Topics in Subtropics Newsletter

University of California Cooperative Extension

Fresno, Kern, Madera, Riverside, San Bernardino, San Diego, San Luis Obispo, Santa Barbara,Tulare,&Ventura Counties

News from the Subtropical Tree Crop Farm Advisors in California

Winter 2025

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FARM ADVISORS AND SPECIALISTS

Mary Lu Arpaia – Subtropical Horticulture Specialist, UCR
Phone: (559) 646-6561
Email: mlarpaia@ucanr.edu

Bodil Cass – Extension Subtropics Entomologist, UCR
Phone: (951) 827-9274
Email: bodil.cass@ucr.edu

Hamutahl Cohen -Entomology Advisor with UC Cooperative Extension in Ventura County.
Email: hcohen@ucanr.edu

Ashraf El-Kereamy – Extension Citrus Specialist, UCR
Phone: (559) 592-2408
Email: ashrafe@ucr.edu

Ben Faber – Subtropical Horticulture, Ventura/Santa Barbara
Phone: (805) 645-1462
Email: bafaber@ucdavis.edu
Website: http://ceventura.ucdavis.edu

Sandipa Gautam – Area Citrus IPM Advisor
Phone: (559) 592-2408
Email: sangautam@ucanr.edu
Website: https://lrec.ucanr.edu/

Fatemeh Khodadadi, Extension Specialist Plant Pathology, UCR
Phone: Cell: (845) 901 3046, Office (951) 827-4764
E-mail: fatemehk@ucr.edu

Peggy Mauk – Subtropical Horticulture Specialist and Director of Citrus Research Center, UCR
Phone: 951-827-4274
Email: peggy.mauk@ucr.edu
Website: http://www.plantbiology.ucr.edu/

Ana Pastrana -Plant Pathology Advisor with UC Cooperative Extension in Imperial, Riverside and San Diego Counties.
Phone: (442) 238-3950
Email: ampastranaleon@ucanr.edu

Philippe Rolshausen – Extension Specialist Subtropical Crops, UCR
Phone: (951) 827-6988
Email: philrols@ucr.edu
Website: https://www.rolshausen-lab.com/

Eta Takele – Area Ag Economics Advisor, Southern California
Phone: (951) 313-9648
Email: ettakele@ucanr.edu
https://ucanr.edu/sites/Farm_Management

Date Production Overview

Vanessa Ashworth (ashworth@ucr.edu), Project Scientist, UC Riverside
Philippe Rolshausen (philrols@ucr.edu), Professor of Extension, UC Riverside

Dates are the mature fruits of the date palm *Phoenix dactylifera* L. and one of the oldest tree crops in the world that can be traced to archaeological sites dated to some 7000 years ago. The leading date producers today are concentrated in the regions of origin—especially Egypt, Saudi Arabia, Algeria and Iran, each producing over 1.1 million US t of dates in 2022 (FAO 2024). Though occupying position 18 in global date production, the United States is the main date producer in the New World (FAO 2024). In 2022, US production was 66,150 US t, ahead of Mexico 21,738 US t, Peru 530 US t and Colombia 62 US t (FAO 2024). For the past 15 years, date production in the USA has been on the increase, rising steadily from 20,900 US t in 2008 to 49,050 US t in 2023, with a peak of 67,450 US t in 2021. This trend has been accompanied by an expansion in bearing acres from 5,700 acres in 2008 to 14,800 acres in 2023, with a maximum of 15,600 acres in 2020–2022 (Fig. 1). Income from date fresh market production totaled $130,368,000 in 2023 (NASS 2024). Utilized production in 2023 was split almost equally by fresh market and processed production (23,050 and 25,780 US t, respectively; NASS 2024).

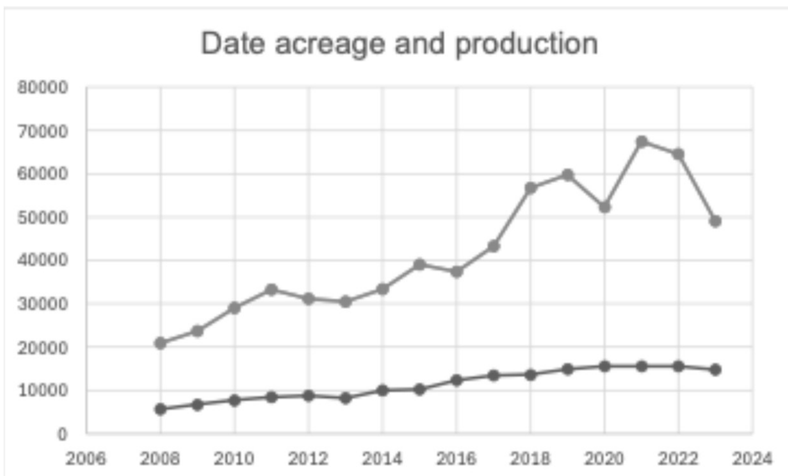

Figure 1. National date acreage (below) and production (US tons; above) between 2008 and 2023.

California is the primary US producer (35,300 US t in 2023 [NASS 2024]), followed by Arizona (13,750 US t). In 2022, California contributed 62.2% of total US exports, of which the top three export destinations were Canada, Mexico and Australia (CDFA 2023). Almost all date orchards in North America occupy the climatically favorable valleys north of the Colorado River delta, especially the Coachella and Imperial valleys in California, the Yuma and Hyder valleys in Arizona, and the Mexicali and San Luis Colorado valleys in Mexico's Baja California and Sonora states, respectively. California's Riverside and Imperial counties generated 78 and 22% of the State's total gross value of agricultural production ($108 million; CDFA 2023).

