [11, 7]	QoI and SDHI-pyridine-carboxamide	-	-	+++++	++++	++++	-	-	+++++	+++
Quadris Top [11, 3]	QoI and DMI	-	-	++++	++++	+++	-	-	++++	++

Fungicides with the same MOA CODE, unless multi-site, are NOT appropriate as tank-mixing partners or for alternating as they have similar modes of action and are prone to cross-resistance.



Trade Name	Active Ingredient	Chemical Class	Manufacturer
1. <b>Fontelis</b> (DPX-LEM17)	Penthiopyrad	SDHI	DuPont
2. <b>Luna Sensation</b>	Trifloxystrobin + Fluopyram	Strobilurin + SDHI	Bayer
3. <b>Merivon</b>	Pyraclostrobin + Fluxapyroxad	Strobilurin + SDHI	BASF
4. <b>Inspire Super</b>	Difenoconazole + Cyprodinil	DMI + AP	Syngenta
5. <b>Inspire XT</b>	Difenoconazole + Propiconazole	DMI + DMI	Syngenta
6. <b>Quadris Top</b>	Difenoconazole + Azoxystrobin	DMI + Strobilurin	Syngenta
7. <b>Topguard</b>	Flutriafol	DMI	Cheminova
Chemical Standard = <b>Pristine</b>	Pyraclostrobin + Boscalid	Strobilurin + SDHI	BASF

