UC CE UNIVERSITY OF CALIFORNIA Agriculture and Natural Resources Cooperative Extension

Tree and Vine Notes *January 2024*

Upcoming Events

January 29th, 2024
Digital Tools for Water Workshop
More information on Page 5
Time: 9:00 AM – 12:00 PM
Location: 2145 Wardrobe Ave, Merced, CA 95341

February 2nd, 2024
Quad-County Walnut Institute
More information on Page 5
Time: 8:00 AM – 2:30 PM
Contact: Cameron Zuber cazuber@ucanr.edu
Sponsor: California Walnut Board
Location: 2101 E Earhart Ave, Stockton, CA 95206

March 11th to 15th, 2024
Principles of Fruit & Nut Tree Growth, Cropping, and Management
More information on Page 1
Contact: fruitsandnuts@ucdavis.edu
Location: UC Davis, Foundation Plant Sciences

Bulleted Summary of Issue

Upcoming Principles of Fruit & Nut Course

- Upcoming multiday course coming in March and being held in Davis, CA. Will cover various topics pertaining to growing and managing fruit and tree nut in California. Check the link below on Page 1 for more information and to register.

Winter Sanitation

- Shaking mummies from almond trees for winter sanitation by mid-January is preferred to reduce damage to emerging flowers. However, a later shake could potentially be performed without adversly affecting yeilds. Affects on yield depends on shake timing with bloom. If timed well, shaking by late January to early February may remove many buds but may not compromise yeilds.
- Sanitation is no longer just for navel orangeworm as a carpophilus beetle was newly discovered in California. Mowing or destroying nuts after shaking is especially important when managing for beetle.

Irrigation Considertations

- Start of irrigation each year can be different as it depends on the amount of soil moisture at the beginning of the growing season which is dictated by precipitation during fall and winter.
- While monitoring plant water stress may be preferred, if using a soil moisture based approach knowing reasonable allowable depletion level for soil type and the effective rootzone of your orchard is important in understanding when irrigation could start.

Prune Brownline Disease Alert

- While normally rare, prune brownline disease has been detected in a few prune orchards in the Sacramento Valley in 2023. While worrisome, it is unknown at this time if there should be great concern for prune growers.
- If you suspect your orchard has brownline please contact a local farm advisors. If you do not know who to contact or have questions about the disease, please reach out to Jaime Ott at njott@ucanr.edu. If in Merced County, you can also reach out to Cameron Zuber at cazuber@ucanr.edu.

Upcoming Principles of Fruit & Nut Tree Growth, Cropping, and Management Course

Understanding the fundamentals of tree biology is essential in making sound orchard management and business decisions in the tree fruit and nut industry. However, access to educational courses on basic fruit and nut tree biology, and how it relates to agronomic practices, is limited. This course incorporates lecture, lab exercises, and field demonstrations to provide information on all aspects of basic plant biology and the relationship between plant biology and nuts and fruit orchard management.

Course topics include tree growth, pruning, dormancy, chilling, flowering, pollination & fruit set, fruit development & thinning, tree water relations & irrigation, plant nutrition, rootstocks, tree fruit pests and pathogens, and harvesting. This course includes five days of instruction in Mach with an optional four day field trip the following week. Each day will have several hours of lectures with hands-on field demonstrations where applicable. The course is being offered for $1595.

Please registration by February 29th. More information and registration can be found here: https://fruitsandnuts.ucdavis.edu/events/2024-principles-fruit-nut-tree-growth-cropping-and-management

Course attendees pruning trees on a pleasant and crisp March day in 2023.

Considerations Towards New Beetle Pest and How Late to Shake for Winter Sanitization in Almond

Adapted form various sources

The removal of nuts remaining on almond trees from the prior year's crop is an important winter sanitation practice for the management of navel orangeworm (NOW), *Amyelois transitella*, and newly discovered in California carpophilus beetle, *Carpophilus truncatus*.

