



**CAL POLY**  
Strawberry Center

# Future Prospects to Solve Strawberry Disease Problems at Cal Poly Strawberry Center

SHASHIKA S. HEWAVITHARANA PHD

ASSISTANT PROFESSOR

HORTICULTURE AND DROP SCIENCE DEPARTMENT

CAL POLY

# Background



Sri Lanka



University of Colombo



Washington State



Washington State University



California



Cal Poly University

# Anaerobic Soil Disinfestation (ASD)

3



Grass application



Amending into soil



Irrigation

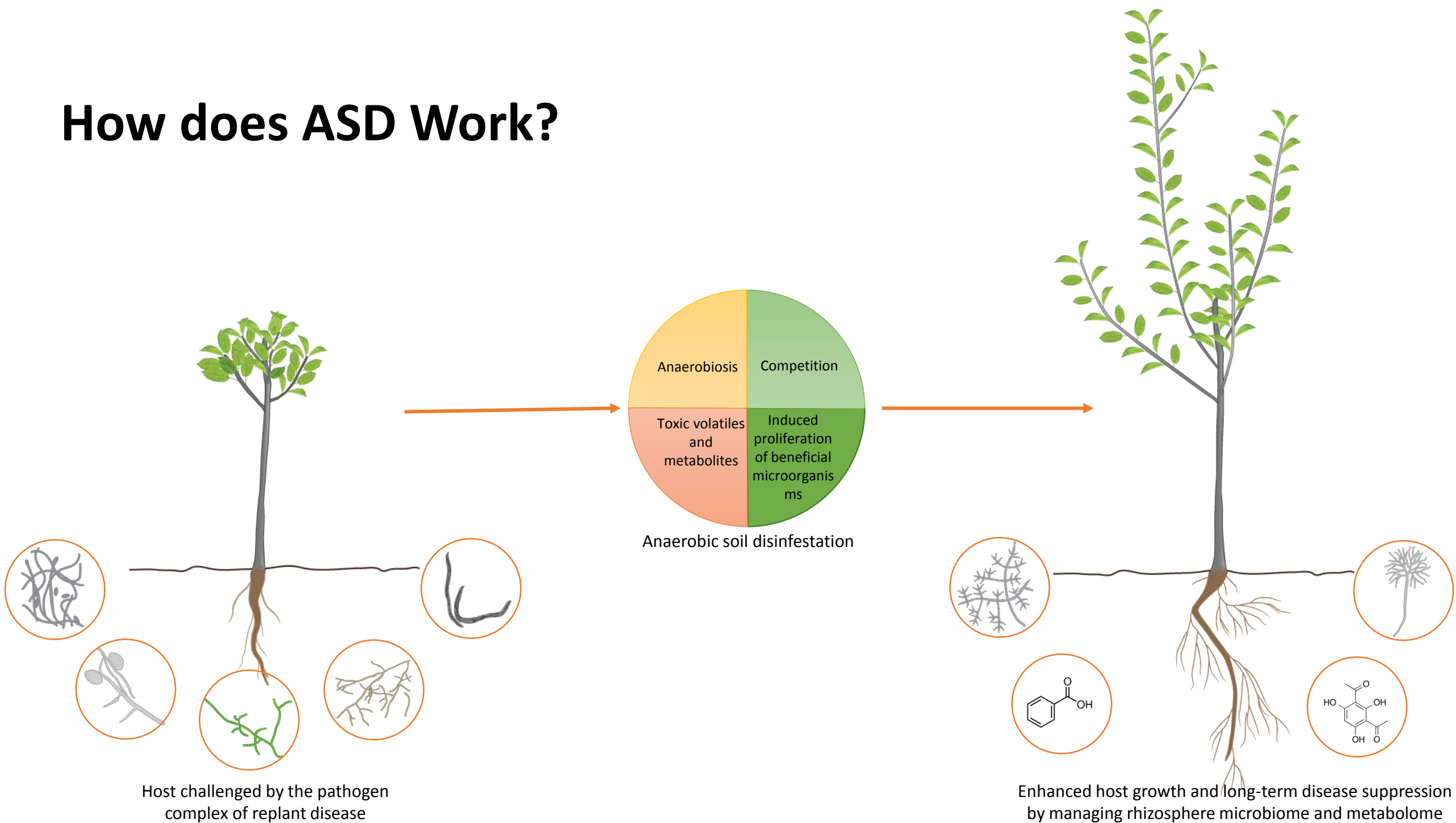


Tarping

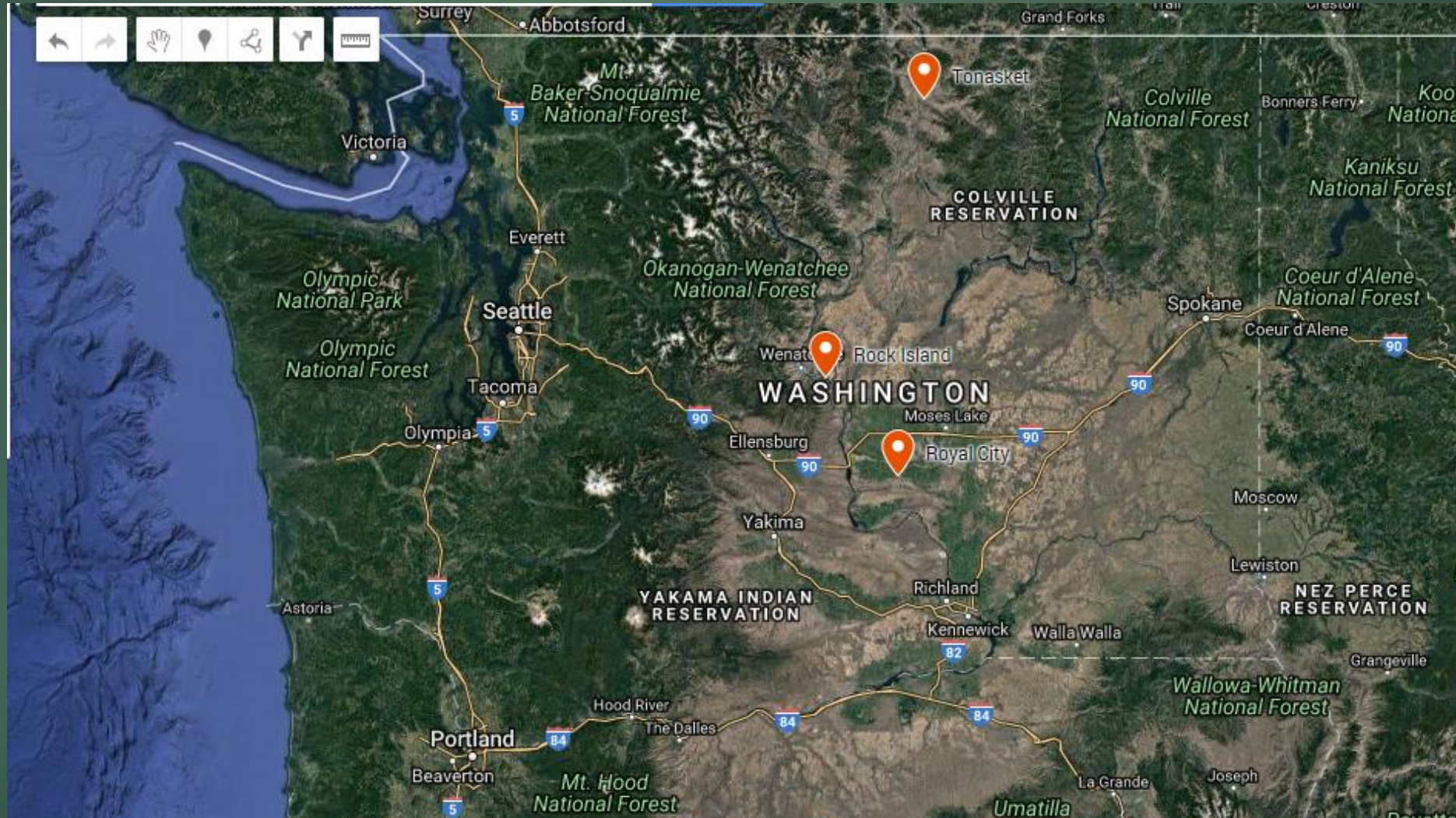


Tarp Removal

# How does ASD Work?



# Commercial Scale Replant Project





WSU Tree Fruit  
Extension

# Anaerobic Soil Disinfestation

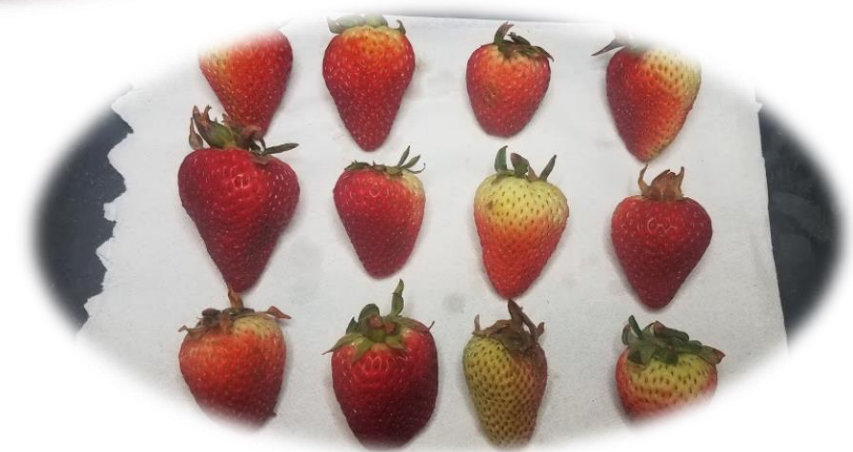


WASHINGTON STATE  
UNIVERSITY  
EXTENSION

# Strawberry Disease Diagnosis

- ▶ We are accepting samples!
- ▶ Visit Cal Poly Strawberry Center website to access sample submission form

<https://strawberry.calpoly.edu/>

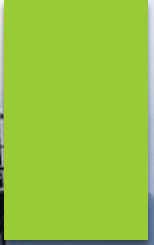


# Recent major problems found in the clinic

Strawberry disease	Number of samples
Phytophthora crown rot	4
Zythia leaf blotch	3
Fusarium wilt	2
Macrophomina crown rot	1
Powdery mildew	1
Other	5

