FERTILIZERguide
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Crimson clover, vetch, field peas

Western Oregon—west of Cascades

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These annual legumes are grown for seed and forage in western Oregon. They may respond to applications of fertilizers and lime. The fertilizer and liming needs can be estimated through the use of soil tests.

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, correct inoculation of legumes, good seedbed preparation, proper seeding methods, and timely harvest.

Follow recommended soil sampling procedures 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.

Nitrogen (N)

Legumes can obtain N from symbiotic N fixation. This source of N should be adequate to meet plant needs. Since symbiotic N fixation is depressed by fertilizer N, application of N-containing fertilizers to legumes generally is not recommended.

A response of these legumes to applied N indicates that they have not been effectively nodulated.

Phosphorus (P)

The need for P fertilization can be determined by a soil test (Table 1).

P applications are most effective when the P is banded about 1 inch to the side or below the seed.

Do not include boron in a band application.

Table 1.—P fertilization rates for crimson clover, vetch, field peas.

If the soil test for P is (ppm)	Band this amount of phosphate (P_2O_5) (lb/a)
0–15	60–80
15–30	40–60
over 30*	0

*At low soil pH (below 5.6), a response to P when the P soil test equals 30–50 ppm is likely.

When P is not banded close to seed, it should be broadcast before seeding, and the application rate should be increased by 50 percent.

Potassium (K)

Use soil testing to evaluate the need for K fertilization (Table 2).

K should be broadcast and worked into the seedbed prior to seeding.

Table 2.—K fertilization rates for crimson clover, vetch, field peas.

If the soil test for K is (ppm)	Apply this amount of potash (K_2O) (lb/a)
0–75	80–100
75–150	60–80
over 150	0

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Sulfur (S)

Include 15–20 lb/a of S in the annual fertilizer program. S sometimes is contained in fertilizers used to supply other nutrients such as 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.

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 requirements can be provided by:

1. Annually applying 15–20 lb S/a in the form of sulfate.
2. Applying 20–30 lb S/a of fine-ground elemental S the preceding year.
3. Applying coarser ground elemental S at higher rates and less frequently.

Boron (B)

Adequate B is necessary in legume production, particularly when a seed crop is being grown.

If the soil test for B is less than 1 ppm, an application of 2 lb B/a is suggested.

B and other materials should be thoroughly mixed when B application is combined with other fertilizers. Fertilizer containing B should be applied evenly to the soil.

B can be toxic to plants if applied at rates higher than recommended. For this reason, B-containing fertilizers should not be banded.

Apply B in fall or early spring.

Other Micronutrients

Responses of these legumes to micronutrients other than B, such as zinc or copper, have not been observed in western Oregon.

Lime

The application of lime is suggested when the soil pH is below 5.5 or the soil test for calcium (Ca) is below 5 meq Ca/l00 g. Lime should be worked into the seedbed at least several weeks before seeding. The amount of lime required is based on an SMP lime requirement test (Table 3).

Table 3.—Lime application rates for crimson clover, vetch, field peas.

If the SMP buffer test for lime is	Apply this amount of lime (t/a)
below 5.2	4–5
5.2–5.5	3–4
5.5–5.8	2–3
5.8–6.2	1–2
over 6.2	0

The suggested liming rate is based on 100-score lime. Liming materials should be checked for score.

The SMP test takes the soil type and texture into account since clayey soils require more lime to change pH than do sandy soils.

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 (1–2 t/a) should suffice to neutralize soil acidity.

For acid soils low in Mg (less than 0.5 meq Mg/l00 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.

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 30, *Crimson Clover, Vetch, Field Peas: Western Oregon—West of Cascades*, our Publications and Videos catalog, and many other publications via our Web site at **eesc.orst.edu**

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