Residual nuts are called 'mummies' and the process of removing the mummies is referred to as a 'mummy shake' because they are mechanically shaken from trees. This practice is conducted during the dormant and delayed dormant season, a time when orchard access may be thwarted by the winter rains.

Most growers strive to have the mummy shake complete by mid-January when buds are dormant and less likely to abscise from the vibration caused by a mechanical shaker. As the flower buds progress toward bloom, they become more sensitive to the shaker vibration and more likely to abscise. Studies conducted in the 1980s (Sibbett et al.) established that the shaking of mummies by January 31 (approximately 8 days prior to bloom) at a Kern County site did not adversely affect yield; however, the authors cautioned growers of the risk of delaying mummy shakes further, particularly on early blooming varieties and in locations in the southern San Joaquin Valley.

Because bud development and bloom date advance with increasing latitude, the potential risk of early and mid-February mummy shakes was investigated by W. Asai (Pomology Consulting, Turlock, CA) in the northern San Joaquin Valley. This work, conducted at a more northern latitude, suggested shakes conducted in early February may not compromise yield.

Although rainy years or other complications make it difficult for growers to access orchards and complete orchard sanitation tasks, the heightened soil moisture adversely affects NOW survival in comparison to dry winters. Mummy nuts on the ground support enhanced NOW survival on a dry orchard floor than on moist soil with winter vegetation in the row middles.

Photos of removed buds (top) and, shaker performing mummy shake with blue tarp on ground to capture removed buds (bottom). Photos source Wes Asai.

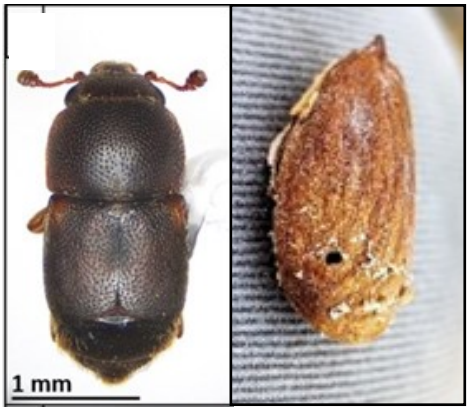
Intact mummy nut left on ground, regardless of soil moisture, can be beneficial for a newly discovered pest called carpophilus beetle. This pest was recently found infesting almonds and pistachios in the San Joaquin Valley, and is recognized as one of the top two pests in Australian almond production. This invasive beetle overwinters in mummy nuts that are left in the tree or on the ground. Adults move onto new nuts around hull-split, where they deposit their eggs directly onto the nut. The larvae that emerge feed on the developing kernels.

Overwintering beetles have been reported to survive well within intact mummy nuts, so destroying these nuts is extremely important for appropriate sanitation.

Flailing, mowing, or other methods of destroying the intact mummy nuts on the ground should be completed by March 1 for NOW, prior to the emergence of adults. The emergence profile of NOW varies by location, but the first flight generally starts in late March. For the carpophilus beetle, destroying intact nuts can wait longer as adults tend to emerge closer to hull split or when soil begins to warm.

Growers who have not completed their winter sanitation practices by the end of January should walk their orchards to assess bud development if considering a delayed mummy shake. Winter sanitation can reduce NOW damage by up to 80%, so an early February shake may be worth the effort if orchard access is possible and bud development has not advanced into pink tip.

Destroying shaken mummy nuts is further reduced expected damage from NOW, but is necessary to manage for the newly discovered carpophilus beetle. Unfortunately, exact metrics and specifics for management of this beetle are still being explored. If you have questions regarding the new carpophilus beetle or suspect its presence in your orchard, please contact a local farm advisor in your area.



Adult carpophilus beetles as seen from the dorsal (left). Photo by Sarah Meierotto, UC Riverside. Almond kernel with carpophilus beetle feeding hole (right). Photo by Houston Wilson.

This article adapted from one written by Cameron Zuber and Elizabeth Fichtner for the San Joaquin Valley Trees and Vines website. *Carpophilus truncates* information adapted from article (https://ucanr.edu/News/?routeName=newsstory&postnum=58245) and conversations with Houston Wilson, Jhalendra Rijal, and David Haviland.

