



ORCHARD NOTES

July 2003

MID-SUMMER UPDATES

LEAF ANALYSIS

July is the month to take leaf samples and assess tree nutrition. Whether you have never used leaf analysis before or it has been two years or longer since last done, make an effort to take those leaf samples this year. It is a relatively inexpensive way to determine nutrient deficiencies, toxicities or excesses. The results can help guide your fertilizer program. If you find excessive amounts of nitrogen, for example, fertilizer can be cutback saving you dollars. Annual sampling is recommended and can help pinpoint a developing nutritional problem in your orchard.

Points to remember when sampling

- Sample in July (August for pistachio) when nutrient levels in leaves are relatively stable
- Test annually for nitrogen, potassium and zinc
- Check for any other suspected deficiencies or toxicities
- Each sample should be of the same variety, age, rootstock and soil
- Take comparison samples between poor vs. good trees

PEACH - select 60-80 mid-shoot leaves from moderately vigorous fruiting shoots.

WALNUT - select 25-30 terminal leaflets from spurs or from the middle of moderately growing shoots.

KIWIFRUIT - select 25-30 mature leaves, just past the fruit on the shoot.

Put leaves in paper bags and keep them cool until they are delivered to the lab. We have a list of laboratories that do plant, soil and water testing in our office.

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CRITICAL NUTRIENT LEVELS

Based on July leaf samples

	Cling Peach	Walnut	Kiwifruit
% Nitrogen (N) Deficient below Adequate	2.4 2.6-3.5 ⁽¹⁾	2.3 2.4-3.2	1.6 2.2-2.8 ⁽²⁾
% Potassium (K) ⁽³⁾ Deficient below Adequate over	1.0 1.2	0.9 1.2	1.0 1.5
% Magnesium (Mg) Adequate over	0.25	0.3	0.3
% Calcium (Ca) Adequate over	1.0	1.0	2.0
% PPM zinc (Zn) Adequate over	20	18	15
% Chloride (Cl) ⁽⁴⁾ Excess over	0.3	0.3	1.1
% Sodium (Na) ⁽⁴⁾ Excess over	0.2	0.1	(?)

Adequate levels for all orchard crops:

Phosphorus (P) 0.1- 0.3%; Copper (Cu), over 4 ppm; Magnesium (Mn), over 20 ppm.

⁽¹⁾ Best to keep around 3.0%

⁽²⁾ 2.5% or lower is recommended to maximize storage potential

⁽³⁾ K levels between deficient and adequate are considered >low= and may cause reduced fruit sizes in some years.

⁽⁴⁾ Excess Na or Cl cause reduced growth at the levels shown; leaf burn may or may not occur when levels are higher

PEACH FERTILIZATION - Evaluate leaf nitrogen levels in August from samples you took in July. If levels are over 3.0% (see above table) and there is more than one to two feet of new shoot growth, consider reducing the amount of nitrogen applied. Many of our peach orchards are too vigorous which leads to shading out and loss of fruitwood in the lower part of the tree. Overly vigorous trees should be left unfertilized to allow the nitrogen level to drop to a more optimum range. High nitrogen levels can delay fruit maturity and decrease red coloration. Time nitrogen fertilizer applications for late summer, after harvest. Applications in early spring are also effective.

SOIL ANALYSIS - Unlike leaf analysis, soil samples can be taken at any time during the year and are not typically recommended annually. For example, soil analysis is mainly used to help diagnose specific problems such as situations where soil may be too acidic or

alkaline. Determining the pH of the soil is very helpful since all plants have a particular soil pH or range where growth is optimum. Depending on the soil pH and the optimum pH range of the particular tree crop, amendments such as lime where soils are too acidic or sulfur where soils are too alkaline can be used to make the soil more productive.

MANAGING CROWN ROT – Several area orchards have trees that show the symptoms of crown and root rot caused by the soilborne fungus *Phytophthora*. Symptoms include small and/or yellow leaves, little or no new terminal shoot growth, dieback or collapse (especially on hot days when diseased trees are unable to pump water). Other root problems, such as, *Armillaria* or oak root fungus, cause the same or similar symptoms. Typically, the best way to minimize losses from *Phytophthora* is through water management. No matter what irrigation system you use, the key is to avoid soil

saturation. Avoid set times longer than 18 hours if irrigating with sprinklers or microsprinklers. With flood irrigation, the faster the water penetrates the better, but it should not exceed 18 hours.

Using annual cover crops or managing resident weeds in the winter by mowing rather than cultivating can increase water penetration and alleviate saturated situations and soil compaction. These cultural practices also help reduce the possibility of *Phytophthora* in the orchard especially when used in combination with berms in the tree row. Mature cultivated orchards can be converted to no-till systems if the irrigation system lends itself to conversion. Consider planting all new orchards on berms unless on really sandy soil and with no-till middles. Under no circumstances should berms be made after trees are planted or around existing trees. Soil should not be placed around the base of the tree higher than where it grew in the nursery. Wet soil around the rootstock will promote crown rot.

PEST UPDATES

Weekly updates for codling moth on walnut and oriental fruit moth and peach twig borer on peaches can be found through the pest tracker. You can subscribe to the pest tracker (also this newsletter) through our website at <http://cesutter.ucdavis.edu> or through email by sending your email address to jkhasey@ucdavis.edu. The pest tracker is also posted in our office on Fridays.

Walnut growers should have walnut husk fly traps hanging in orchards now. Monitor traps frequently for large increases in fly numbers and for females with eggs. Once females with eggs are found, a spray needs to be applied within 5 days (assuming frequent checking). To learn how to sex flies and detect females with eggs, you can check out the video "Walnut Husk Fly: Biology, Monitoring & Control Strategies" from our office.

WALNUTS

OFF TYPE CHANDLER - For those growers who still have off-type Chandler trees in their

orchards that occasionally don't produce a crop, this appears to be one of those years there will be no crop. This happens sporadically and we don't know why in certain years these trees produce little or no nuts.

TRAINING FIRST LEAF TREES - Continue to allow the leader to grow tying it at the tip of the stake and half way down after it reaches above the top of the stake. Do not head this leader back because lateral buds will be forced to push forming weak branches that must be removed in the winter. The goal is to attain maximum leader growth by the end of the first leaf. This will develop a strong tree and give you more choices at heading time next spring. If you are really concerned about wind breakage, then consider only lightly tipping the leader after trees have grown at least 9 feet. This method should avoid lateral buds from pushing.

IRRIGATION

July and August are high water use months for tree crops. Do not allow trees to become water stressed, which for walnuts, can result in poor kernel development and little to no vegetative growth. Peach trees that become water stressed during late August and early September, are more likely to produce double fruits the following year. Please give me a call if you would like help in developing an irrigation schedule as a guideline whether you use microsprinklers, sprinkler or flood irrigation.

WATER RESOURCES

Allan Fulton, the UC Irrigation and Water Resources Farm Advisor in Tehama, Glenn, Colusa, and Shasta County, is writing a series of six newsletters discussing topics related to groundwater, water wells, and pumping plants. "Seeking and Understanding the Groundwater Aquifers Systems in the Northern Sacramento Valley" and "Incentives for Groundwater Management in the Northern Sacramento Valley" can be accessed through the website <http://cetehama.ucdavis.edu> or we have copies in our office.

Janine Hasey, UC Farm Advisor

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