

SR, A



Oregon State University Fertilizer Guide for

FG 35

Revised September 1976

WALNUTS (Oregon)

Good management practices are essential if optimum fertilizer responses are to be realized. These practices include use of recommended varieties, selection of adapted soils, weed control, disease and insect control, and timely harvest.

Observations of annual shoot growth and size and color of leaves and fruit 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.

NITROGEN (N)

Young trees

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

*Apply N only after 1 growing season has passed. Young trees should grow 18-30 inches annually. No N need be applied as long as this much annual growth is attained.

Mature trees

Leaf analysis guide for N application

% leaf N in August	Apply this amount (lbs N/tree)
Under 2.0 (severe deficiency)	8-10
2.0-2.3 (deficiency)	4- 8
2.3-2.8 (optimal)	2- 4
Over 2.8 (excess)	none

N application should be made about the middle of the dormant season (February or early March).

Fall application of N should be limited to the amount necessary to promote cover crop establishment and growth. Where a cover crop is not used, no fall N should be applied.

Broadcast application of N under the outer half of limb spread is most desirable. Band applications of N can be used but may lead to excessive acidity in banded area.

PHOSPHORUS (P)

In Oregon, walnut trees have not responded to applications of P.

POTASSIUM (K)

Since K applications tend to reduce magnesium uptake, do not apply K unless leaf analysis indicates a deficient or borderline level.

Mature trees

Leaf analysis guide for K application

% leaf K in August	Apply this amount of potassium (K ₂ O) - (lbs/tree):
0.2-0.9 (deficiency)	15-20
0.9-1.2 (borderline)	0-15
over 1.2 (optimum)	0

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

Preferably drill K 4-6 inches deep in root zone; or place K in concentrated band on soil surface. It is suggested that the band width should equal 2" per pound of K₂O applied. Band should be located at the drip line.

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

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

BORON (B)

Next to nitrogen, B is the most deficient



OREGON STATE UNIVERSITY
EXTENSION SERVICE

Extension Service, Oregon State University, Corvallis, 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, without discrimination.

nutrient in Oregon walnut orchards.

B deficiency symptoms consist of long leafless shoots mostly in tops of trees. Shoots become flattened and twisted at the tips, resembling the head of a snake. These shoots die the following winter.

Reduced yields by otherwise healthy trees are frequently due to B deficiency.

Excessive B applications can cause B toxicity. Symptoms of B toxicity are round, brown, necrotic spots along the margins of the leaflets and in severe cases these spots appear between the veins approaching the midrib.

Young trees less than 8 years old are more sensitive to B. Where deficiency symptoms on young trees indicate a need for B fertilizer, the rate of application should not exceed 1/10 lb B/tree.

If too much B is applied, an excessive crop of nuts may be set the following year, resulting in limb breakage and production of a crop of "baby-sized" walnuts.

ppm leaf B in August (mature trees)	Apply this amount of B (lb/tree)
below 80	0.5
over 80	0

These B applications, which are usually effective for 2 to 3 years, should be broadcast.

If B deficiency has occurred, spray application will give more rapid recovery than soil application but is used up during season applied.

For current season results, spray at the rate of 8 lbs sodium pentaborate/A using 2 lbs sodium pentaborate/100 gal of water.

The B spray can be combined with a copper blight spray.

A soil application of B as suggested above should also be made.

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

Recommendations based on fertilizer experiments in Oregon and Washington and chemical analyses of leaf samples.

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NEW ORCHARDS

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

Recommended soil sampling procedures should be followed in order to estimate fertilizer needs. Your county agent can provide you with soil sampling instructions and soil sample bags and information sheets.

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

MAGNESIUM (Mg)

Mg should be worked into the plow layer during preparation of the land for planting.

If the OSU soil test for Mg is less than 0.8 meq/100g of soil, apply 1.0 T/A of dolomite.

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.

Lime should be mixed into the soil at least several weeks before planting. *A lime application is effective over several years.*