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Pomology Notes

JUNE/JULY 2004

HAPPY NEW YEAR!! NEXT YEAR STARTS NOW. Almond and prune crops for **next** year begin developing in mid to late summer **this** year. Extreme stress, (now through leaf drop) may harm next year's crop or the health of the orchard. Good, attentive (not excessive) orchard management from now through the fall is vital to, 1) harvesting a good quality crop and 2) preparing the orchard for the best possible performance next year.

ALMOND AND PRUNE ORCHARD PRACTICES TO CONSIDER IN JUNE/JULY

ALMONDS:

- Take leaf samples in July (see information below)
- Take hull sample at harvest for boron analysis.
- Monitor orchard moisture and irrigate as needed.
- Decide if a hull split spray is needed, using trap catches and past grade sheets. Spray when hull cracks first appear in the tops of the trees. Monitor orchards earlier than usual, as this year may see an early harvest. Hull splits first appear in blank nuts, then in "good" nuts in dry orchards or water stressed trees. Reduced irrigation (60% of ET) can improve nut removal and reduce hull rot incidence.
- Monitor spider mites on a weekly basis. Mite populations can build up fast when weather is hot, and late season defoliation can hurt next year's crop.
- Get harvest equipment and orchard prepped for harvest – it may be early this year.
- Use pest population information to help reach harvest timing decision. Early harvest can help avoid navel orange worm damage, but drying-on-the-ground can expose nuts to ant damage. Late harvest is an option **IF** navel orange worm pressure is low and ants have been a significant pest in the block.
- Bait for ants, if needed, 4-7 weeks before harvest, which may be early this year. Do not use baits within 24 hours after irrigation or 48 hours before irrigation with sprinklers or micro-sprinklers.

PRUNES:

- Take leaf samples in July (see information below.)
- Monitor orchard moisture and irrigate as needed.
    - Irrigation shut-off (4-6 weeks before harvest) may help improve dry away.
    - Consider at least one postharvest irrigation to avoid extreme water stress before rains begin (knock, knock).
    - Call Franz (822-7515) with any questions regarding moisture monitoring.

- Monitor for spider mites and prune rust.
  - Apply treatment at the first sign of rust. Continue monitoring and retreat as needed.
  - Treat early with oil or light rate of miticide to manage mites and avoid defoliation.
  - Call Franz (822-7515) with any questions about monitoring details.

- Get harvest equipment ready – harvest should be early this year.

- Clean up orchard for harvest. Possible tasks include:
  - Cut out dead wood from trees with die back. Brittle wood can shatter at harvest, endangering employees, puncturing harvester tarps, and generally delaying harvest operation. Cutting out deadwood is an important task for blocks with *Cytospera* damage. Cut at least 6" into healthy wood to ensure that all the *Cytospera* canker has been removed, otherwise the canker may continue to grow down the branch/scaffold.
  - Clean up tall weeds and suckers from tree rows that can mean poor shaker closure seal and a slow harvest, barked trees, and/or lost fruit.

- Use pressure gauge to evaluate fruit maturity. Wherever possible, begin harvest when fruit pressure is at or below the 3-4 pound range. Don't harvest based on sugar content, as some dry away may be sacrificed.

SUMMER = TIME FOR LEAF SAMPLING

Summer is almost here. That means, among other things, it is time to get leaf samples from every block in the orchard. Leaf sampling, more than soil sampling, is the best way to determine orchard nutrient needs. Put another way, for every dollar spent on nutrient determinations in orchard crops, $0.85 should be spent on leaf analysis. Leaf sampling is deceptively simple, but it must be done carefully and with a clear understanding of analysis objective. The following article is intended to help growers, managers and their employees/consultants with accurate leaf sampling and therefore, a key part of effective orchard nutrition planning.

Leaf sampling labor cost(s) for nutrient analysis are worth $80-100/hour. Sound outrageous? It's not. The difference between knowledgeable, careful leaf sampling and leaf "grabbing" is akin to the difference between cutting and surgery. [Anybody can cut, knowing where to cut is the difference between a successful and unsuccessful operation.] Here is an example of this point from tree crops.

The critical indices for almond and prune leaf nutrient concentrations were developed by UC researchers using mature leaves from non-fruiting spurs. Therefore, the leaves that need to be sampled in the orchard for nutrient analysis from both prunes and almonds are fully expanded (mature) leaves from non-fruiting spurs. Growing fruit can "suck" nutrients from leaves on the spur where the fruit (or nut) is growing, and the leaf nutrient levels – especially for nitrogen and potassium – can show a tremendous difference between fruiting and non-fruiting spurs. UC Davis researchers Drs. Steve Weinbaum and Patrick Brown, working with UCCE Farm Advisor Roger Duncan in Stanislaus County have measured differences of up to 0.4% leaf potassium between fruiting and non-fruiting spurs on the same tree.