Date palms can attain venerable ages of up to 150 years, but in commercial orchards, palms are rarely kept beyond 40–50 years. Date palms are dioecious, meaning that individual plants are either male or female, the latter producing the date crop. Date production in female palms starts at 4–6 years, though full productivity occurs at 15–20 years. Artificial pollination methods have been developed to ensure good fruit set, involving the insertion of male inflorescence bunches into the female flower clusters in the crown of the palm, followed by tying to prevent the bunches from falling out. Controlled pollination and other cultivation practices are challenging as they are delivered in the crown of the palms at considerable height aboveground. Inflorescences develop inside a hard, greenish-brown sleeve (the spathe) that eventually splits open to reveal clusters of cream-colored flower strands, each studded with a profusion of flower buds. Upon fertilization, female flower buds enlarge, eventually producing large, hard, green fruit, before ripening to first yellow and then the familiar brown dates (Fig. 2). Harvesting in California takes place from October until mid-December.

Black mold disease caused by several species in genus *Aspergillus* has been a major issue for the date industry. The fungus colonizes the date cavity containing the pit, with a powdery black mold initially becoming visible in the region closest to the attachment point of the fruit stalk, eventually lining the entire cavity and making the date unmarketable (Fig. 2). The black mold pathogen is thought to enter the plant tissues during flowering or early stages of fruit set, lying dormant at first and spreading later as the date matures. The black mold pathogens also affect other crops, for example causing aspergillus vine canker and summer bunch rot in wine and table grapes. Crop losses due to mold-infected dates are of serious concern, and industry stakeholders are in urgent need of studies to ascertain the magnitude of the problem and develop appropriate control measures.

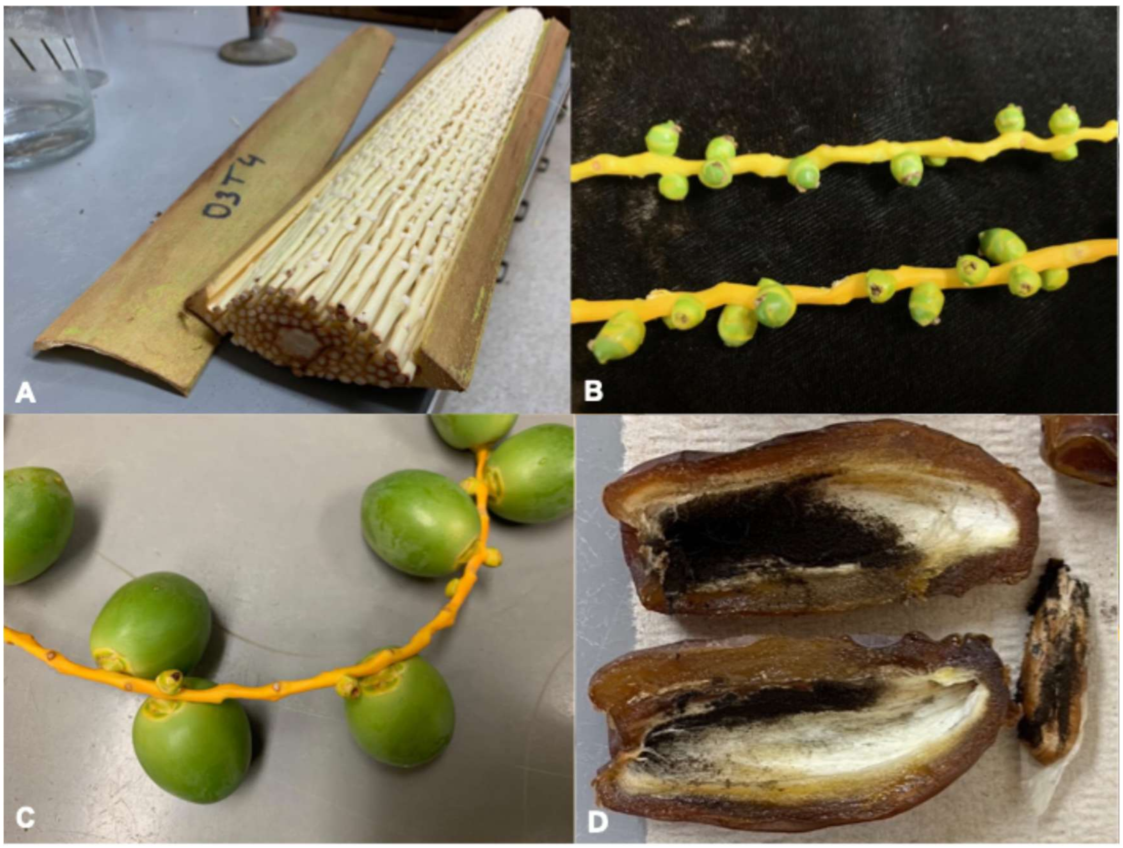

Figure 2. Stages in the development of date fruits. **A.** Spathe cut open to reveal inflorescence strands. **B.** Immature fruits on inflorescence strands. **C.** Enlarged green fruits. **D.** Mature dates infected with Aspergillus black mold.

