

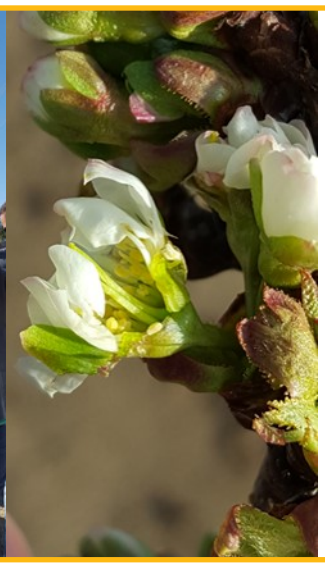

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Agriculture and Natural Resources
UC CE

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Walnut News

& *Fruit for Thought*

Covering walnuts, cherries, apricots & grapes

In this Issue

Announcements

IPM Breakfast Meetings

Old Mill Café, 600 9th Street, Modesto
1st and 3rd Wednesdays of the month
March through June, 7:00 a.m.
1.0 hour continuing education credit per session

Not everything is better in black & white…

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cestanislaus.ucanr.edu

Watering Walnuts

Recent research by Bruce Lampinen, UC Cooperative Extension (UCCE) Nut Specialist, and collaborating UCCE Walnut Advisors shows that early over-irrigation saturates soil, limiting oxygen availability to roots. Trees show decline in overall health, lose productivity, and may die. Roots systems are shallower, leading to an appearance of water stress later in the summer when temperatures rise. Growers are asking, what is a good time to start and how much do I apply?

The best practice for understanding your orchard's water needs is to first understand water availability in the soil as well as the water stress of the tree. Soil probes provide a measure of soil moisture while pressure bombs (Fig. 1) provide stem water potential (SWP), a measurement of tree water stress. SWP is commonly recorded when leaves are fully developed, at midday (between 1:00 and 3:00 p.m.) when the tree is most stressed for water. The terminal leaflet is used.

Not everyone has a pressure bomb or a soil moisture meter on hand. For this reason, UCCE and the Department. of Water Regulations (DWR) teamed up to provide an estimate of water use based on the evapotranspiration of certain crops. Evapotranspiration, or ET, in plants can be measured to determine how much water is moving from the soil to the atmosphere via the plant. These measurements are made daily and calculated to determine a crop's water usage on a weekly basis. Tables for estimating irrigation are made available electronically by your local UCCE office. If you would like to be added to the email list, please visit:

ucanr.edu/nlchange

Select the UCCE/DWR email list option on the survey.

For a more in-depth article involving walnut irrigation, please visit:

http://www.wcngg.com/images/pdf/WCN_March_2017_Web.pdf

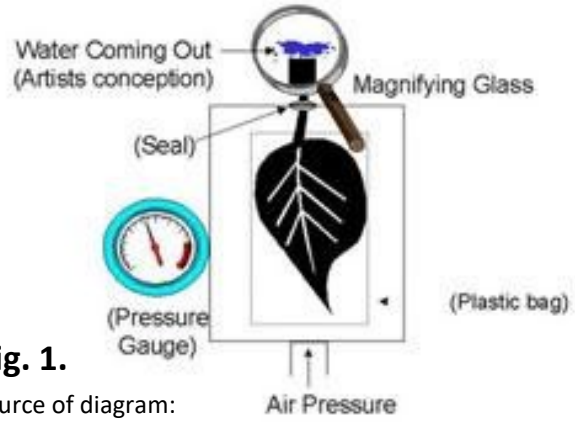


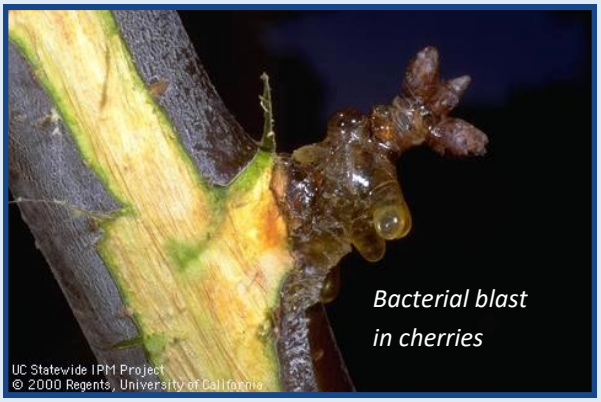
Fig. 1.