Understanding Soil Moisture and Effective Rootzone to Inform the Start of Irrigation

By Cameron Zuber

The amount of precipitation during the fall and winter can dictate when to start irrigating deciduous trees at the beginning of the season as it affects the amount of water in the soil. Irrigation needs to begin when plant become water stressed which depends on soil moisture.

While monitoring plant water stress can provide more tree-specific information, it may not be feasible for some. Monitoring soil moisture provide an alternative but requires understanding a reasonable soil moisture depletion level for your soil and the depth of the effective rootzone for your trees.

A recommendation of 50% allowable depletion from its field capacity is considered reasonable to start irrigating. Each soil texture can hold a different amount of water that is available to trees.

As soil moisture is typically given as an amount of water per foot of soil depth, it is important to take into account the depth of the effective rootzone. Effective rootzone is the potential depth plant roots can uptake the maximum amount of available water from the soil.

For woody agricultural tree crops, there is a misperception that the effective rootzone is similar to the height and size of the above ground portion of the tree. Current understanding is majority of older woody agricultural tree's roots tends to spread out and only go to about 1½ to three-feet deep. Young woody tree's effective rootzone can be shallower.

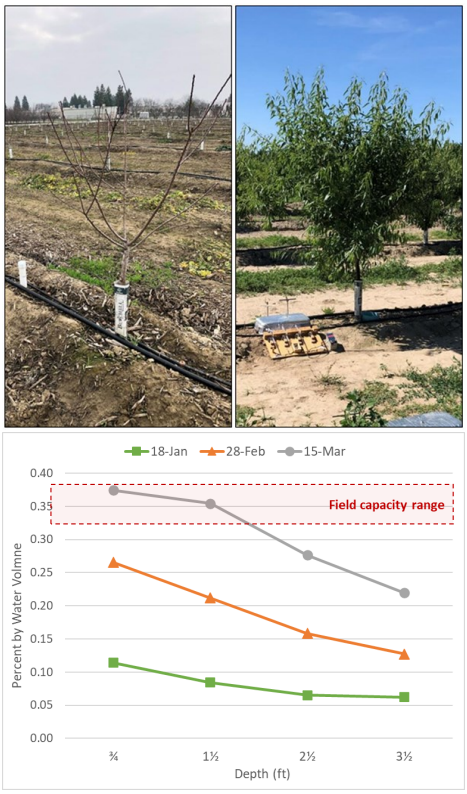
Understanding the potential depth of an orchard's effective rootzone is important as soil moisture can vary at different depths. As an example, let us look at information from a wetter rainy season a few years ago.

Soil moisture measurements were collected January to March at an almond orchard in Parlier, CA. Overall, the soil moisture increased at all depths month to month (graph right column).

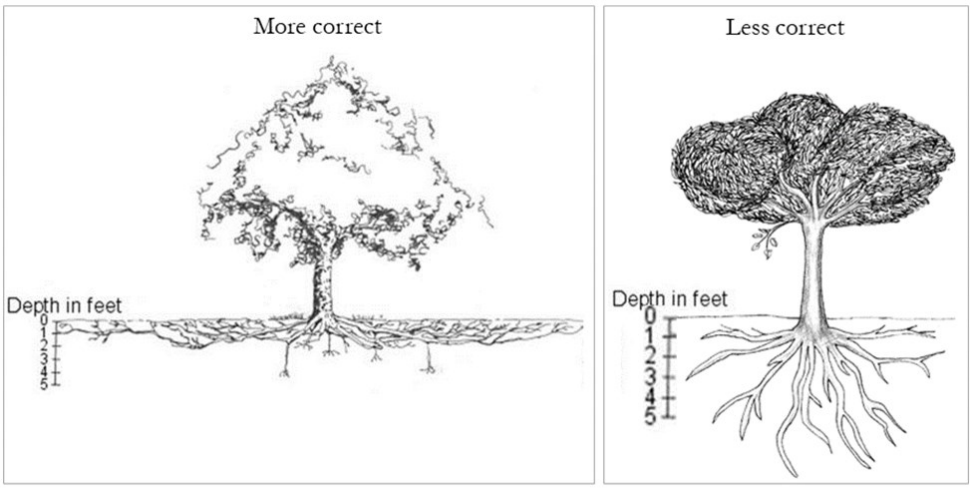
By March, the soil moisture above 1½ feet reached the field capacity for the soil at this orchard (dashed box in graph). However, the soil moisture at and below 2½ feet stayed below the field capacity.