What does this difference between fruiting and non-fruiting spurs mean to a grower? Here is an example. What if leaves from non-fruiting spurs in a particular orchard measured 1.45% potassium (within UC's adequate range for almonds) and leaves from fruiting spurs in that same orchard showed 1.15% leaf potassium (less than adequate, but not deficient according to UC). If the person sampling leaves is poorly trained and grabs a sample that contains 75% leaves from fruiting

spurs, the lab report could then come back showing a leaf potassium level of 1.35% -- an insufficient level by UC standards. If the material cost of potassium sulfate is around $300/ton and 500 to 2000 pounds of fertilizer material is recommended (following UC suggestions to maintain or correct potassium levels), that is equal to $75 to $300/acre to correct a problem that doesn't exist. On a 20 acre block, that comes out to a $1500 to $6000 bill for a non-existent problem. Paying attention to proper leaf sampling practices will pay off.

Make sure the sample is taken from the right place(s). The following are directions for taking leaf samples for overall orchard nutrition maintenance.

Almonds: Take 100 fully expanded leaves from non-bearing spurs at about 6 feet off the ground from the same variety, rootstock, and age. Ignore interplants. Avoid sampling leaves that are regularly "hit" by irrigation water, as irrigation water can leach some nutrients like potassium and leave salt deposits that can skew the analysis report.

Prunes: Take 50-75 fully expanded leaves from non-bearing spurs from around 6 feet off the ground. Follow the same general directions as for almonds.

Note: Micronutrients such as zinc, copper, iron, and manganese bind very tightly to leaf surfaces. If micro-nutrient foliar fertilization or pesticides with high micro-nutrient content (Manex, ziram, etc.) have been applied prior to leaf sampling, there is no need to pay for micronutrient analysis, because there is no way to separate micronutrients in leaves from the micronutrient spray residue on leaves.

How can maximium value at minimum cost be achieved from leaf analysis? If money is tight, reduce the number of nutrients requested for analysis, but don't abandon leaf sampling/nutrient analysis for the year. Key nutrients for analysis in every sample, every year, in both prunes and almonds are nitrogen, potassium, and zinc. Hull boron sampling and analysis is important in almonds. Other nutrients may be important for specific blocks and should be included based on history and consultation with PCA or crop consultant.

CRITICAL NUTRIENT LEVELS FOR PRUNE AND ALMOND LEAVES* SAMPLED IN JULY.

NUTRIENT	PRUNE	ALMOND
Nitrogen	Below 2.2% = deficient 2.3-2.8% = adequate	Below 2.0% = deficient 2.2-2.5% = adequate
Phosphorous	0.1-0.3% = adequate	0.1-0.3% = adequate
Potassium	Under 1.0% = deficient 1.3-2.0% = adequate Over 2.0% = excessive (not toxic, but no need to fertilize)	Under 1.0% = deficient Over 1.4% = adequate
Calcium	Over 1.0% = adequate	Over 2.0% = adequate
Magnesium	Over 0.25% = adequate	Over 0.25% = adequate
Sodium	Over 0.2% = excessive (potentially toxic)	Over 0.25% = excessive (potentially toxic)
Chloride	Over 0.3% = excessive (potentially toxic)	Over 0.3% = excessive (potentially toxic)
Boron	Under 25 ppm = deficient From 25-80 ppm = adequate Over 100 ppm = excessive (potentially toxic)	**Leaf data not accurate****
Copper	Over 4 ppm = adequate	Over 4 ppm = adequate
Manganese	Over 20 ppm = adequate	Over 20 ppm = adequate
Zinc	Under 18 ppm deficient	Under 15 ppm deficient

* Fully expanded leaves from non-bearing spurs sampled in July.

** Use analysis results of hulls sampled at harvest to best assess almond boron status. See information below.

CRITICAL BORON LEVELS FOR ALMOND HULLS SAMPLED AT HARVEST.

DEFICIENT	ADEQUATE	EXCESSIVE
30-80 ppm B	80-200 ppm B	Over 200 ppm B

How to sample almond hulls for boron analysis: Collect 10 hulls per tree from a number of trees at around 6 feet off the ground or pick from windrows. Keep hulls separate by variety.

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