# Phytophthora crown rot

- ▶ Dispersed by motile zoospores



# Phytophthora Zoospore Release



Video by Alison  
Hawkes

# Fusarium wilt

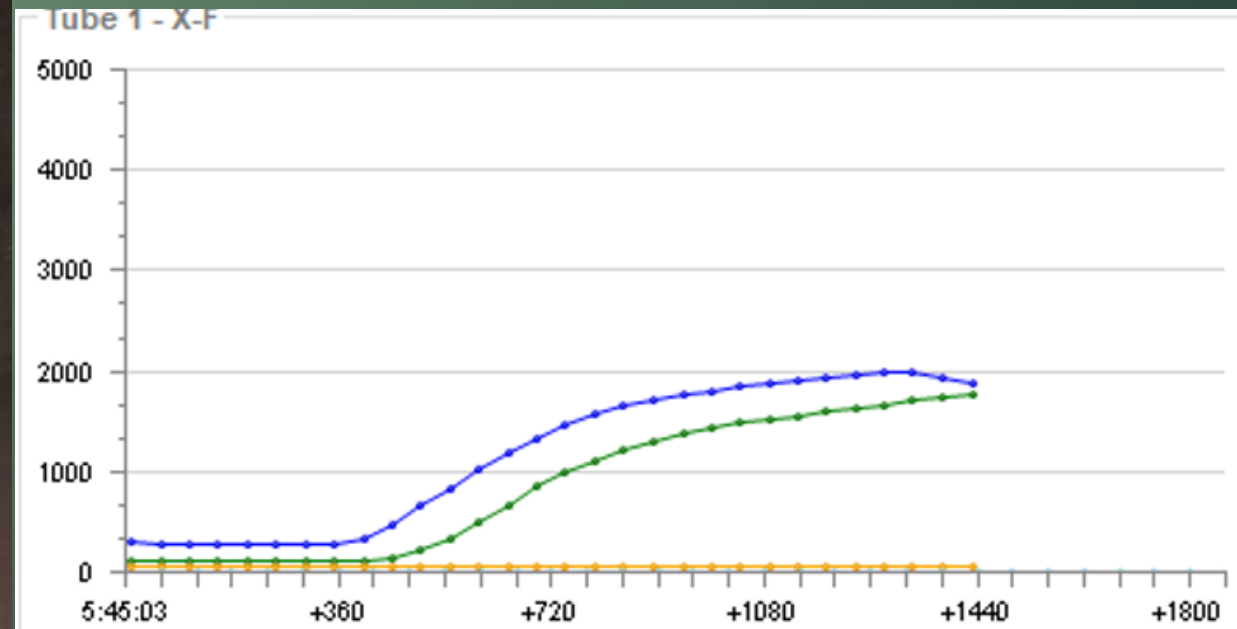
- ▶ Detection using RPA method (Recombinase polymerase amplification)
- ▶ Rapid
- ▶ Highly sensitive



**Plating Results: 3-5 days**



**RPA Results: 1 hour**



# Leaf Blotch, Stem-End Rot and Dry Calyx/ Brown Cap

Pathogen: *Gnomonia comari* (sexual stage)  
*Zythia fragariae* (asexual stage)



Photo by Gerald Holmes

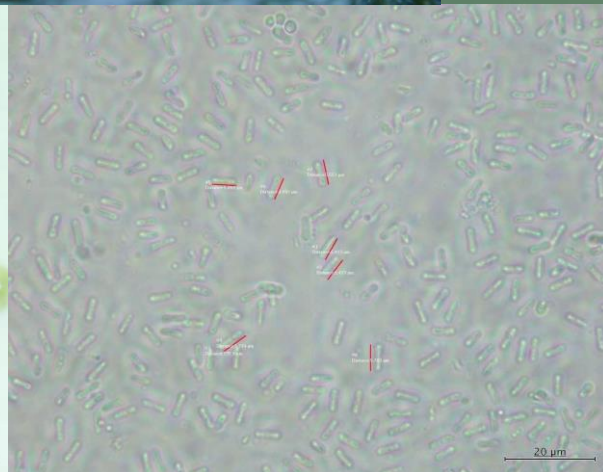
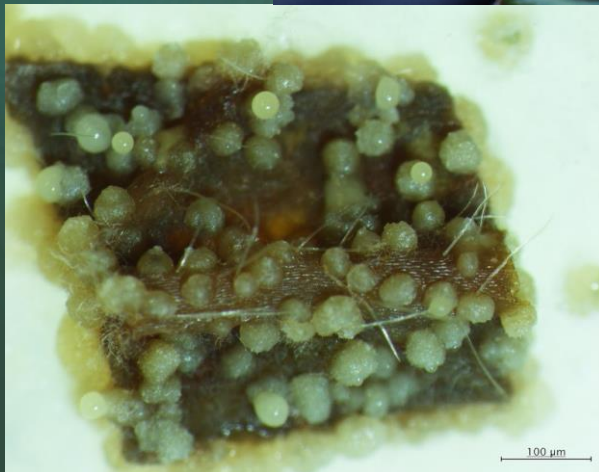


Photo by Gerald Holmes

# Plant Pathology Research Program

## ▶ Ongoing Research

- ▶ Resistance to *Macrophomina* Crown Rot in 83 Cultivars and Elite Lines
- ▶ Resistance to *Verticillium* wilt in 83 Cultivars and Elite Lines
- ▶ Resistance to Anthracnose in 77 cultivars
- ▶ Fungicide Efficacy for Powdery Mildew
- ▶ Fungicide Efficacy for Box Rot
- ▶ Fungicide Efficacy for *Botrytis* Gray Mold