While trees typically transpire much of its water needs from the effective rootzone, some may still be transpired from deeper depths. When scheduling your first irrigation realize that you may have different soil moisture at different depths. Which soils depths matter is based which portion of the rootzone the tree is transpiring water.

To understand when to start irrigation and if taking a soil moisture approach, first determine the soil moisture towards the beginning of the growing season. Then the allowable depletion based on your soil type and the suspected depth of the effective rootzone. Once 50% allowable depletion is reached begin irrigating. Determining that point can be done my monitoring soil moisture or calculating loss of soil moisture through evapotranspiration.



Photos of almond tree during dormancy period (top-left) and after leaf emergence (top-right). Graph (bottom) with soil moisture at various depths in January, February, and March of 2018 at almond orchard in Parlier, CA. Colored lines correspond to one day of soil moisture readings. Red box shows field capacity range for site.



Conceptual images of effective rootzone of older woody trees. Left image more correct with majority of effective roots from 1½ to three feet deep (adjusted from source, University of Minnesota Extension). Right image less correct with roots similar as above ground portions of trees (adjusted from source, Janice Austin).

This article adapted from ones written by Cameron Zuber for the San Joaquin Valley Trees and Vines and Almond Doctor websites.

AgAlert - Prune Brownline Disease

By Jaime Ott

Since this spring, we have found prune brownline disease (brownline) in four Sacramento Valley orchards on Krymsk 86 rootstock. Symptoms include tree decline and rapid collapse of the entire canopy. If you peel the bark away, a distinct line of brown, dead tissue will be visible at the graft union.

If you notice these symptoms in your orchard, please reach out to your local farm advisor so we can sample for confirmation. Over the last several decades brownline has been considered a very rare disease in prunes, and we want to understand the extent of current infections.

The Details

Prune brownline was first described in the late '70s affecting prune trees on peach (lovell, nemaguard) or Myrobalan plum (myro seedling, 29C) rootstocks. At that time, there were many orchards affected, especially in the south Sacramento Valley. Since then, it has only been reported very rarely.

The disease is caused by Tomato Ringspot Virus (ToRSV), which is transmitted to the tree by dagger nematodes (Xiphinema species). The virus infects the rootstock, moving up the trunk toward the graft union. When it reaches the graft union, the scion reacts with a hypersensitive response, killing the cells in contact with the infected rootstock tissue. This results in the line of dead tissue at the graft union, which disrupts the transport of water and eventually kills the tree.

From previous research, we know that trees on Marianna 2624 are resistant to prune brownline disease: our best recommendation currently is to use that as a rootstock for replants if you have confirmed brownline in your orchard. Trees on lovell, nemaguard, myro seedling, and 29C are all susceptible to brownline, and our in-orchard observations add Krymsk 86 to that list. We plan to conduct testing to determine the susceptibility of other modern rootstock options, such as Atlas, Viking, and M40.

If you have questions about prune brownline disease or think you might have the disease in your orchard, please reach out to Jaime Ott at njott@ucanr.edu. If in Merced County, you can also reach out to Cameron Zuber at cazuber@ucanr.edu.

Prune brownline affected trees in spring (left, arrows) and after harvest 2023 (right, arrow) with healthy trees for comparison. Brownline causes decline and collapse of the entire canopy: trees appear "off-color", with yellowing or scorched leaves. In some cases, but not all, there is gumming on the trunk above the graft union. Note that these symptoms are NOT exclusive to brownline disease (Source, Jamie Ott).

