FERTILIZERguide
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Carrots

Western Oregon—west of Cascades

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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, good seedbed preparation, proper seeding methods, and timely harvest.

Because of the influence of soil type, climatic conditions, and other cultural practices, crop responses from fertilizer may not always be predicted accurately. Soil test results, field experience, and knowledge of specific crop requirements help determine the nutrients needed and the rate of application.

The fertilizer application for vegetable crops should ensure adequate levels of all nutrients; optimum fertilization is essential for top quality and yields.

For carrots, fertilizer materials usually are broadcast and worked into the seedbed before planting.

The suggested fertilizer applications are based on a 24-inch row spacing and 20–25 plants per linear foot of row.

Follow recommended soil sampling procedures in order to estimate fertilizer needs. The Oregon State University Extension agent in your county can provide you with soil sampling instructions and soil sample bags and information sheets.

Nitrogen (N)

Rates of 60 to 100 lb of N/a are suggested. Broadcast N before planting, or apply part of the N as an early-season top dressing.

Excess N can cause splitting.

Phosphorus (P)

Carrots require adequate available P for satisfactory growth.

Broadcast P and work into the seedbed before planting (Table 1).

Table 1.—P fertilization rates for carrots.

If the soil test for P is (ppm)	Apply this amount of phosphate (P_2O_5) (lb/a)
0–20	120–150
20–50	90–120
50–75	60–90
over 75	0

Potassium (K)

For optimum growth, carrots require a good supply of available K.

Broadcast K and work it into the seedbed before planting (Table 2).

Table 2.—K fertilization rates for carrots.

If the soil test for K is (ppm)	Apply this amount of potash (K_2O) (lb/a)
0–75	120–180
75–150	90–120
150–225	60–90
over 225	0

Sulfur (S)

Include 15–20 lb/a of S in the fertilizer program for carrots. S sometimes is contained in fertilizers used to supply other nutrients such as N, P, and K, but may not be present in sufficient quantity.

Plants absorb S in the form of sulfate. Fertilizer materials supply S in the form of sulfate and elemental S.

Elemental S must convert to sulfate in the soil before the S becomes available to plants. The conversion of elemental S to sulfate usually is rapid for fine-ground (less than 40-mesh) material in warm, moist soil.

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S in the sulfate form can be applied at planting time. Some S fertilizer materials such as elemental and ammonium sulfate have an acidifying effect on soil.

The S requirements of carrots can be provided by:

1. The application of 15–20 lb S/a in the form of sulfate before planting.
2. Applying 30–40 lb S/a as fine-ground (finer than 40-mesh) elemental S the preceding year.
3. Applying coarser ground elemental S at higher rates and less frequently.

Magnesium (Mg)

To date, there have been no observed indications of yield response from applications of Mg to carrots in the Willamette Valley. Trial applications of 10 to 15 lb Mg/a are suggested with soil test values below 1 meq Mg/100 g soil.

Mg also can be supplied in dolomite, which is a liming material and reduces soil acidity to about the same degree as ground limestone. Mix dolomite into the seedbed at least several weeks before seeding and preferably the preceding year.

Boron (B)

Carrots require an adequate supply of B.

Apply 2 to 4 lb of B/a (broadcast and disk in before planting).

Do not exceed the recommended rate of application. Excess B can be toxic to carrots.

B should be broadcast uniformly on the soil.

Other Nutrients

Responses of carrots to nutrients other than those discussed in this guide have not been observed in western Oregon.

Lime

At present, lime is not generally recommended for carrots, as commonly carrots are grown on sandy river bottom soils, which usually have adequate levels of calcium and magnesium.

A lime application is suggested where the soil pH is below 5.6 (Table 3).

Table 3.—Lime application rates for carrots.

If the SMP buffer test for lime is	Apply this amount of lime (t/a)
under 5.2	4–5
5.2–5.6	3–4
5.6–5.9	2–3
5.9–6.2	1–2
over 6.2	0

The liming rate is based on 100-score lime.

Mix lime into the seedbed at least several weeks before seeding and preferably the preceding year. A lime application is effective for several years.

Some soils may have a fairly high SMP buffer value (over 6.2) and a low pH (below 5.3). This condition can be caused by the application of acidifying fertilizer. In this case, the low pH value is temporary, and the pH of the soil will increase as the fertilizer completes its reaction with the soil. This temporary "active" acidity from fertilizer is encountered following recent applications of most nitrogen fertilizer materials. Acidifying fertilizers also have a long-term acidifying effect on soil that is cumulative and leads to lower SMP buffer readings.

Sandy soils to which fertilizers have not been recently applied sometimes record low pH and high SMP buffer values. In such cases, a light application of lime (1 to 2 t/a) should suffice to neutralize soil acidity.

For acid soils low in Mg (less than 0.5 meq Mg/100 g soil), 1 t/a of dolomite lime can be used as an Mg source. Dolomite and ground limestone have about the same ability to neutralize soil acidity.

For More Information

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.

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

You can access the above publications, as well as FG 29, *Carrots: Western Oregon—West of Cascades,* our Publications and Videos catalog, and many other publications via our Web site at **eesc.orst.edu**

These recommendations are based on experiments conducted by H.J. Mack and T.L. Jackson, Oregon State University.

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