



April Leaf Sampling

By Robert Smith, Agronomist, Ultra Gro

Leaf tissue analysis in April can show the general availability of soil nitrogen and tree reserve nitrogen, allowing for adjustments of in-season fertilization rates. Deficiencies in other nutrients may also be detected. While leaf tissue sampling in summer months certainly provides a reliable and realistic measurement of nutrient concentration, it doesn't leave you time to make adjustments for that growing season. Taking proactive leaf tissue samples in April and combining the results with yield estimates, therefore, allows growers to effectively plan in-season nitrogen demand and ultimately have the best opportunity to reach their yield goals for the season.

The University of California Davis Early-Sampling Protocol involves sampling all the leaves of 508 non-fruiting, well exposed spurs per tree at 43 +/- six days (37 to 49 days) after full bloom when the majority of leaves on the non-fruiting spurs have reached full size.

Here are some tips:

- Sample all the leaves of 5–8 non-fruiting, well-exposed spurs per tree at approximately 43 +/-6days after full bloom when the majority of leaves on non-fruiting spurs have reached full size. In the majority of California orchards, this corresponds to mid-April.
- Collect leaves from 18–28 trees per orchard. Combine all leaves in a single bag for submission to a reputable laboratory. EACH SAMPLED TREE MUST BE AT LEAST 30 YARDS APART. A minimum of 100 leaves per sample bag is required.
- Send the samples to the lab and ask for a FULL NUTRIENT ANALYSIS (N, P, K, B, Ca, Zn, Cu, Fe, Mg, Mn, S) and application of the **UCD-ESP program**.

Both Denele Analytical and JMLord labs have been provided with UCD-ESP guidelines for interpreting April tissue values. This information can then be integrated with expected yield to determine annual N application, as illustrated in the scenarios below. A spreadsheet utilized as a tool for these calculations can be downloaded at the web page Crop Nutrient Status and Demand: Patrick Brown in the upper right corner (labeled "N Prediction Model for Almond"). ([http://ucanr.edu/sites/scri/Crop Nutrient Status and Demand Patrick Brown/](http://ucanr.edu/sites/scri/Crop%20Nutrient%20Status%20and%20Demand_Patrick%20Brown/))

N-Prediction Model for Almond (.xlsx, 22K)

- 1) Estimate annual inputs of N in irrigation water, manures, composts, etc.
- 2) Calculate preliminary fertilization rates and timings, and make first application of fertilizer in early- to mid-spring (March – April).
- 3) Collect and analyze April leaf samples according to preceding instructions.
- 4) Conduct in-season yield estimation (April – May).
- 5) Adjust fertilization strategy for remainder of year to reflect April leaf and yield estimates.



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1. The following recommendation assumes that fertilizers can be applied at four intervals:
2. Early-Spring Application (end of bloom through full leaf expansion). 20% of total annual demand.
3. Fruit Growth Application (from full leaf expansion through shell hardening). 30% of total annual demand.
4. Kernel Fill Application (shell hardening through early hull split). 30% of total annual demand.
5. Fruit Maturity/Early Postharvest Application (hull split through early postharvest). 20% of total annual demand.

And finally, when in doubt, call your Ultra Gro Crop Advisor, they are happy to help!