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Guidelines for Managing Grape Powdery Mildew

George Zhuang (gzhuang@ucanr.edu), Viticulture Farm Advisor Fresno County
Philippe Rolshausen (philrols@ucr.edu), Professor of Extension, UC Riverside

Figure 1: Grape Powdery Mildew

In the last several years, many growers in Southern California reported heavier mildew pressure than usual. After a winter of heavy rain and wet spring, the perfect weather condition resulted in the disease outbreak with heavy crop loss. However, there are effective actions that can be taken to reduce initial inoculum and prevent infection. In most areas, powdery mildew overwinters as fruiting bodies (called chasmothecia) which contains spores (called ascospores). In warm climates, it can also overwinter as mycelium in dormant buds. An early season application of lime sulfur or horticultural oil (such as JMS Stylet Oil) should be applied at budbreak if temperatures are optimal for ascospore release: between 70° to 80° F. This application significantly reduces spores released from chasmothecia and delays initial infections. After the initial period of ascospore release, preventing further infection entails a season-long control strategy which includes fungicides (conventional or organic) and cultural controls. Fungicide types and application intervals can be timed using the powdery mildew risk index (Table 1).

Table 1. Spray intervals based on disease pressure using the powdery mildew risk index model (reproduced from Grape Pest Management, UC ANR publication 3343)

Index	**Disease pressure**	**Pathogen status**	**Suggested spray schedule**			
			Biologicals and SARs*	Sulfur	Demethylation inhibitors (DMI)	Strobilurins and quinolines
0-30	low	present	7-14 days interval	14-21 days interval	21 days interval or label interval	21 days interval or label interval
40-50	moderate	reproduces every 15 days	7 days interval	10-17 days interval	21 days interval	21 days interval
60 or above	high	reproduces every 5 days	Use not recommended	7 days interval	10-14 days interval	14 days interval

*SARs: systemic acquired resistance products.

Powdery Mildew Risk Index: Grape growers can use the powdery mildew risk index model to micro-adjust their spray interval (Grape Powdery Mildew Risk Assessment Index / Statewide IPM Program). The model correlates the pathogen biology with the canopy temperature to assess the disease pressure during the growing season. The critical point of calculating the correct mildew risk index is to measure the inside canopy temperature (Figure 2). The model contains two stages: an ascospore and a conidial stage. The ascospore model is used to determine the risk of ascospore release and primary infection. Daily average temperature and duration of leaf wetness are put into the calculation. Once ascospore infection has occurred, growers can switch to the risk index (RI) to determine the potential of secondary infection by conidia. At this stage, pathogen population increase is mainly based on the canopy temperature.

Initiating the risk index: Once there are three consecutive days with 6 or more continuous hours of canopy temperatures from 70° to 85° F, it means the index reaches 60 and an epidemic is under way. Growers should begin using the spray-timing phase of index (Table 1).

Adjust the spray timing: After the index reaches 60, the calculation of index is simply based on the daily canopy temperature (Figure 1). Basically, 20 points are added to the index when 6 or more continuous hours of canopy temperatures occur from 70° to 85° F. Similarly, 10 points are subtracted from the index when fewer than 6 continuous hours of canopy temperatures occur from 70° to 85° F or temperatures reach 95° F for more than 15 mins. According to the RI, local conditions, and field scouting, growers can tighten or loosen the spray interval to confront the different levels of disease pressure in their vineyards (Table 1).
Real-world example: We use UC IPM weather station at Caruthers, CA (Grape Powdery Mildew Risk Assessment Index / Statewide IPM Program) to demonstrate how to use RI to guide the spray timing and interval (Figure 2). The first spray should kick off when the RI reaches 60. In 2023, the RI reached 60 around Mid-April, while the same RI arrived around Mid-March in 2024. Once the first spray is initiated, the following spray intervals should be based on RI using the recommendations in Table 1.

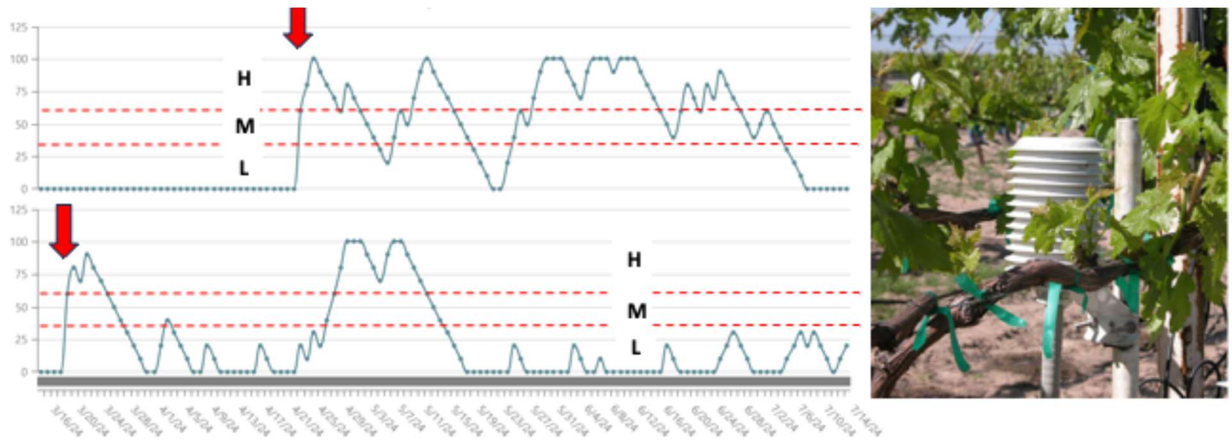

Figure 2. Powdery Mildew Risk Index in Caruthers, CA from Mid-March to Mid-July in 2023 (top) and 2024 (bottom). Dashed lines indicate low, moderate, and high disease pressure based on the Mildew Risk Index. Red arrows indicate the timing of starting spray for 2023 and 2024 seasons. H, M, L represent high, moderate and low mildew pressure, respectively. A temperature sensor installed to measure the inside canopy temperature to calculate the Powdery Mildew Risk Index (right).

