



UNIVERSITY OF CALIFORNIA ≈ COOPERATIVE EXTENSION
SUTTER/YUBA COUNTIES,
142A GARDEN HIGHWAY, YUBA CITY, CA 95991
TEL: (530) 822-7515 ~ FAX: (530) 673-5368



POMOLOGY NOTES

ALMONDS

January/February, 2009

Meeting Dates

| | | |
|-------------|------------------------------------|----------------|
| February 3 | Walnut Day/Almond Institute, Chico | (530) 538-7201 |
| February 12 | Sutter/Yuba Walnut Day, Yuba City | (530) 822-7515 |
| February 19 | Colusa Almond Meeting, Arbuckle | (530) 458-0570 |
| February 25 | Yolo/Solano Walnut Day, Woodland | (707) 784-1320 |

Almond Orchard Checklist for January/February

- ◆ **Soil moisture.** Check soil moisture (sensors, auger, shovel, etc.) and consider one or more winter irrigations to fill the soil profile prior to bloom. (see article in this newsletter.)
- ◆ **Orchard Sanitation:** Goal = one mummy or less per tree. Use harvester or long poles to knock mummy nuts out of trees. Destroy the mummies by first windrowing them on the orchard floor and then mowing or rototilling over the windrow. Navel orange worm overwinters in mummy nuts (where dormant spray cannot reach), and it is cheaper to kill them this way (winter sanitation) than to hope one or more sprays will kill them in season.
- ◆ **Bees.** Current UC recommendations are for 2-3 hives per acre. When bloom weather is bad, more hives (3 per acre) = more nuts at harvest.
- ◆ **Clean and short mowed orchard floors at bloom.** Clean spray strips and close-mowed orchards = warmer orchard compared to tall weeds on the orchard floor.
- ◆ **Prep frost alarm and thermometers.**
- ◆ **Gophers.** Consider controlling gophers if mounds appear in the orchard.
- ◆ **Pest traps.** Make out your order for peach twig borer and navel orange worm traps and place it in February. Peach twig borer traps should be up by April 1, and one trap will cover 20 acres. Navel orange worm traps should be up by April 1. Use four traps per block or 1 trap per 10 acres in large blocks.
- ◆ **Equipment maintenance.** Are you ready for an early bloom? Who knows when it will be, but a maintained sprayer and irrigation system could be important.
- ◆ **Plan for season.** Review crop grade sheets and leaf analyses. Plan a general orchard pest and nutrient management program for new season. Please see UC Fungicide Timing and Efficacy info included with this newsletter or on the web at <http://ipm.ucdavis.edu/PDF/PMG/fungicideefficacytiming.pdf>.

Winter Irrigation?

Orchard soils are unseasonably dry across much of the region. Less than 5 inches of rain have fallen in the area so far this winter. Evaporation and weed water use has probably moved some of that water out of the orchard. Watermark sensors in an almond orchard on the north side of the Sutter Buttes read wet at 18 inches down, but dry at 36 inches from the surface on January 9. This means there is only shallow water in this block, and no medium to deep water at all.

Deep water (roughly 3-5 feet from the soil surface) is an orchard's water savings account, the water that trees can use if the top parts of the root zone dry out. If trees go into the growing season without deep water, your irrigation program is really working "without a net".

According to Wilbur Reil, retired UC Farm Advisor in Yolo Co., almond roots begin to grow 4-6 weeks before bloom. He used to tell his growers to look for 6 inches of water from rain or irrigation in December, January, and February. Based on that target, we are way behind as of mid-January. Even if we get more rain, checking soil moisture between now and bloom should be a good idea. At least 2 inches of water is needed to fill a foot of loam soil to field capacity. [A soil is at field capacity when free water has drained away and soil pores contain water and air – both required for healthy roots.

