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Fertilizer Guide

FG 27
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Broccoli, Brussels Sprouts, Cabbage, Cauliflower

(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 responses 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 36" row spacing. With decreased row spacings, increased fertilizer rates are suggested.

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, soil sample bags, and information sheets.

TRANSPLANT BED FERTILIZATION

Broadcast and work into the transplant bed:

1. 40 to 70 lbs N/A.
2. Apply phosphorus, potassium, sulfur, magnesium, boron, molybdenum, and lime up to the maximum rates suggested below.

TRANSPLANTING SOLUTIONS

Dilute solutions of complete fertilizers high in phosphorus promote quick recovery and early growth of transplants. One-half pint of transplanting solution should be injected into the furrow at the roots of each plant.

NITROGEN (N)

A total application of 150-200 (80-100 for cabbage) lbs N/A is suggested.

Broadcast about half of the N just prior to direct seeding or transplanting or band 60-90 lbs N/A with the phosphorus. Broadcast remaining N as a top dressing 1 to 2 weeks before the first cutting.

When these crops are grown for seed apply 50 lbs N/A in the fall and 50-100 lbs N/A in the spring.

PHOSPHORUS (P)

P fertilizer should be banded at the time of seeding or transplanting. Bands should be located 2-3" to the side of the seeds or plants and 3-4" deep.

If the OSU soil test for P reads (ppm):	Apply this amount of phosphate (P_2O_5) (lb/A):
0 - 30	150 - 200
30 - 50	100 - 150
Over 25	80 - 100

POTASSIUM (K)

Limit band applications of K to 90 lbs K_2O/A. Broadcast remainder of K and work into seedbed prior to planting. The total of N plus K_2O in the band should not exceed 90 lbs/A.

If the OSU soil test for K reads (ppm):	Apply this amount of potash (K_2O) (lb/A)
0 - 150	150 - 200
150 - 200	90 - 150
200 - 250	60 - 90
Over 250	None

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SULFUR (S)

Include 25-40 lbs/A of S in the fertilizer program. 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.

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.

The S requirements of crucifers can be provided by:

1. The application of 25-40 lbs S/A in the form of sulfate at or prior to seeding or planting.
2. Applying 40-50 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 OSU soil test value for Mg is below 2 meq/100g soil, band 15-20 lbs Mg/A at transplanting or seeding time. If Mg deficiency symptoms develop, spray with 10 lbs of 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 seedbed at least several weeks in advance of seeding and preferably the preceding year.

BORON (B)

If the OSU soil test for B reads (ppm):	Apply this amount of B (lbs/A):
0 - 1	3 - 4 broadcast
1 - 3	1 - 2 broadcast
Over 3	½ - 1 foliar spray

A satisfactory foliar spray contains 1 lb B/100 gals of water.

Fertilizers containing B should not be banded close to seeds or plants.

MOLYBDENUM (Mo)

Mo should be applied to transplant beds at the rate of 2 lbs sodium molybdate/A. If whiptail develops in the field, apply ¼ to ½ lb of sodium molybdate/A as a foliar spray.

Sodium molybdate contains 40% Mo.

Caution: Forage crops grown on soils previously fertilized with molybdenum may cause molybdenum toxicity when fed to cattle or sheep.

LIME

Compared to other vegetables the crucifers have a fairly high lime requirement.

The application of lime is suggested when the soil pH is below 6.3 and/or the calcium (Ca) level is below 8 meq/100g soil.

If the OSU SMP Buffer test for lime reads:	Apply this amount of lime (T/A):
Below 5.6	5 - 7
5.7 - 5.9	4 - 5
5.9 - 6.1	3 - 4
6.1 - 6.3	2 - 3
6.3 - 6.6	1 - 2
Over 6.6	None

The liming rate is based on 100-score lime.

Lime should be mixed into the seedbed at least several weeks before seeding and preferably the preceding year. A lime application is effective over several years.

Some soils may have a fairly high OSU SMP buffer value (over 6.6) and a low pH (below 6.0). 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 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 lime (1 to 2 ton/A) should suffice to neutralize soil acidity.

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

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

These recommendations are largely based on the results of experiments conducted by T. L. Jackson and H. J. Mack, Oregon Agricultural Experiment Station.

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