Growers can use the RI to micro-adjust spray intervals and reduce unnecessary sprays when the disease pressure is low. However, alternating fungicides with different modes of action is critical to reduce the risk of developing resistance. Growers should avoid applying two sequential sprays of any fungicide without alternating with a fungicide of a different mode of action. Fungicide formulations that mix more than one active ingredient may be useful to delay the development of resistance and improve disease control by broadening the spectrum of activity. Whenever possible, tank mix synthetic fungicides with sulfur. Because the risk of resistance to sulfur is minimal, tank mixing with sulfur reduces the chance that resistant isolates of powdery mildew will successfully infect plants and spread. As always, follow label guidelines for application rates, minimum spray intervals, and pre-harvest intervals. Rotate fungicides between different modes of action to prevent resistance. If you have any questions, consult your local farm advisor or extension agent. Like any spray program, coverage is one of the most important factors that determine the success of the powdery mildew fungicide spray. Vine vigor, trellis types, irrigation, fertilization, canopy management, sprayer and nozzle types can all be managed to achieve better coverage. Water sensitive paper and proper sprayer calibration should be adopted as tools to validate and improve spray coverage. Canopy management, like shoot thinning, leaf removal, and hedging are commonly applied, when appropriate, to increase the fruit quality, and these practices can also open the canopy for better spray coverage and improved disease control.

Dry Root Rot of Citrus: A Persistent Threat Caused by *Fusarium solani* in California

Fatemeh Khodadadi (fatemehk@ucr.edu), Zahra Pegahrad, Mehdi Kamali Dashtarzhaneh
Department of Microbiology and Plant Pathology, University of California, Riverside

Dry root rot, a persistent threat to California citrus, is caused by the soilborne fungus *Fusarium solani*. While historically prevalent, the disease surged following wet winters in the mid-20th century, impacting both young and mature trees, particularly on susceptible rootstocks and in poorly drained soils. Despite the passage of time, dry root rot remains a significant challenge for the state's citrus industry.

F. solani thrives on weakened hosts. Stressors such as other pathogens (e.g., *Phytophthora* root rot), nutrient deficiencies, and environmental extremes (drought, excessive moisture, high temperatures) increase tree susceptibility.

The development of dry root rot is a complex interplay of factors.

- **Environmental factors:** Drought, excessive moisture, and high temperatures can weaken trees and promote fungal growth. Poor soil drainage and nutrient imbalances further compromise tree health.
- **Host factors:** Rootstock susceptibility varies significantly. Older, less vigorous trees are more prone to infection.
- **Fungal factors:** Pre-infection or co-infection with Phytophthora root rot and the level of inoculum in the soil influence disease severity.

By understanding these intricate interactions, growers can implement targeted management strategies to effectively mitigate the impact of dry root rot on their citrus orchards.

Dry root rot, caused by *F. solani*, primarily attacks the root system, leading to a gradual decline in tree health. Infected roots exhibit a distinctive reddish-purple to grayish-black discoloration, differentiating it from *Phytophthora* root rot, which primarily affects the outer root bark. This discoloration can extend into the trunk, resulting in internal wood decay and external bark discoloration. Above-ground symptoms include leaf yellowing, premature leaf drop, twig dieback, and reduced fruit production. In severe cases, trees may experience sudden collapse, even while still bearing leaves (Figure 1).

Figure 1. Dry Root Rot Symptoms. Roots show black, purple, or grayish discoloration with brown vascular tissue. Leaves exhibit rapid yellowing, browning, and dieback, leading to tree collapse.

In the past year, we observed a concerning trend: sudden wilting and collapse of seemingly healthy lemon trees in Santa Paula, Ventura, and the Central Valley. Upon examination, the root systems displayed characteristic black, purple, or grayish discoloration with a brown vascular component, indicative of dry root rot. Leaves exhibited rapid yellowing, browning, and dieback, culminating in tree collapse. Intriguingly, these collapses were exclusively observed in lemon trees grafted onto Carrizo citrange rootstock, while adjacent lemon blocks on Trifoliate or C-35 rootstocks remained unaffected despite similar management practices and environmental conditions. These observations led to two primary hypotheses:

1. **Nursery Contamination:** Nurseries represent a significant source of citrus dry root rot, with infected plant material, contaminated soil, and irrigation water serving as potential pathways for pathogen dissemination, contributing to outbreaks in both home gardens and commercial orchards.
2. **Rootstock Susceptibility:** Carrizo citrange rootstock may exhibit increased susceptibility to dry root rot caused by *Fusarium solani* and *Phytophthora* species compared to Trifoliate and C-35 rootstocks.

To investigate these hypotheses, a comprehensive survey of California citrus nurseries was conducted. Soil, root, and water samples were collected and subjected to rigorous isolation procedures. Four key pathogens were identified: *Fusarium solani*, *F. oxysporum*, *Phytophthora nicotianae*, and *P. citrophthora*. Among these, *F. solani* emerged as the most prevalent species isolated from nursery samples (Figure 2), further supporting the potential role of nurseries in the dissemination of this devastating disease.

