HOW TO TAKE COFFEE LEAF AND SOIL SAMPLES (rev. 1/28/22)

Proper fertilizer recommendations cannot be provided with just soil samples. Soil and leaf samples should be taken together and submitted on an annual or biennial basis unless there is a nutritional problem requiring diagnostics. Leaf samples should be taken at or just prior to flowering/bloom when nutritional status within a plant is most stable.

The sample(s) should be representative of the area. Or, collect a sample from trees with similar visible problems to determine if there is a plant nutrition and/or pH problem. Select 5 or more trees to sample from. Mark the trees for sampling in following years or to return to and manage the problem.

SOIL

Soil testing (S2 code) determines the level of nutrients (Phosphorus, Potassium, Calcium, and Magnesium) and the pH, a measurement of acidity or alkalinity, of the soil.

HOW TO TAKE A SOIL SAMPLE (Fig. 1)

1. Avoid taking samples during a dry period/drought, right after rain, or immediately following a fertilizer application.
2. Use clean tools, buckets, containers, and bags for sampling.
3. Label a clean, water-proof bag or container with your name, date, host plant, and location from where soil was taken.
4. Midway between the trunk and the drip line (fig. 1), clear the soil surface of debris (leaves, fruit, weeds, etc.), rocks, and any fertilizer residue.
5. Dig down to approximately 6-12 inches or until you reach a mass of roots. Sample closer to the dripline if you are unable to find feeder roots at the halfway point.
6. Collect ½ to 1 cup of soil per tree from at least 5 trees, combine in a bucket or container, and mix thoroughly.
7. Place the entire sample or a subsample of at least 2 cups of soil in the labeled bag or container.
8. Refrigeration is not necessary, but keep out of the sun and heat.

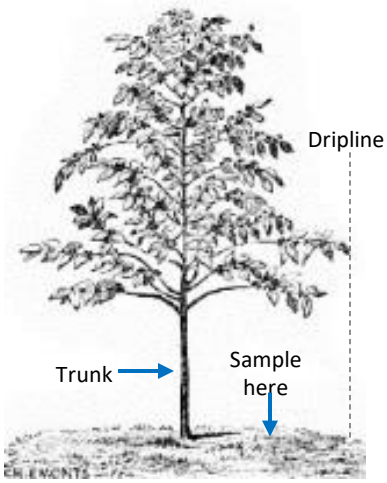

Figure 1: Soil should be sampled from the mid-point between the dripline (widest point of the branches) and the trunk of the tree.

LEAF

Leaf tissue testing (T1-N and T2 codes) determines the level of nutrients (Nitrogen, Phosphorus, Potassium, Calcium, Magnesium, Iron, Sodium, Copper, Manganese, Zinc, Boron) found in the leaves and nutritional status of the plant.

HOW TO TAKE A LEAF SAMPLE (Fig. 2 & 3)

1. Avoid taking samples directly following a foliar and granular fertilizer application or drought/dry period.
2. Use clean bags for sampling.
3. Label a clean, plastic or paper bag with your name, date, host plant, location from where leaves were taken, and any visual plant problems.
4. Take samples during flowering for best results. This gives you an opportunity to adjust fertilization prior to fruit maturity. Sample also during fruit development if a nutritional problem is suspected.

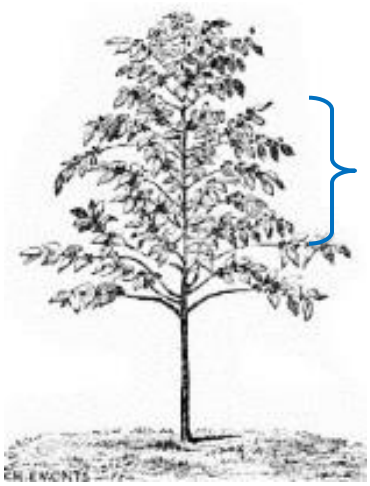
Figure 2: Select leaves approximately mid-way up/down the tree canopy.

