



Onions

Muck soils—Willamette Valley

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Good management practices are essential if optimum fertilizer responses are to be realized. The practices include use of recommended onion 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 response 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 onions should ensure adequate levels of all nutrients. Optimum fertilization is essential for top quality and yields.

Fertilizer suggestions are based on a 12–14 inch row spacing. Follow recommended soil sampling procedures to estimate fertilizer needs. The Oregon State University Extension Service agent in your county can provide you with soil sampling instructions, soil sample bags, and information sheets.

Nitrogen (N) and Sulfur (S)

N and S at rates of 20–40 lb/a each should be broadcast and worked into the seedbed before planting, using fertilizers such as ammonium sulfate, 16-20-0, or a mixed fertilizer containing sulfate sulfur.

An additional 20–60 lb N/a should be applied during the growing season when onions are 6–8 inches tall.

Phosphorus (P)

P is essential for vigorous early growth of seedlings. P can be broadcast and worked into the seedbed before planting (Table 1). If P is banded, the amount of P in the band should not exceed 60 lb P₂O₅/a. S and not more than 15 lb N/a can be banded with P.

Table 1.—P fertilization rates for onions.

If the soil test for P is (ppm)	Apply this amount of phosphate (P ₂ O ₅) (lb /a)
0–40	120–150
40–100	80–120
over 100	60–80

Potassium (K)

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

Table 2.—K fertilization rates for onions.

If the soil test for K is (ppm)	Apply this amount of potash (K ₂ O) (lb/a)
0–100	150–200
100–200	100–150
200–400	50–100
over 400	0

Magnesium (Mg)

When the soil test value is below 1.0 meq Mg/100 g, broadcast 20–25 lb Mg/a and work it into the seedbed before planting. If deficiency symptoms appear, spray with 10 lb Epsom salts in 100 gal water/a.

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 in the fall.

Boron (B)

No consistent responses of onions to the application of B have been observed in western Oregon. Where the soil test for B is below 0.25 ppm, growers may wish to make a trial application of 2 lb B/a. Too much B fertilizer can be highly toxic, and suggested rates of B application should not be exceeded. B should be distributed evenly over the field, not banded.

Zinc (Zn)

The application of Zn has increased the yield of onions where soils have been deficient. When the soil test for Zn is below 2 ppm, broadcast 10 lb Zn/a before planting or include 3–4 lb Zn/a in the fertilizer band. A broadcast application of 10 lb Zn/a should supply Zn needs for 2 or 3 years.



Copper (Cu)

Muck soils tend to be deficient in Cu and “fix” Cu. If Cu has not been applied for 3 years, apply 15–25 lb Cu/a to the soil before planting, or two foliar applications of 1–2 lb Cu in 100 gal water/a may be applied to onion leaves. Soil Cu applications need not be repeated every year.

Other Nutrients

Responses of onions to nutrients other than those discussed in this guide have not been observed on muck soils in western Oregon.

Lime

Experimental work has shown that onions will produce good yields over a fairly wide range of soil acidity.

Lime applications should be considered when the soil pH is 5.5 or below (Table 3).

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

Table 3.—Lime application rates for onions.

If the soil test for pH is	Apply this amount of lime (t/a)
under 5.0	4–5
5.0–5.5	2–4
over 5.5	0

Mix lime into the soil in the fall.

For acid soils low in magnesium (Mg) (less than 1.0 meq Mg/100 g of 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. FG 52, *Fertilizer and Lime Materials*, which is available from county offices of the OSU Extension Service, provides additional information on lime.

Do not apply lime when the soil pH is above 6.0. Decreased yields have resulted in Willamette Valley experiments when liming raised the soil pH to 6.5.

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.

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:

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

You can access the above publications, as well as FG 67, *Onions: Muck Soils—Willamette Valley*, our Publications and Videos catalog, and many other publications via our Web site at eesc.orst.edu

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