



Strawberries

(Western Oregon—west of Cascades)

J. Hart, T. Righetti, A. Sheets, and L.W. Martin

Fertilizer recommendations in this guide are based on the use of well-adapted varieties and disease-free plants, selection of suitable soils, disease and insect control, weed control, and proper irrigation. Application of these management practices is essential to realize optimum fertilizer response.

Strawberries respond to generous amounts of soil organic matter. Incorporation of straw or a green manure crop prior to planting is advisable.

Fertilize established fields after harvest. Fertilization should be based on a soil test performed after harvest or before the establishment of a new planting.

Follow recommended soil sampling procedures to ensure a satisfactory fertilizer recommendation. The Oregon State University Extension Service agent in your county can provide you with instructions on correct soil sampling procedures and a list of laboratories providing soil testing services.

Nitrogen (N)

New plantings

- Apply 30–40 lb N/a at planting time. One application may be adequate, particularly if the planting follows a row crop such as beans, where more than 80 lb N/a has been applied and a small amount of crop residue is incorporated. If a sod crop or cereal straw has been turned under, use 50–60 lb N/a.
- Apply another 20–30 lb N/a in mid-July to mid-August of the planting year unless irrigation is not available. See item 2 under “Established plantings.”

Established plantings

- Apply 25–50 lb N/a about August 1 followed by irrigation. Shuksan, Olympus, and Totem can utilize higher rates than Hood or Benton.
- Delay the N application until about September 15 if no irrigation is available.
- Spring applications of N are recommended only when plants are stressed by winter injury, soil insects, or disease (root rot), or when plants are being grown on sandy soils. Apply 15–20 lb N/a.

- Foliar sprays of urea can be used. Do not apply more than 10 lb of N/a per application. Apply foliar sprays when foliage is dry.
- The Benton variety has a tendency to produce excess foliage. Reducing the N level by 25 percent may be advisable with this variety. Also, grower experience indicates there may be an association between malformed berries and excess N.

Phosphorus (P)

Strawberries have shown a marked response to P on some soils. Apply P according to Table 1.

P fertilizer should be banded on both sides of the row. Bands should be 3–4 inches from the plants and 4–6 inches deep at planting time, or at the edge of the row when rows are trimmed following harvest. P fertilizers are used with greater efficiency when placed below the soil surface.

Table 1.—P fertilization rates for strawberries.

If the soil test for P is (ppm)	Apply this amount of phosphate (P ₂ O ₅) (lb/a)
0–15	100–120
15–45	60–100
over 45	0–60

Potassium (K)

For new plantings, rates of 60 lb K₂O/a or less can be banded with N and P after planting. Rates above 60 lb K₂O/a should be broadcast before planting. See Table 2.

Table 2.—K fertilization rates for strawberries.

If the soil test for K is (ppm)	Apply this amount of potash (K ₂ O) (lb/a)
under 75	100–120
75–175	80–100
over 175	0–80



OREGON STATE UNIVERSITY
EXTENSION SERVICE

Revised by John Hart, Extension soil scientist; Tim Righetti, professor of horticulture; Arden Sheets, Extension agent emeritus, Washington County; and L.W. Martin, former superintendent, North Willamette Experiment Station; Oregon State University.

Sulfur (S)

The fertilizer program should include an annual application of at least 15–20 lb S/a. S is contained in some fertilizer materials used to supply other nutrients and in fungicides such as sulfur sprays or dusts.

Magnesium (Mg)

Applications of Mg are suggested when Mg soil test values are below 1 meq of Mg.

Mg can be banded similar to P using such materials as potassium magnesium sulfate or magnesium sulfate (epsom salts) to supply 20–30 lb Mg/a.

Mg also can be supplied in dolomite, which is a liming material. Dolomite reduces soil acidity to about the same degree as ground limestone.

Boron (B)

B should be broadcast and worked into the soil prior to planting. B can be very toxic to strawberries if applied in excess of recommended rates; therefore, **never band B or banded fertilizer**.

With a soil test value below 1 ppm B, an annual maintenance application of 1 lb actual B/a should be broadcast or applied as foliar sprays.

Lime

Strawberries are fairly tolerant of soil acidity and have a comparatively low lime requirement.

If the soil pH is below 5.4 or calcium (Ca) is less than 5 meq, an application of 1–1.5 t/a lime or dolomite lime may be desirable. Dolomite is preferred if magnesium (Mg) is needed (see above).

For pH to change before planting, apply lime or dolomite lime and work it into the soil at least 3 months before planting.

If lime or dolomite applications are made within 1 month prior to planting, increase the K application by 60–90 lb K₂O/a.

For More Information

OSU Extension publications

How to Take a Soil Sample ... and Why, EC 628, by E.H. Gardner (revised 1997). No charge.

A List of Analytical Laboratories Serving Oregon, EM 8677, by J. Hart (revised 1997). No charge.

To order copies of the above publications, send the complete title and series number, along with a check or money order for the amount listed (payable to Oregon State University), to:

Publication Orders
Extension & Station Communications
Oregon State University
422 Kerr Administration
Corvallis, OR 97331-2119
Fax: 541-737-0817

You may order up to six no-charge publications without charge. If you request seven or more no-charge publications, include 25 cents for each publication beyond six.

World Wide Web

Fertilizer and Lime Materials, FG 52, by J. Hart (reprinted 1997). No charge.

You can access the above publications, as well as FG 14, *Strawberries: Western Oregon—West of Cascades*, our Publications and Videos catalog, and many other publications via our Web site at eesc.orst.edu

Other publications

Breen, P.J., and L.W. Martin. 1981. Vegetative and reproductive growth responses of three strawberry cultivars to nitrogen. *J. Amer. Soc. Hort. Sci.* 106(3): 266–272.

Kirsh, R.K. 1959. The importance of interaction effects in fertilizer and lime studies with strawberries. *Proc. Amer. Soc. Hort. Sci.* 73: 181–188.

Kirsh, R.K., and T.L. Jackson. 1959. *Fertilizing Strawberries in the Willamette Valley*, OSU Agricultural Experiment Station CI #594.

Riggs, D.I.M. 1987. *The Effect of Soil-applied Boron on Yield, Deformity and Boron Partitioning in 'Tristar' and 'Benton' strawberries*. MS thesis (Oregon State University, Corvallis).

Riggs, D.I.M., T.L. Righetti, and L.W. Martin. 1987. The effect of boron application on boron partitioning in Tristar and Benton strawberries. *Comm. in Soil Sci. and Plant Anal.* 18(2).

These recommendations are based on field research in the Willamette Valley that produced yield or quality response from fertilizer application. Observations and grower experience also are included in the fertilizer recommendations.

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. Oregon State University Extension Service offers educational programs, activities, and materials—without regard to race, color, religion, sex, sexual orientation, national origin, age, marital status, disability, and disabled veteran or Vietnam-era veteran status—as required by Title VI of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, and Section 504 of the Rehabilitation Act of 1973. Oregon State University Extension Service is an Equal Opportunity Employer.

Revised January 1988. Reprinted January 2000.