Source of diagram: http://fruitsandnuts.ucdavis.edu/pressure_chamber/

Over-irrigation is associated to bronz-

Kasumin 2L Registered for Walnuts & Cherries

Walnut Blight (*Xanthomonas arbicola* pv. *Juglandis)* in walnuts and bacterial blast and canker (*Pseudomonas syringae* pv. *syringae*) in cherries are of constant concern for growers. After many years of research by Dr. Jim Adaskaveg, Plant Pathology Professor at UC Riverside, and his team, Kasumin 2L is officially registered for use in walnuts and cherries. Please be aware this product is not a silver bullet and should be used with other modes of action to reduce the risk of resistant populations. Always follow the label's instructions.



Bacterial blast in cherries

Author: Kari Arnold, PhD, UCCE Area Orchard and Vineyard Advisor, Stanislaus County

What is Bot?

Bot, or *Botryosphaeria* and phomopsis cankers are caused by different fungal organisms that spread by splashing water and wind. These fungi need temperatures above 50°F, at least a quarter inch of rain, and susceptible tissue to infect the tree. Susceptible tissues consist of fruit, spurs, leaf and peduncle scars as well as wounds of any kind from pruning to freeze, sunburn, hail, wood peckers, and scale infestations. Commonly the fungi will infect the nut, then move into the spurs through the peduncle, leading to the loss of future buds.

Latent infections occur throughout the season but may not show symptoms until fall. For this reason, growers can sample early in the season before buds break to determine the level of risk. This sampling is referred to as BUDMON, or BUD MONitoring.

Buds collected for analysis

Photo credit: Themis Michailides

Managing Bot & Phomopsis

Bot infection in fruit moving into spurs

Photo credit: Themis Michailides

Although fungicide use is common for managing bot and phomopsis, certain cultural practices can be utilized to incorporate an integrated pest management program. When possible, reduce the trajectory angle of sprinklers to avoid wetting the lower canopy. Additionally, shorter irrigation periods (less than 24 hours) reduce the level of bot infected leaves while also limiting phytophthora infections.

Proper pruning techniques reduce the opportunity of infection. Studies have shown that pruning in late, cooler October temperatures led to less infection than pruning in early warmer, February temperatures. Pruning one- to two-year old wood is better than pruning three- or four-year old wood, even when pruning in winter. Lastly, selectively pruning dead wood reduces bot cankers as much as 50%.

Both walnut blight and walnut scale create wounds for bot and phomopsis infection. Managing these issues in concert with cultural practices and fungicides can reduce the problem. Different fungicides have varying levels of efficacy and must be sprayed at the right time. For further information on blight, scale, effective pesticides, and timing please visit:

http://ipm.ucanr.edu/PMG/r881902111.html#TREATMENT

If internet access is limited, contact Kari Arnold for further information.

Research projects involving bot and phomopsis canker in walnut are conducted by Dr. Themis Michailides, a Plant Pathologist stationed at the UC Kearney Agriculture, Research and Extension Center in Parlier, CA, in collaboration with Y. Luo, D. Felts, J. Moral, R. Puckett, and J. Lake and UCCE Walnut Advisors J. Hasey, D. Lightle, R. Buchner, E. Fichtner, and K. Sean in multiple counties across California.

Funding

The California Walnut Board and the California Cherry Board provide funding for research in disease and pest management, irrigation, cultural practices, and other topics in their respective crops. Walnut and cherry related topics covered in this newsletter are only a few examples in short summary of a much longer, in-depth history of research.

