

mc, A



OREGON STATE UNIVERSITY
**EXTENSION
SERVICE**

Extension Service, Oregon State University, Harry A. Wadsworth, 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.

Oregon State University Fertilizer Guide for

FG 12
Reprinted September 1980

POLE BEANS

(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 other 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.

The suggested fertilizer applications are based on a 5 foot row spacing.

Recommended soil sampling procedures should be followed in order to estimate fertilizer needs. Your county agent can provide you with soil sampling instructions and soil sample bags and information sheets.

NITROGEN (N)

Rates of 100 to 150 lbs of nitrogen (N)/A are suggested.

Apply half of the N at planting time; the remainder can be applied before planting or during the growing season. Split applications will reduce the possibility of leaching losses.

If the application of nitrogen (N) plus potassium (K_2O) exceeds 90 lbs/A, there is danger of seedling injury from the concentration of salt when fertilizer is banded at planting time.

There is less danger if the row application is split into two bands.

The danger is aggravated as the band comes closer to the seed.

The danger is greater with sandy than with finer textured soil.

Immediate irrigation at the first sign of burn should reduce further injury.

PHOSPHORUS (P)

P is essential for vigorous early growth of seedlings. P should be applied in bands 2 to 3 inches to the side and 2 to 3 inches below the seed at planting time.

If the OSU soil test for P reads (ppm): phosphorus (P_2O_5)-lbs/A:

| | |
|----------|-----------|
| 0 to 15 | 150 - 180 |
| 15 to 60 | 120 - 150 |
| over 60 | 90 - 120 |

The P content of fertilizer is expressed as the oxide (P_2O_5) on fertilizer labels. Multiply P_2O_5 by 0.44 to convert to P.

POTASSIUM (K)

K should be applied before planting or banded at planting time. Amounts above 60 lbs K_2O/A should be broadcast and worked into the seed bed.

If the OSU soil test for K reads (ppm): potassium (K_2O)-lbs/A:

| | |
|------------|-----------|
| 0 to 75 | 120 - 180 |
| 75 to 150 | 90 - 120 |
| 150 to 250 | 60 - 90 |
| over 250 | none |

The K content of fertilizer is expressed as the oxide (K_2O) on fertilizer labels. Multiply K_2O by 0.83 to convert to K.

SULFUR (S)

The fertilizer program should include a minimum of 20 to 30 lbs of S/A.

S is contained in several fertilizer materials used to supply other nutrients.

MAGNESIUM (Mg)

When the soil test value is below 1.0 meq Mg/100g or when calcium (Ca) is 10 times more than the Mg apply 10 to 15 lbs Mg/A banded at planting. If deficiency symptoms appear, spray with 10 lbs Epsom salts in 100 gals of water/A.

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 several weeks in advance of seeding.

BORON (B)

Fields which have received recent heavy B applications should be soil tested for B. If the test indicates 2.0 ppm B or above, there is danger of injury to beans.

ZINC (Zn)

The application of Zn has increased the yields of beans in the Stayton area-especially on the gravely, dark colored soils.

If the OSU soil test for Zn reads (ppm): Apply this amount Zn (lbs/A):

| | |
|-------------|---------------|
| less than 1 | 3-4 banded or |
| | 10 broadcast |
| over 1 | 0 |

When the soil test is below 1 ppm Zn, a response to Zn is expected on all soils.

When the soil test is between 1 and 1.5 ppm Zn, a response to Zn is expected on most soils in the Stayton area.

Where Zn is required, either 10 lb/A of Zn should be broadcast and worked into the soil prior to planting or 3 to 4 lbs/A of Zn should be banded with the fertilizer at planting time.

A broadcast application of 10 lb Zn/A should supply Zn needs for 2 or 3 years.

OTHER NUTRIENTS

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

LIME

Experimental work has shown that beans 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, or when calcium (Ca) levels are below 5 meq Ca/100g of soil.

| <u>If the OSU buffer test for lime reads:</u> | <u>Apply this amount of lime (T/A):</u> |
|---|---|
| below 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.

Lime should be mixed into the seed bed at least several weeks before seeding.

A lime application is effective over several years.

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.

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

This fertilizer guide is largely based on the results of experiments conducted by H. J. Mack, S. B. Apple Jr., Horticulture and T. L. Jackson, Soils, Oregon Agricultural Experiment Station.

Prepared by N. S. Mansour and H. J. Mack, Horticulture and E. Hugh Gardner and T. L. Jackson, Soil Science, Cooperative Extension Service and Agricultural Experiment Station, Oregon State University. Reviewed by a committee of Western Oregon County Extension Agents.