Water Relations in Almonds

2009 looks to be a tight year for water in the Sacramento Valley. The following are some key points to consider when planning almond orchard water management in 2009. These comments are pulled from an article by UC farm advisors, specialists and professors titled: "Summary of University of California Research on Irrigation Management of Almond Trees under Drought Conditions". See the entire article on the web at: <http://ucmanagedrought.ucdavis.edu/almonds.cfm> or call or e-mail me and I'll get you a copy.

- **Almonds are most sensitive to water stress from:**
 - **Leaf out to mid-June when rapid shoot and nut growth occurs.** To produce good crops and maintain orchard growth, avoid any water stress from leaf out to mid-June. Beginning the season with a full soil "water bank" helps avoid surprises during this period.
 - **Mid to late summer when flower buds are forming for next year.** Avoid severe water stress in mid to late summer. Moderate stress during this time, to be expected in flood or solid set sprinkler blocks during harvest, does not reduce yield the following year.
- Cover crops (weeds or planted) can use increase orchard water use by 30%. When water is limited, remove the orchard floor vegetation – at least in the growing season.
- The best way to know the water status of your orchard is with a pressure bomb that measures mid-day stem water potential.
- How much water do almond trees need in a year? Almond trees need between 1-4 acre feet of water (irrigation and/or rainfall) in a year. One foot of water keeps the tree barely alive without a crop. Four to four and a half feet of water is what big trees on peach roots in Kern County use to grow huge crops (and hull rot). **If you grow almonds on plum root, don't try to irrigate your orchard like it's a Kern County, peach rooted orchard. Mild etch will be a problem and may kill your trees.**
- How does orchard age affect how trees respond to water stress?
 - In a young orchard, water stress will reduce shoot growth and canopy development and produce a smaller tree. This will hurt yield in years to come.

Avoiding any water stress in a young orchard that is still filling its space permits maximum canopy development and is an investment in future production and profitability of the orchard.

Don't "push" young plum-rooted blocks with water and/or fertilizer. Mild etch, which occurs only on plum rooted trees, can kill or damage plum rooted trees if you try to treat them like peach rooted trees.

- Mature, bearing blocks that have filled their space can handle moderate, carefully timed stress with little yield reduction. This stress period begins in mid-June and runs through leaf drop. Using the pressure bomb is the best way to manage planned water stress.
- If water supply is limited, keep the young block well watered and practice a limited water stress program in your mature, bearing blocks.

Cost Effective Fertilizer Sprays

Almond prices are way down from previous years at this time. 2009 may be a year when carefully watching costs, particularly extra "why not?" expenses, may be a very good idea. At the same time, spending money on the basics where and when needed (water, pesticides, nitrogen, potassium, zinc, and boron) will be essential to producing a good crop and making money. Here are some things to consider as almond bloom approaches:

- **Boron can help increase yield.** Many almond orchards in Sutter and Yuba Counties have low boron levels. Adequate flower boron is key to optimum yield. Boron sprayed at pink can increase flower boron and almond yield. Boron at full bloom can increase flower boron BUT reduce almond yield. This information comes from research by Dr. Patrick Brown at UC Davis. If you spray boron on the entire orchard targeting pink stage for one variety, you may be reducing yield in any varieties in full bloom. Fall boron sprays are just as good at increasing bloom boron levels as pink bloom timings. Dr. Brown's work showed the best success with boron was when it was sprayed at a rate equal to 2 pounds of Solubor (0.4 pounds of actual boron)/acre in 100 gallons of spray solution/acre.
- **Carefully consider bloom spray programs.** Proprietary blends of nutrients, plant extracts, and/or adjuvants are marketed for use in tree crops by many companies. While there are reports of significant yield increases with these materials, several careful, replicated studies by UC farm advisors in 2008 in the San Joaquin Valley did not show any increase in almond yield following use of multiple sprays of special foliar fertilizers beginning at bloom compared to just a solid bloom fungicide program. These tests will be repeated in 2009.

Submitted by:

Franz Niederholzer
UC Farm Advisor
530-822-7515