



Oregon State University Fertilizer Guide for

Extension Service, Oregon State University, Henry A. Wadsworth, director. This publication was produced and distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914. Extension work is a cooperative program of Oregon State University, the U.S. Department of Agriculture, and Oregon counties. Extension invites participation in its programs and offers them equally to all people.

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FILBERTS (Oregon)

Observations of annual shoot growth and size and color of leaves and nuts are helpful to an orchardist in determining the fertilizer needs of his trees. In addition, leaf analysis indicates which elements are present in adequate, deficient, or excessive amounts. Soil analysis before planting is useful in predicting the need for potassium, magnesium, or lime applications.

A nutrient deficiency should be suspected if the cause of poor tree performance is not primarily one or more of the following:

| | |
|-------------------------|---------------------------|
| <i>lack of pruning</i> | <i>soil borne pests</i> |
| <i>winter injury</i> | <i>poor soil drainage</i> |
| <i>physical injury</i> | <i>disease</i> |
| <i>poor weather</i> | <i>insects</i> |
| <i>poor pollination</i> | <i>rodents</i> |
| <i>deep cultivation</i> | <i>shallow soil or</i> |
| | <i>limited moisture</i> |

NITROGEN (N)

Young trees

| Age | Apply this amount (lb N/tree) |
|-----------------|-------------------------------|
| planting-2 yrs* | none |
| 3-5 | 1/4 - 1/3 |
| 6-7 | 1/3 - 1/2 |
| 8-10 | 1/2 - 3/4 |

* Apply N only after 2 growing seasons have passed. Young trees should grow 18-30 inches annually.

Mature trees

Leaf analysis guide for N application

| % leaf N in August | Apply this amount N lb/tree |
|-------------------------------|--------------------------------|
| Under 1.8 (severe deficiency) | 3-4 |
| 1.8-2.2 (deficiency) | 2-3 |
| 2.2-2.5 (optimal) | 1.5-2.0 |
| Over 2.5 (excess) | None |

Apply N in a 1-2 foot band under drip line or increase 20-30% for a broadcast application.

Note: Banding, over a period of years, may lead to excessively acid soil in the band.

Adjust rates according to results of application in previous years.

N applications should be made during the period between February 1 to leafing-out in spring.

PHOSPHORUS (P) AND SULFUR (S)

Deficiencies of P and S have not been observed in Oregon filbert orchards.

POTASSIUM (K)

K deficiency is common in Oregon filbert orchards.

Mature trees

Leaf analysis guide for K application

| %leaf K in August | Apply this amount K ₂ O lb/tree |
|-------------------------------|---|
| Under 0.5 (severe deficiency) | 8-10 |
| 0.5-0.7 (deficiency) | 6-8 |
| 0.7-0.9 (borderline) | none |
| Over 1.0 (optimum) | none |

Submit soil sample from 0-6 inch depth for lime requirement test and lime to pH 5.6 in band where K is applied.

Place K in a band at the drip line of the tree. This band should have a width of 2 inches for each pound of fertilizer applied.

When muriate of potash (KCl) is used it should be applied in fall or before mid-February to avoid chloride toxicity.

Potassium levels in leaves often do not increase until the year following application. A single application is usually effective for 2 or more years.

BORON (B)

Boron deficiency is indicated if the level in leaves is below 30 ppm. One application of 8 lb sodium pentaborate/A using 2 lb sodium pentaborate/100 gal of water applied in May has increased nut set. Some phytotoxicity has been noted. B levels over 100 ppm in leaves are usually toxic.

NEW ORCHARDS

Soil sampling and testing of fields to be planted to orchards is recommended. Application and incorporation into the soil of certain nutrient elements such as K and Mg can be best done prior to planting.

POTASSIUM (K)

K should be broadcast and plowed under during preparation of land for planting.

| | |
|--|--|
| If OSU soil test for K reads (ppm): | Apply this amount of potassium (K ₂ O) lbs/A |
| 0 to 75 | 300-400 |
| 75 to 150 | 200-300 |
| over 150 | None |

The K content of fertilizer is expressed as the oxide (K₂O) on fertilizer labels. Multiply K₂O by 0.83 to convert to K.

MAGNESIUM (Mg)

Mg should be broadcast and plowed under during preparation of the land for planting.

If the OSU soil test for Mg is less than 0.5 meq/100g of soil, apply dolomite in amount called for to lime to pH 5.6.

Dolomite acts in a similar manner to limestone in the correction of soil acidity.

LIME

Lime should be applied when the pH of the soil is below 5.6.

| | |
|---|-------------------------------------|
| If the OSU buffer test for lime reads: | Apply this amount of lime (T/A): |
| Below 5.2 | 4 - 5 |
| 5.2 - 5.6 | 3 - 4 |
| 5.6 - 5.9 | 2 - 3 |
| 5.9 - 6.2 | 1 - 2 |

The liming rate is based on 100-score lime.

Liming of orchard soils is most effective where the lime is mixed into the soil to as great a depth as feasible during the preparation of the land for planting. A lime application is effective over several years.

The suggested K, Mg, and lime applications for new orchards are based on soil test values from the Soil Testing Laboratory, OSU, Corvallis, Oregon.

This guide is based on research conducted by John H. Painter, Horticulturist, USDA (Emeritus) and on grower experience using leaf analysis as a guide.

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