Author: Kari Arnold, PhD, UCCE Area Orchard and Vineyard Advisor, Stanislaus County

Grapes & Viruses

There are over 70 virus and virus-like diseases in grapevines. Not all viruses are economically detrimental, but certain ones can reduce yield, vigor, and/or limit berry sugar accumulation. Viruses are easily distributed by the propagation of infected material. They are graft transmissible, meaning they can move from the rootstock to the scion, and from the scion to the rootstock; therefore, top-working with healthy material onto infected roots will result in infected vines. For this reason, it is better to request certified, virus tested material when planting a vineyard.

Some viruses are spread by insects or nematodes, such as leafroll and fanleaf. There are multiple types of leafroll, and certain types are spread by mealybugs. Fanleaf, on the other hand, is spread by dagger nematodes.

Symptoms of leafroll appear in the fall. Leaves turn red (in red varieties) with green veins. Leaves may roll under depending on the variety. Fanleaf, though, turns yellow in spring, with an interesting shadow effect. Symptoms will seem to disappear as the weather gets warmer.

Viruses can look like nutrient deficiencies and nutrient deficiencies can look like viruses. Oftentimes, vines are girdled by stretch tie, turn red, and appear to be infected with a virus. Additionally, different varieties and rootstocks vary in terms of symptom expression. Diagnostic testing is needed to determine the virus status of a grapevine.

Cherries

Sudden decline of sweet cherry is a growing concern in young cherry orchards across California. Dr. Florent Troullias, Assistant Cooperative Extension Specialist at the UC Kearny Agriculture, Research and Extension Center, and Dr. Renaud Travadon, an Assistant Project Scientist at UC Davis, are working in collaboration with UCCE Cherry Advisors to investigate the issue.

Diseased root samples of declining trees were collected in 2016 and 2017 for analyses. Six potential fungal pathogens isolated from these samples are currently being tested for pathogenicity (the capability of the fungal organism to cause sudden decline) and virulence (to what degree the fungal organism is pathogenic to the host) in cherry rootstocks.

Surveys are ongoing, and growers are encouraged to participate. If you feel you have cherries suddenly declining in a relatively young orchard (<10 years old) in Stanislaus County, please feel free to contact Kari Arnold.

Sudden decline in sweet cherries

Photo credit: Florent Troullias

Apricots

Apricots are a historic part of Stanislaus County and remain a staple producing approximately 66% of California's harvest. According to the Stanislaus County crop report, harvested acres in 2015 was 3,956, and in 2016, 3,733. In 2015, apricots sold for $885/ton, and in 2016 for $658/ton, yet total value was greater by more than $1,000,000; likely due to a larger harvest in 2016 of 36,400 tons to 2015, 25,500 tons.

Bacterial canker

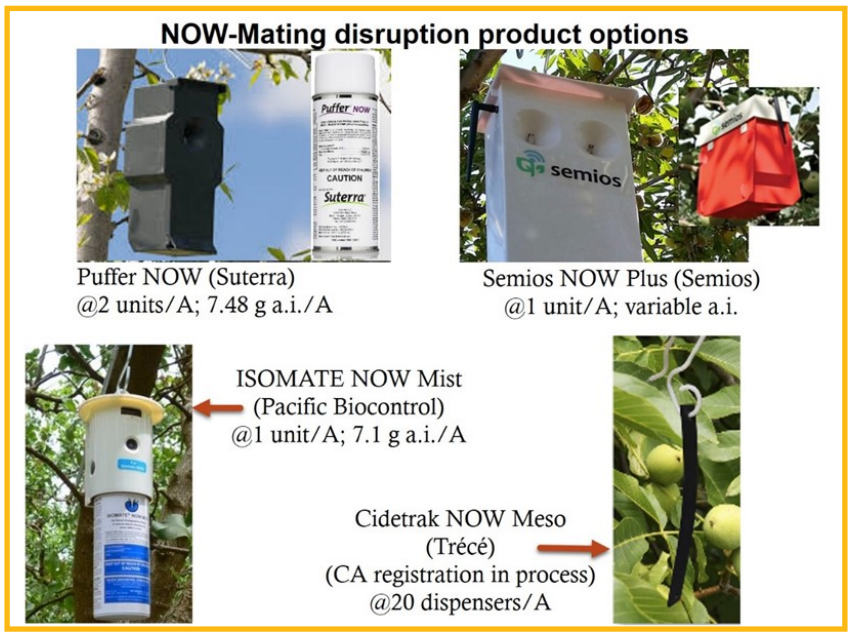
Cumulative chill hours below 45°F between November 1, 2017, and February 16, 2018, recorded at the CIMIS weather station in Modesto was an even 800.