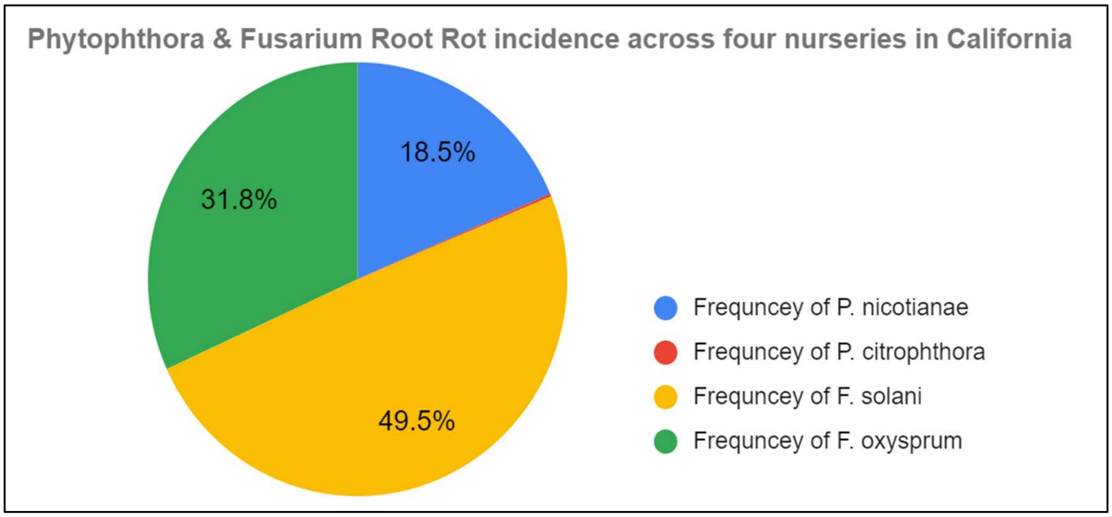

Figure 2. Frequency of *Phytophthora* and *Fusarium* species isolated from citrus nurseries in California.

Morphological examination revealed distinct characteristics for each fungal genus (Figure 3). These findings underscore the critical importance of implementing rigorous sanitation practices and robust disease management strategies within nursery operations to effectively prevent the dissemination of these harmful pathogens.

Selecting a healthy, *Fusarium* and *Phytophthora*-tolerant rootstock is paramount for establishing new citrus orchards, as it confers disease tolerance to the entire plant. Resistant rootstocks serve as a cornerstone of integrated disease management strategies. Our research focuses on developing an integrated approach to combat dry root rot and *Phytophthora* root rot in citrus nurseries and groves. Utilizing resistant rootstocks is a promising strategy to mitigate both diseases. If further research establishes a link between prior *Phytophthora* infection and increased dry root rot occurrence, existing control measures for *Phytophthora* could potentially offer a secondary benefit by reducing dry root rot incidence in citrus production.

Managing citrus dry root rot effectively requires a multi-pronged approach. Key strategies include:

- **Disease-Free Planting Material:** Sourcing disease-free planting material from reputable nurseries is paramount to prevent the introduction of pathogens into orchards.
- **Rootstock Selection:** Selecting disease-resistant rootstocks is crucial, as they provide inherent tolerance to the pathogen.

- **Soil Solarization:** Solarizing the soil prior to planting can effectively reduce populations of soilborne pathogens, including *F. solani*.
- **Cultural Practices:**
    - Optimizing irrigation and fertilization practices enhances tree vigor and reduces disease susceptibility.
    - Proper pruning techniques promote air circulation and minimize stress on the trees.
- **Chemical Control:** In the absence of dedicated DRR fungicides, controlling Phytophthora through fungicide applications represents a viable interim strategy. However, strict adherence to label guidelines and robust fungicide rotation practices are essential to prevent resistance, as we continue to seek effective solutions for DRR management.
- **Biological Control:** Utilizing beneficial microorganisms, such as *Trichoderma* spp., can help suppress the growth of *F. solani* and other pathogens.
- **Sanitation:** Maintaining good orchard sanitation, including removing and disposing of infected plant debris, is crucial for minimizing the spread of the disease.

