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The Concept of Plant Analysis and How to Take a Leaf Sample

Analytics

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Leaf analysis has been widely used for many years as a means of (a) determining the nutrient-element associated with a nutrient disorder and subsequent prescription of a corrective measure and (b) *as a means of estimating fertilizer needs prior to the occurrence of nutrient disorders.*

It has been shown that leaf element content may be regarded as an index to the tree's nutritional status, which is related to tree growth and fruit production. Leaf nutrient levels which fall in the ranges of shortage, below normal, normal, above normal, and excess have been established with fertilizer experiments. Leaf nutrient levels, however, may vary throughout the season and from leaf to leaf on the tree, as well as from tree to tree in the orchard. Standards developed in these experiments are valid only for leaves collected during the proper period, from the proper part of the plant, and handled in a standard fashion. *It is important to follow the procedures listed below before your leaf sample can be considered valid.*

What to sample

Sample leaves of apples, pears, sweet and sour cherries, peaches, plums, filberts, walnuts, and holly.

When to sample

Collect leaf samples during August in all areas except Umatilla County, where July 15 to August 15 is the best sampling period. Do not take samples other than holly after September 1. Do not pick holly samples after October 1. The sooner your samples are received at the plant analysis laboratory, the sooner you will receive the results.

Selection of trees

A single sample should not represent an area of more than 5 acres. Two samples from each uniform 5-acre area would give less chance of misrepresentation.

In diagnosing a trouble spot, take a composite sample from five affected trees and five nonaffected trees. Two samples from trees of each condition are preferred.

In the absence of a trouble spot, take the sample from five trees of average vigor spaced evenly through an area of less than 5 acres. Cross the area in another direction for the second sample.

Include only one variety or strain in a sample and preferably only one rootstock type.

Mark or map each tree sampled for resampling in the future.

Selection of leaves

Unless leaves are unusually small, 50 leaves are enough for a sample. Select all leaves from the periphery of trees at shoulder height or higher. Collect 10 leaves per tree from *shoots* randomly selected from all sides of the tree. Select only one leaf from a shoot. Collect leaves that are free of any disease or other damage. Remove the leaves with a downward pull so that the petiole remains on the leaf.

From all crops except walnuts, pick leaves from the middle of the current season's *terminal shoots* of about average vigor. With walnuts, take one mid-leaflet from a leaf in the middle of a fruiting terminal. If five leaflets are present, select the leaflet immediately back of the terminal leaflet. If seven leaflets are present, select one leaflet from the second pair of leaflets back of the terminal leaflet.

Take spur leaves only if no other leaves are available. Note on the Plant Analysis Information Sheet that spur leaves were taken.

Preparation of sample

If the samples are contaminated with soil, spray or other visible residues, they should be washed in a detergent solution and rinsed with soft water. *The leaves should be washed quickly (1 minute or less) while still fresh to prevent loss of nutrient elements.* Nearly all detergents are satisfactory for this procedure. Remove excess moisture by blotting with a paper towel.

The leaves should then be allowed to *air* dry. Do not place the leaves in a damp location where they may mold or otherwise spoil.



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Shipment of sample

Fill out the Plant Analysis Information Sheet and put it along with the dried leaves into the perforated paper bag furnished in the kit. Seal the bag securely and deliver the sample to the office of your local OSU Extension agent or mail to a private laboratory. No other container is necessary unless a large number of samples are being submitted.

Analysis of samples

Samples will be analyzed for nitrogen, phosphorus, potassium, calcium, magnesium, boron, manganese, zinc, and copper. Chlorine will be determined if requested.

Reports of analyses performed at OSU will be prepared by computer and reviewed for accuracy by the county Extension office. Reports will be mailed or delivered to growers from the county Extension office.



SELECT ONE MID-SHOOT LEAF OR MID-LEAFLET (WALNUT) AS ILLUSTRATED ABOVE