According to the UC IPM website, bacterial canker and blast are more apparent in spring. Symptoms include gumming on branches, water soaked areas, and affected blossoms. Cankers may develop at the base of infected buds.

Author: Kari Arnold, PhD, UCCE Area Orchard and Vineyard Advisor, Stanislaus County

Mating Disruption & Navel Orangeworm

Current management practice for navel orangeworm (NOW) in nut crops depends primarily on insecticide and winter sanitation (removal of mummy nuts from trees and ground during winter). Mummy nuts harbor NOW overwintering larvae and serve as the only resource for the first-generation moths to lay eggs. Insecticide alone does not provide desirable control, but pheromone-based mating disruption can be implemented as a part of the IPM program. Under mating disruption, the orchard is saturated with a high amount of artificial pheromone (i.e., the chemistry that is exactly or very close to the female-produced pheromone of the particular species) that disrupts the capability of a male NOW in finding females, resulting in no or delayed mating. Currently, there are three aerosol-based mating disruption products (NOW Puffers® by Suterra, Semios NOW Plus® by Semios, ISOMATE NOW Mist by Pacific Biocontrol) available to use in California. These products contain a battery-operated pheromone dispenser 'cabinet' consisting of the canister filled with the pheromone. These devices release the pheromone to the orchard at a constant interval (15 min.) during the night (~12 h, dusk to dawn) when mating occurs.



A new NOW disruption product (CIDE TRAK NOW by Trece Inc.) is in the process of registration. In this dispenser, the pheromone is impregnated into polyvinyl-based plastic strips which dispense pheromone passively day and night. These four products use the same active ingredient which is a non-attractive component of the pheromone blend. Almond field studies by David Haviland, UCCE Entomology Advisor for Kern County, found these four products perform more or less equally in reducing the damage compared to controls. Based on the side-by-side comparison (with or without mating disruption) in six almond orchards covering northern and southern San Joaquin valleys, we found that mating disruption reduces the overall NOW damage by ~50%. Benefits are likely to increase with larger orchards, and/or with continuous use of mating disruption for multiple years. These trials included regular insecticide sprays at hull-split timings. Although work was performed for almonds, general assumption is that these products will work for walnuts as well. Effectiveness may vary due to the difference in canopy size and other factors.

This tool should not be taken as a replacement for winter sanitation and early harvest practices but instead added to other control methods. Mating disruption does not directly kill NOW; rather it helps to reduce the population by interfering with mating.

Application Considerations

1. Timing: Apply before moth emergence in spring (April 1, if possible), a good minimum of 180 days based on product labels
2. Distribute units @1-2 units/acre in a grid pattern, plus a few more in upwind edges to compensate for wind influence
3. Select a limb closer to the center in the upper 1/3 of the tree
4. Place in a way to avoid direct insecticide spray on the unit
5. Avoid canister nozzle facing foliage/limbs (3-ft clearance, if possible)
6. Canisters are returned to the company providing them; some provide a service for installation and collection while others do not

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University of California Cooperative Extension

Walnut News & *Fruit for Thought*

Informing Stanislaus County

Spring 2018

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