5. Select a vertical that is in its second year of growth (first year of cherry production), and then count down from the top of the vertical to the 8th to 12th lateral branch, approximately midway of the tree canopy.
6. Pick one leaf from the most recently matured leaf from the lateral – usually the 3rd or 4th pair back from the branch tip. These leaves should be full-sized, not shaded by neighboring coffee trees, and generally have the same color and texture as older leaves, unless there is a problem.
7. Collect a minimum of 15-20 leaves per sample.
    - Collect 1-2 leaves from at least 15 trees around the farm for a general, representative sample, OR
    - Collect a total of 15-20 leaves when attempting to diagnose a specific nutritional problem.
    - Place leaves in the labeled bag.
8. Keep leaves dry and out of the heat and sun. E.g. Place samples in a cooler and on a light towel covering a bag of ice or an icepack to preserve sample integrity.
9. Do not freeze samples. Refrigeration is ok.
10. Prevent decay and rot of leaves. Submit tissue samples as soon as possible to your nearest Cooperative Extension Office on Mondays or Tuesday morning before 10:00 am. Wipe off any water moisture on the leaves with a clean paper towel and keep in the refrigerator if you are unable to bring the samples to an extension office for a few days.

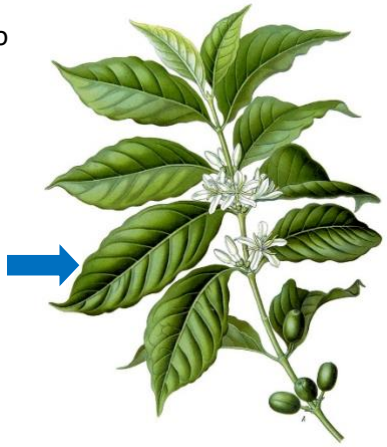

Fig. 2: Some plant nutrients are more mobile or immobile in plant tissues than others. As such, proper selection of leaves from laterals is important for accurate results

COSTS

The charge for a basic soil test or S2 is $12. A T1-N (total nitrogen) and T2 (P, K, Ca, Mg, Fe, Na, Cu, Mn, Zn, B) is recommended for most common leaf sampling analyses. Leaf tissue analysis charges are $7 for a T1-N and $20 for a T2 (all). Please see the UH CTAHR ADSC analysis document for all fees and services at http://www.ctahr.hawaii.edu/site/downloads/adsc/price_list.pdf

Bring samples to your nearest UH-CTAHR Extension Service Office (https://cms.ctahr.hawaii.edu/ce/Find-Us). To allow for travel time, receipt, and processing of samples prior to the weekend, samples are usually sent to the Honolulu ADSC lab early in the week (Mon/Tues). All CTAHR labs and offices are closed on weekends and holidays.

RESULTS

Sample results are mailed and/or emailed directly to the grower approximately 2-4 weeks after receipt. For any sample inquiries, please have available the Job Control Number and name of the person or farm noted on the form receipt.

If you have questions regarding your soil and leaf samples or results, contact the Agricultural Diagnostic Service Center at tel: (808)956-6706, fax: (808)956-2592; or by email at adsc@ctahr.hawaii.edu.

This publication was created by Andrea Kawabata (UH-CTAHR; andreak@hawaii.edu) and adapted from V. Easton-Smith's Extension Publication. Information and interpretation of Hawaii soil and various crop tissue results can be found in the following publications.

- Adequate Nutrient Levels in Soils and Plants in Hawaii (General Guide) - https://bit.ly/3g46KdG
- Testing your Soil - Why and How to Take a Soil-Test Sample - https://bit.ly/35nrOJY
- Interpreting Soil Nutrient Analysis Data - https://bit.ly/3G9nISE
- Recommended Plant Tissue Nutrient Levels for Some Plants in Hawaii - https://bit.ly/3raB4d6