Brownline affected trees also tend to have a bulge at the graft union, with the scion overgrowing the rootstock (top, arrow). Trees affected by prune brownline have a distinct line of brown, dead tissue at the graft union (middle and bottom, arrows). This line can be exposed by cutting away the bark. Once a tree is collapsing, the line will usually extend entirely around the trunk, girdling the tree (Source, Jamie Ott).

This article was originally from Sacramento Valley Prune News found here https://cesutter.ucanr.edu/news_204522/Sacramento_Valley_Prune_News/
Jaime Ott, UCCE Tehama, Shasta, Glenn, and Butte Counties, njott@ucanr.edu

UNIVERSITY OF CALIFORNIA
Agriculture and Natural Resources

IN-PERSON EVENT

QUAD-COUNTY WALNUT INSTITUTE

2024

Event Details

FRIDAY, FEBRUARY 2ND, 2024
8:00 AM - 2:30 PM

Robert J Cabral Agricultural Center
2101 E. Earhart Ave.
Stockton, CA 95206

RSVP

Event free to attend

We would appreciate an RSVP to better plan for lunch.
Please use the link or scan the code below

https://ucanr.edu/QCWI-RSVP

DESCRIPTION

At this year's Quad-County Walnut Institute we are partnering with the California Walnut Board and Commission to host a two session event. The first session will have presentations from various experts and researchers and the second session will be for the board, commission, and attendants to discuss industry interests and other topics of importance. Growers, CCAs, PCAs, and other agricultural professionals who work with California walnuts are encouraged to attend.

Coffee and donuts in the morning. Lunch is being provided by the California Walnut Board and Commission.

TOPICS

Sign-in (7:30 AM to 8:00 AM)

First Session (8:00 AM to 12:00 PM)

- 8:00 AM to 8:15 AM - Introduction
- 8:15 AM to 8:45 AM - Managing walnut husk fly and scale insects in walnuts (Robert Van Steenwyk)
- 8:45 AM to 9:15 AM - Principles of irrigation management in walnuts (Abdelmoneim "Moneim" Mohamed)
- 9:15 AM to 9:45 AM - Orchard weed management updates (Brad Hanson)
- 10:00 AM to 10:30 AM - Dissecting the walnut mold problem of walnut and its management (Themis Michailides)
- 10:30 AM to 11:00 AM - Cause, prevention, and treatments of crown and trunk galls in walnuts (Cameron Zuber)
- 11:00 AM to 11:30 AM - Cover crop benefits and considerations for walnut orchards (Kamyar Aram)
- 11:30 AM to 12:00 PM - Research updates on borer and worm pests of walnuts (Jhalendra Rijal)

Lunch (12:00 PM to 1:00 PM)

Second Session (1:00 PM to 2:30 PM)

- 1:00 PM to 1:30 PM - Talk with Robert Verloop, Executive Director and CEO of California Walnut Board and Commission
- 1:30 PM to 2:30 PM - Panel and attendee discussion

CONTINUING EDUCATION

- Department of Pesticide Regulation (DPR) Pending approval - 2.5 CE
- Certified Crop Advisor (CCA) Approved - 3.5 CEU

Photos in flyer from Growing the Valley podcast

CONTACT

Kamyar Aram (kamaram@ucanr.edu), Roger Duncan (raduncan@ucanr.edu), Jhalendra Rijal (jrijal@ucanr.edu), Cameron Zuber (cazuber@ucanr.edu)

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SECURE WATER FUTURE (SWF) PRESENTS:

DIGITAL TOOLS FOR WATER RESOURCE MANAGEMENT & UCM EXPERIMENTAL SMART FARM AND VERNAL POOL AND GRASSLAND RESERVE TOUR

Monday, January 29, 2024

SECUREWATERFUTURE.NET

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Cooperative Extension Merced County
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Tree and Vine Notes

January 2024

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https://cemerced.ucanr.edu/news_392/Tree_and_Vine_Newsletter/

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