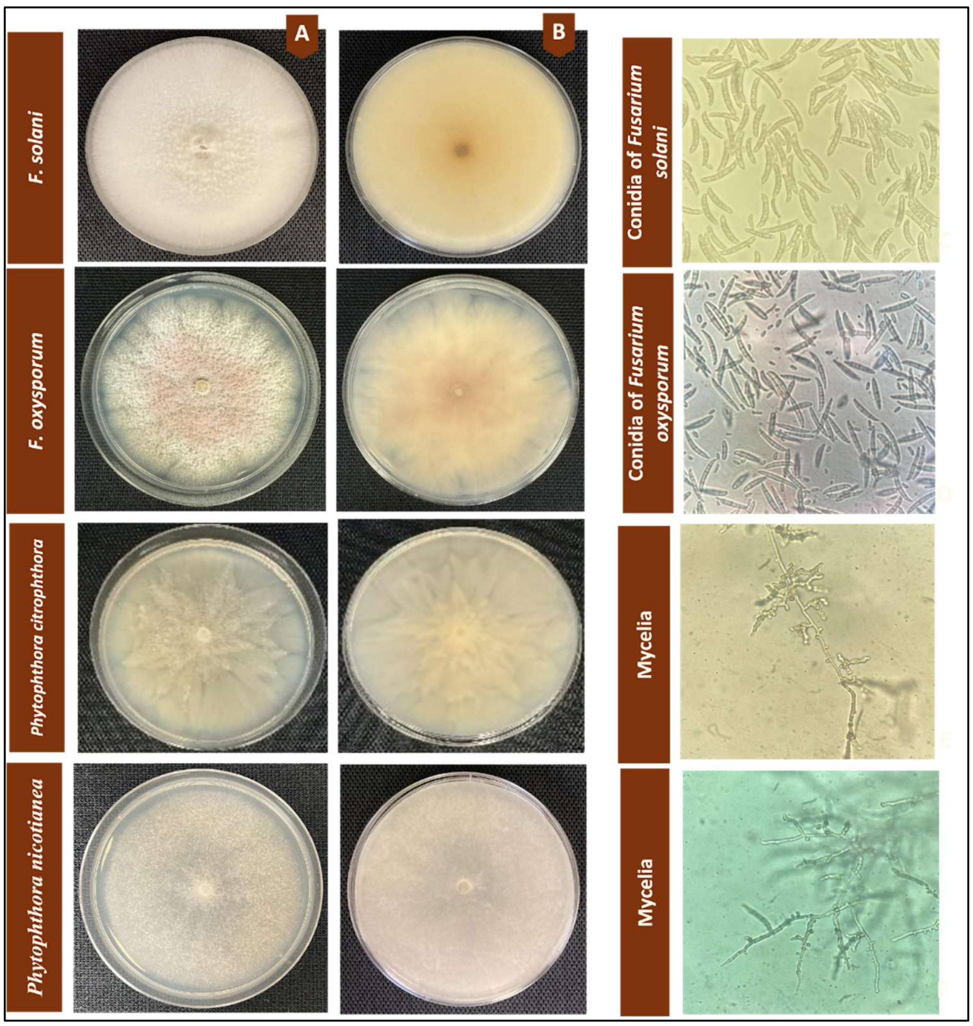

Figure 3. Morphological characteristics of representative species isolated from citrus nursery samples of root tissue and soil belonging to *Fusarium* and *Phytophthora* spp. *Fusarium* colonies were sub-cultured on potato dextrose media (PDA), while *Phytophthora* colonies were grown on V8 juice agar. The front (**A**) and back (**B**) of media plates were photographed. Under 40x total magnification, multiseptated, oval/kidney-shaped *F. solani* (**C**) and multiseptated, oval/kidney-shaped with sharp end on both side *F. oxysporum* (**D**) mycelia of *Phytophthora* spp. under 40X magnification (**E, F**).

Pest Scouting Reports Needed for Research Study

Bodil Cass, Subtropical Entomologist, UC Riverside (bodil.cass@ucr.edu)
Hamutahl Cohen, Entomology Advisor, Ventura & Los Angeles (hcohen@ucanr.edu)
Sandipa Gautam, Citrus IPM Advisor, Tulare, Fresno, Madera & Kern (sangautam@ucanr.edu)

California's citrus industry has an exemplary integrated pest management (IPM) program, developed from decades of research and experience. Over the years, this IPM program has addressed several issues from heavy pest pressure from a range of invertebrates, with approximately 30 different arthropod pests of concern. Despite the complexities of this susceptibility profile, citrus in California is sustainably farmed thanks to the careful, frequent monitoring conducted by expert Pest Control Advisors (PCAs) who recommend management decisions within the principles of IPM to implement preventative and responsive biological, cultural and chemical control strategies.

Recently, a combination of disruptive pressures has increasingly stretched the efficacy of this cornerstone IPM program, with new invasive species, extreme weather patterns, regulatory changes, and urban encroachment. These large-scale challenges will not be adequately addressed with small-scale research farm trials alone. Instead, we must look to historical scouting records and 'big data' approaches to determine the insect population dynamics at play in the range of different citrus varieties and growing conditions across the state. Such approaches are used effectively in other crop systems such as apples and pears[1], vineyards[2], cotton[3], and carrots[4], to name a few.

Three University of California Cooperative Extension researchers have received funding from the Hrdy Foundation to conduct analyses on historical PCA scouting records. Dr. Bodil Cass ('Bo'; statewide subtropicals entomology specialist based at UC Riverside), Dr. Hamutahl Cohen (Entomology Advisor based in Ventura), and Dr. Sandipa Gautam (Citrus Advisor based in Tulare) are working together to expand the Citrusformatics data collection started more than a decade ago by Dr. Jay Rosenheim (Distinguished Professor Emeritus of Entomology, UC Davis). The goals of the project are two-fold: first, to directly test hypotheses about drivers of outbreaks of citrus thrips, Asian Citrus Psyllid (ACP) and other pest concerns raised by growers in our recent needs assessment, and second, building a foundation for continued data-driven research into citrus pest challenges in the future. At present the database only includes records from the Central Valley up to 2021. More participants are needed to expand the database forward in time, increase statistical power, and to more growing regions, to allow for analyses of landscape-level processes on pest densities.

Our current analysis for the Central Valley will be focused on citrus thrips, following the devastating losses to scarring in 2023. Citrus thrips are a key pest of California citrus, yet our current phenology models for citrus thrips management are based on observations made in small research plots in early to late 1900s. Disruptive weather patterns are a leading hypothesis behind the recent failures in carefully timed thrips control strategies. We will test this hypothesis using statistical models with weather variables as the predictor variables, along with other grove covariates (tree age, field size, cultivar, growing region, etc.) and measures of thrips density and fruit damage as the response variables. With this information, we hope to adapt treatment timing for weather-driven outbreaks. In regions where citrus thrips are less of a concern, like coastal Ventura County, we plan to apply our models to understand how weather patterns affect ACP population dynamics.

Much more data is needed to properly tease out the effects of weather from other sources of variation. Scouting data is helpful in any format, quality or quantity on any arthropod pest. We have input everything from electronic spreadsheets to old hand-written field notebooks that we scanned and typed in manually. The most helpful records may be collecting dust in a forgotten filing cabinet, waiting to be repurposed. Data is anonymized and stored on a secure server; only means and summary data are reported in results. If you are a grower or PCA interested in joining the project, please contact the researcher from your area:

Southern/Inland Empire: Bodil Cass (bodil.cass@ucr.edu, 951-827-4454)
Central Coast: Hamutahl Cohen, (hcohen@ucanr.edu)
Central Valley: Sandipa Gautam (sangautam@ucanr.edu, 559-592-2408)

Figure 1. Field scouting reports needed for citrus thrips and other citrus pests – please contact us if you have old scouting reports to contribute to this research project.

