



OREGON STATE UNIVERSITY
**EXTENSION
SERVICE**

Oregon State University Fertilizer Guide for

Extension Service, Oregon State University, Henry A. Wedsworth, 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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PRUNES (Oregon)

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.* Predictions of fertilizer needs of established orchards based on soil tests are often not reliable. *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)

<u>Young trees</u>	Apply this amount
<u>Age</u>	<u>N (lb/tree)</u>
planting - 2 years	none
3 - 5	1/4 - 1/3
6 - 7	1/3 - 1/2
8 - 10	1/2 - 3/4

Young trees should grow 18-36 inches annually.

Mature trees (all varieties)

Leaf analysis guide for N application.

<u>% leaf N</u>	Apply this amount
<u>in August</u>	<u>N (lb/tree)</u>
Under 1.8 (deficiency)	1 - 1 1/2
1.8 - 2.2 (normal)	3/4 - 1
Over 2.2 (above normal)	none

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

Banding N, 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 between February 1 and petal fall in spring.

Excess nitrogen will delay fruit maturity and increase dry-away ratio.

PHOSPHORUS (P) AND SULFUR (S)

Deficiencies of P and S are very unusual and corrective measures have not been researched.

POTASSIUM (K)

Leaf analysis guide for K application.

<u>% leaf K</u>	Apply this amount of
<u>in August</u>	<u>Potash (K₂O)-(lbs/tree)</u>
Under 1.3 (deficiency)	6-10
1.3 - 1.5 (below normal)	3-6
Over 1.5 (normal)	None

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

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.

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

Preferably drill K 4-6 inches deep in root zone of cultivated orchards. In non-tilled orchards K should be surface-applied in a band less than 10 inches wide at the drip line. Repeated band applications on precisely the same soil increases the efficiency of K absorption.

Rooting near the surface, as in non-tilled orchards, often increases absorption of K.

Do not apply muriate of potash (KCl) after February 15 if subsequent rainfall or irrigation is likely to be insufficient to leach the chloride in which case foliage burn may occur.

An application of several inches of mushroom compost or manure can be effective in correcting K deficiency.

BORON (B)

B deficiency has been observed in some Oregon prune orchards.

Leaf analysis guide for B application

<u>ppm B in leaves</u>	Apply this amount of
	<u>B-(lb/tree)</u>
Under 25 (deficiency)	0.10-0.15
25-35 (below normal)	0.10
35-80 (normal)	0.10*
80-100 (above normal)	None
Over 100 (excess)	None

*Maintenance application every 3 years.

Do not apply B to non-bearing trees. Reduce rates per tree by one-half or more for young bearing trees since trees are easily injured by excessive B applications. B should be evenly broadcast when applied to soil.

A foliar application of sodium pentaborate at 5 lbs/A either shortly before or soon after harvest will often increase fruit set the following spring. N levels must be normal or above and fruit set somewhat limited for a fruit set increase to occur. Whether this fruit set response will occur cannot be predicted from August leaf analysis. Sodium pentaborate may be applied with a preharvest sulfur spray.

ZINC (Zn)

If a Zn deficiency is observed, use a foliar spray of Zn-containing compounds, taking care to follow manufacturer's directions.

NEW ORCHARDS

Soil sampling and testing of fields to be planted for orchards is recommended. Recommended soil sampling procedures should be followed in order to estimate fertilizer needs. Your county agent can provide you with soil sampling instructions, soil sample bags, and information sheets. Application and incorporation into soil of certain nutrient elements such as K and Mg can be best done prior to planting.

PHOSPHORUS (P)

Deficiencies of P in prune trees have not been observed in Oregon.

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 Potash (K ₂ O)-(lbs/A):
0- 75	300-400
75-150	200-300
Over 150	None

MAGNESIUM (Mg)

Mg should be broadcast and disced in during preparation of the land for planting if the OSU soil test for Mg is less than 0.5 meq/100g of soil. Dolomite lime can be used to supply Mg as indicated in the section on lime.

The need for application of Mg is usually greater where K and calcium levels in the soil are high.

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. The application of lime is not suggested if the soil pH is 5.6 or higher.

If the OSU SMP Buffer test for lime reads:	Apply this amount of lime (T/A):
below 5.2	4 - 5
5.2 - 5.5	3 - 4
5.5 - 5.8	2 - 3
5.8 - 6.2	1 - 2
Over 6.2	0

The liming rate is based on dry 100-score lime. A lime application is effective over several years.

For acid soils low in Mg (less than 0.5 meq Mg/100g of soil) one ton/A of dolomite lime can be used as a Mg source. Dolomite and ground limestone have about the same ability to neutralize soil acidity.

Lime should be mixed into the soil at least several weeks before planting.

Fertilizer Guide #3, "Liming Materials for Oregon", which is available from you local OSU Extension Office, provides additional information on lime.

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

These recommendations are based on research findings in Oregon and observations of responses in commercial orchards, including leaf analysis.

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