# Plant Pathology Research Program

## ▶ **Soil-borne diseases**

- ▶ Fumigant effect on soil microbiome (Industry funded; Starting Spring 2019)
- ▶ Phytophthora mefanoxam resistance (Summer 2019)
- ▶ Phytophthora control in organic production (Prospective CSC Proposal)

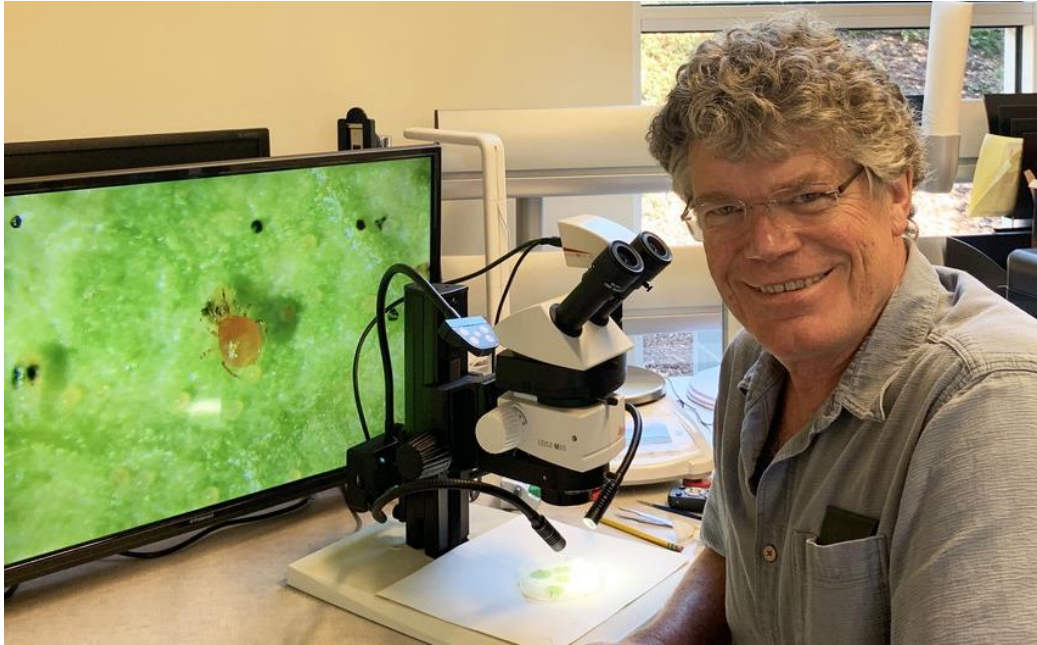
## ▶ **Foliar and fruit diseases**

- ▶ UV technology for Powdery mildew control (Submitted USDA-CPPM grant)
- ▶ Fungicide efficacy assays against Zythia on calyx (Prospective CSC Proposal)

We would like to hear from you!

- ▶ **Please fill out the survey form.**

# Strawberry Entomology Program



Dr. Peter Shearer is the first Strawberry Entomologist hired at the Cal Poly Strawberry Center. He brings years of fruit entomology and IPM experience to the position. Started Sept. 2018.

- Overview:

- Create the foundation for strawberry entomology and IPM.
- Develop a brand new laboratory to facilitate applied research.
- Produce sound, science-based solutions for arthropod pests that attack strawberries.

- Research efforts:

- Conduct efficacy studies and resistance assays for lygus bug and spider mite management.
- Find new solutions to manage insects and mites that attack strawberry.

- Education:

- Provide students with training and experiences in strawberry entomology and IPM.



# SAVE THE DATE!

- ▶ Cal Poly Strawberry Center Field Day 2019
- ▶ Thursday, July 18, 2019