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Avocado Leaves Evolved to Handle Wetness

Ben Faber (bafaber@ucdavis.edu), Subtropical Horticulture, Ventura/Santa Barbara

Avocados come from a wet environment. The Guatemalan and Mexican races come from cloud forest environments that are dripping much of the year from if not rain, a high humidity that creates a cloud-like condition. These are conditions that leaf fungi love, so in order to protect themselves from fungi, leaves have developed a waxy cuticle so that water runs off. This also protects the leaf from water that would dissolve nutrients in the leaf. This is one reason that foliar nutrient sprays don't work well with avocado. They can get into flowers, so floral sprays can work to a certain extent. But then you might mess up pollination. Another consequence of this cuticle is that the leaves are resistant to decay. Once reason for the thick leaf duff/mulch/layer found in avocado orchards. I tagged leaves that had newly fallen with different colored propylene string, so that I could return later to find them. I staked them but still lost a lot of them. Leaves I collected for the photo below were 1 month, 6 months and one year old. The leaf on the right is one year old. That waxy layer is really resistant.

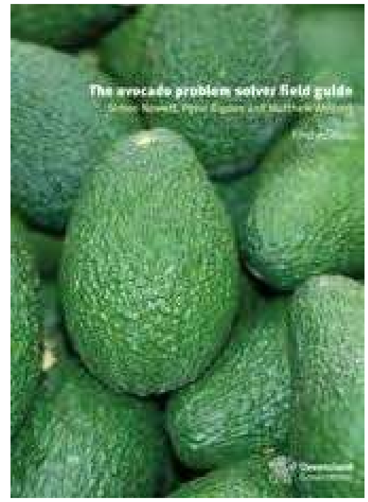
Figure: Costa Rica Highland Cloud Forest (top left). Shiny waxy avocado leaf (top right). Thick mulch layer in avocado orchard (bottom left). One month, 6 months and 1 year-old leaf (bottom right).

Read about studies on zinc uptake by avocado leaves

Crowley DE, Smith W, Faber B and Manthey JA. 1996. Zinc Fertilization in Avocado Trees. HortScience 31:224-229. https://www.avocadosource.com/Journals/HortScience/HortSci_1996_31_PG_224-229.pdf

Avocado Guide from Dow Under

Ben Faber (bafaber@ucdavis.edu), Subtropical Horticulture, Ventura/Santa Barbara



The 2nd edition of the Avocado Problem Solver Field Guide is OUT NOW! It contains 14 new disorders (including six spotted mites, panicle dieback and tree lodging), it updates and expands the information provided in the original edition, includes three new beneficial insects and three new exotic pests, and includes 70 additional photographs as well as replacing many of the original ones. It is 30 pages longer than the 1st edition. The new edition illustrates, describes, and provides management advice for 114 different pests, diseases, and other disorders of avocado in Australia, many of which are common to avocado industries in other countries. The first part of the book is expressly designed to help the user quickly identify the problem, this is achieved using 520 color photographs which are arranged in order of plant part and grouped logically according to symptom. The caption of each photograph refers the reader to a page in the second part of the book which provides information covering the cause, general comments, description, prevention, and management of the problem. All the pests are not found in California - yet- nor are all the diseases, but this is a beautifully illustrated and documented guide that can help CA avocado growers. To order a copy of this guide, contact admin2@avocado.org.au.

AVOCADOS AUSTRALIA – ORDER FORM

The Avocado Problem Solver Field Guide – United States of America

Description	Price per book	Quantity Required
The Avocado Problem Solver Field Guide The 2nd edition contains 14 new disorders (including six spotted mite, panicle dieback and tree lodging); it updates and expands the information provided in the original edition, includes three new beneficial insects and three new exotic pests, and includes 70 additional photographs as well as replacing many of the original ones. It is 30 pages longer than the 1st edition. The new edition illustrates, describes, and provides management advice for 114 different pests, diseases, and other disorders of avocado in Australia, many of which are common to avocado industries in other countries. The first part of the book is expressly designed to help the user quickly identify the problem, this is achieved using 520 colour photographs which are arranged in order of plant part and grouped logically according to symptom. The caption of each photograph refers the reader to a page in the second part of the book which provides information covering the cause, general comments, description, prevention, and management of the problem.	$161 AUD (includes postage to USA)	

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Newly Published UCANR Olive Production Manual for Oil Now Available!

Dan Flynn: Founder and Director Emeritus Robert Mondavi Olive Center
Selina Wang: Professor of Extension Dept. of food Science and Technology, UC Davis
Louise Ferguson (LFerguson@ucdavis.edu), Professor of. Extension, Dept. of Plant Sciences, UC Davis

Due to strong domestic and international market demand, the ability of the tree to produce under low chill and high heat climates, on Class II soils (3) using 18 inches of water with mechanical pruning and harvesting the California olive oil industry is now approaching 40,000 acres. In the 2022-2023 season California's 400 olive growers and 50 processing mills produced 1.94 million gallons (7.34 million liters) of award-winning quality oil. This production was 20% - 25% below the rolling five-year average due to drought and extreme weather events during these years. (1, 2). A drop in production was projected for 2023-2024 but final production statistics are not available.

