

Fertilizer Guide

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PEAS

(Western Oregon—West of Cascades)

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 seed bed preparation, proper seeding methods, and timely harvest.

Because of the influence of soil type, climatic conditions, and cultural practices, crop response from fertilizer may not always be accurately predicted. 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 insure adequate levels of all nutrients. Optimum fertilization is essential for top quality and yields.

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

NITROGEN (N)

Rates of 20 to 30 lbs of N/A banded with P and possibly K at planting time are suggested.

Information on the application of N is given below in the sections on P and K.

INOCULATION

Pea seed should be inoculated immediately before seeding to insure an adequate supply of nitrogen-fixing bacteria. A fresh, effective, true culture of the correct strain of Rhizobia should be used.

PHOSPHORUS (P)

P is essential for vigorous early growth of seedlings. Preferably P, N, and, where required, up to 60 lbs K₂O/A should be applied in a band 2 inches to the side and 2 inches below the seed at planting time.

When banding equipment is not available 20 to 30 lbs N/A and up to 80 lbs P₂O₅/A can be drilled with the seed. Additional P₂O₅ and K₂O when required can be broadcast and plowed down prior to planting.

If the OSU soil test for P reads (ppm):	Apply this amount of phosphate (P ₂ O ₅) (lb/A):
0 - 15	120 - 150
15 - 60	80 - 120
over 60	40 - 80

POTASSIUM (K)

K should be applied and plowed down before planting or banded at planting time as described in the above section on P.

K should not be included with N and P when fertilizer is drilled with the seed. In a 2" x 2" band application of N, P, and K the K rate should not exceed 60 lbs P₂O₅. Additional K, where required, should be broadcast and plowed down prior to planting.

Seedling injury from banded fertilizers tends to be more serious:

- in drier soils
- in coarse textured, sandy soils
- where fertilizer band is close to seed.

P fertilizers are less injurious to seedlings than N and K fertilizers.

If the OSU soil test for K reads (ppm):	Apply this amount of potassium (K ₂ O) (lb/A)
0 - 100	90 - 120
75 - 150	60 - 90
150 - 200	40 - 60

SULFUR (S)

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 is usually rapid for fine ground (less than 40 mesh) material in warm moist soil.

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

S is sometimes contained in fertilizers used to supply other nutrients such as N, P, and K, but may not be present in sufficient quantity.



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Responses to S-fertilization may not occur for a period of at least 4 or 5 years on "red hill" soils which have a history of high S fertilization. These soils have a comparatively high ability to adsorb S and frequently have a history of high S fertilization through the use of S-containing fertilizer such as ammonium sulfate.

The S requirements of peas can be provided by:

1. The application of 20-30 lbs S/A in the form of sulfate at or prior to seeding.
2. Applying 30-40 lbs 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)

When the soil test value is below 0.5 meq Mg/100g or when calcium (Ca) is 10 times more than the Mg apply 10 to 15 lbs Mg/A banded at planting.

Mg can also be supplied in dolomite which is a liming material and reduces soil acidity to about the same degree as ground limestone. Dolomite should be mixed into the seed bed at least several weeks in advance of seeding and preferably during the preceding year. An application of dolomite is effective for several years.

OTHER NUTRIENTS

Responses of peas to nutrients other than those discussed in this guide have not been observed in western Oregon. Peas have a comparatively low requirement for boron which should never be included in fertilizer banded with peas.

LIME

Peas are fairly sensitive to soil acidity and are responsive to liming of acid soils.

Lime application are suggested when the soil pH is 6.0 or below, or when calcium (Ca) levels are below 5 meq Ca/100g of soil.

If the OSU SMP Buffer test for lime reads: Apply the amount of lime (T/A):

below 0.5	0
5.0 - 5.7	5 - 6
5.7 - 5.9	4 - 5
5.9 - 6.1	3 - 4
6.1 - 6.3	2 - 3
6.3 - 6.5	1 - 2
over 6.5	0

The suggested liming rate is based on 100 score lime.

P, K, Mg, and lime suggestions are based on soil test values from the Soil Testing Laboratory, OSU, Corvallis, Oregon.

Suggested fertilizer applications are based on research work conducted in western Washington and observation of growers' fields.

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Apply lime at least several weeks before seeding and preferably the preceding year and mix with the surface 5 to 6 inches of soil.

A lime application is effective over several years.

Some soils may have a fairly high OSU SMP buffer value (over 6.5) and a low pH (below 5.5). 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 N fertilizer materials. Acidifying fertilizers also have a long term acidifying effect on soil which is cumulative and leads to lower OSU 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 1 to 2 T lime/A should suffice to neutralize soil acidity.

For acid soils low in Mg (less than 0.8 meq Mg/100g of soil) 1 T/A dolomite lime can be used as a Mg source. Dolomite and ground limestone have about the same ability to neutralize soil acidity.

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

MANURE

Manures contain variable amounts of all plant nutrients. All of the nutrients in manure are not completely available the first year. The following table gives the approximate average content of some nutrients in fresh manures:

Kind of manure	Nutrient and water content, %			
	Water	N*	P ₂ O ₅	K ₂ O
Dairy	87	0.5	0.16	0.44
Beef	82	0.65	0.43	0.53
Poultry	73	1.30	1.02	0.50
Hog	84	0.45	0.27	0.40
Sheep	73	1.00	0.36	1.00
Horse	60	0.70	0.25	0.60

*About 50% of the N is available the first year.

Losses of N sometimes exceeding 50% can occur during manure storage or following application to the surface of the soil. N loss is least when fresh manure is spread and worked into the soil immediately.

Further information on the use of manure is available from your county extension office.

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