This production met only ~ 3-7% of domestic olive oil market demand much less international demand. Globally, the U.S. (primarily California) ranks 14th among global olive oil producers, with Spain being the world leader. But despite the growing number of olive orchards in California, 93-97% of the olive oil sold in the country is imported. (1,2). However, industry sources estimate that the 2024-2025 harvest could yield around 3 million gallons (11.36 million liters) of olive oil. The U.S. olive oil market size was estimated at a value of USD 3.13 billion in 2024 and is expected to grow at a Computed Annual Growth Rate (CAGR) of 7.4% from 2025 – 2030. This increase in the US olive oil market is driven by a confluence of health trends, culinary preferences, and evolving consumer attitudes. (4)

To support the market demand and growth of this this formerly legacy, and now high potential, growth industry in California, UCANR Press has produced the Olive Production Manual for Oil, publication # 3559: https://anrcatalog.ucanr.edu/Details.aspx?itemNo=3559. This comprehensive, practical growing guide begins with the most important factors for successful production with climate requirements; an example of the level of specific practical information is given in the example of **Table 3.1** from the manual showing the detailed climatic conditions required for successful olive tree productivity. The balance of this comprehensive and practical manual by California's and the world's experts on olive oil include chapters on the industry's history, olive tree botany and physiology and all aspects of producing and processing olive oil. All the authors are current University of California faculty or industry members and welcome feedback from the manual's users.

Table 3.1 Seasonal climate challenges for olive orchards.

Winter	Minimal tree damage: 32° to 23°F (0° to -5°C) Young tree damage: < 25°F (-4°C) Tree cracking and large limb death: 23° to 18°F (-5° to -8°C) Tree death of cold-sensitive varieties: < 18°F (-8°C) Large limb and mature tree death of cold-hardy varieties: < 15°F (-9°C)
Spring	Reduced fruit set: prolonged temperatures < 55°F (13°C), very high humidity, or hot, dry, windy conditions during bloom
Summer	Reduced oil accumulation: > 93° to 95°F (34° to 35°C) Development of peacock spot fungus and olive knot bacteria: significant rain
Fall	Frost damage and oil flavor defects: < 30°F (-1°C) Harvest delays: rain

(Olive Production Manual for Oil 2024: p. 25)

Information Resources

1.https://www.oliveoiltimes.com/production/californians-navigate-a-challenging-harvest-with-unwavering-commitment-to-quality/119972#:~:text=Producers%20from%20across%20the%20state,the%20rolling%20five%2Dyear%20average.&text=Among%20the%20biggest%20winners%20in,and%20abroad%20to%20ensure%20quality.

2.https://www.montereycountynow.com/food_wine/olive-oil-is-booming-in-california-and-central-coast-producers-are-among-the-best/article_c748e270-dc07-11ee-a590-e736520acb9b.html#:~:text=According%20to%20the%20World%20Population,is%20a%20lot%20out%20there.

3. https://www.ars.usda.gov/ARSUserFiles/np215/Food%20security%20talk%20inputs%20Lunch%203-15-11.pdf

4. https://www.internationaloliveoil.org/world-market-of-olive-oil-and-table-olives-data-from-december-2024/#:~:text=Olive%20oil%20–0Estimates%20for%20the,to%20exceed%201.2%20million%20tonnes.

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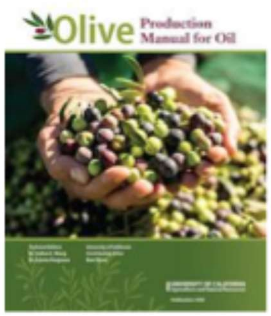
Agriculture and Natural Resources

Olive Production Manual for Oil



The olive oil industry in California has undergone a sea change over the last decade, with acreage of oil olives surpassing that of table olives. Now UC experts turn their expertise to this important market.

This extensive manual covers all aspects of olive production for oil, from orchard site selection to processing of virgin olive oil. Changes fueling the growth in production are covered, including establishing high-density and super high-density orchards, the latest methods of irrigation management, and harvesting methods. The concepts presented in the book are scalable, benefiting large and niche growers alike.

Other topics include:
International and California standards for olive oil grades
Soil and nutrient management
Canopy management
Anthropod pests, including the invasive olive fruit fly and the olive psyllid
Diseases
Weed management
Spray application techniques

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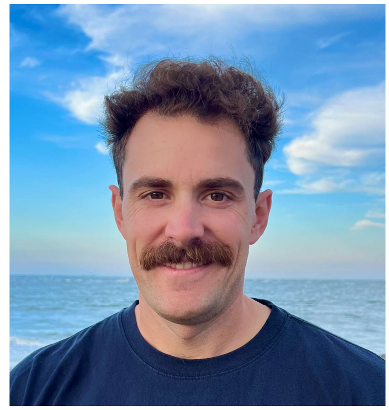
Introducing Matthew Fatino



Matt will be joining UC ANR in July as the CE Advisor for Subtropical Crops in San Diego and Riverside Counties. He will be based in San Diego and will develop an applied research and extension program to serve subtropical crop growers in Southern California. Once he starts in the position, he will update the Topics in Subtropics with his contact information.

Matt grew up in San Diego and Orange counties before pursuing a degree in Crop and Fruit Science at Cal Poly San Luis Obispo, where he worked in the citrus and avocado groves on campus. After graduating from Cal Poly, he pursued an MSc followed by a PhD at UC Davis in the Horticulture and Agronomy program. During the past 6 years at UC Davis, Matt has been focused on developing an applied research and extension program for branched broomrape management in California processing tomatoes. He is excited to return to Southern California and subtropical cropping systems and to develop an applied research program to address issues faced by his clientele. Although he has spent the past 6 years focused on weed science, he is excited to sharpen his plant pathology, entomology, and horticultural skills to meet the needs of his stakeholders.

Topics in Subtropics

Newsletter by Tree Crops Farm Advisors

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