

2A, A



Irrigated Clover-Grass Pastures (Eastern Oregon-East of Cascades)

This guide to fertilization is intended for pastures consisting of *white clover* in combination with *orchard grass* or *tall fescue*.

The optimum response of irrigated pasture to fertilization is dependent on good management.

The following management factors are important:

1. Maintenance of a good stand of adapted, improved clovers and grasses. The stand should be approximately 40%-50% clover.
2. Adequate irrigation without over-irrigation.
3. Harvesting at 5"-8" height using rotation grazing or green chop. Green chop management results in more rapid depletion of soil fertility than grazing.
4. Close grazing (to 2" height) favors white clover and light grazing (to 4" height or higher) favors the grass.
5. Well fertilized grass will outgrow clover in the fall. Excessive grass growth could result in smothering the clover. Either grazing or clipping will reduce the problem.
6. Avoid soil compaction by eliminating grazing when surface soil is saturated with water.
7. Inoculate clover seed with the correct strain of fresh inoculum immediately prior to seeding.
8. Retest the soil and adjust fertilizer applications at least every two years.

NITROGEN (N)

N fertilizer favors the growth of grass over that of clover. Excessive fertilization with N can result in a decrease in the clover stand.

Clover-Grass Pastures

For new seedings: An application of 30 lbs N/A is suggested where adequate available N is not present in the soil.

Where the presence of residual available N in the soil is suspected because of heavy N fertilization the previous year or a previous legume crop, a soil test for N is useful in determining the N fertilizer requirement.

Should the nitrate-N level in the soil exceed 7 ppm in the surface foot, N fertilization should not be necessary.

The N fertilization of new seedings is usually not practiced in northeast Oregon.

For established stands: An application of 30-40 lbs N/A in the spring will stimulate the grass and provide early feed. Single applications of N should not exceed 40 lbs/A.

If the clover stand is adequate, summer N applications seldom pay. In some lower altitude areas, an application of 30-40 lbs N/A in late August will stimulate grass growth and may provide additional fall grazing.

Pure Grass

Productive irrigated pure grass pastures require 125-300 lbs N/A each year. N should be applied in 2 or 3 equal applications in early spring and about June 1 and August 1. The higher rates of application are suggested for lower altitude, longer growing season areas such as Ontario and Hermiston.

PHOSPHORUS (P)

The need for P can be estimated using a soil test. Adequate fertilization with P is particularly important to the maintenance of a good stand of clover.

Established Pasture

| If OSU soil test for P reads (ppm): | Apply this amount (lbs/A) | |
|-------------------------------------|-------------------------------|---------|
| | P ₂ O ₅ | P |
| 0 - 5 | 60 - 80 | 26 - 35 |
| 5 - 15 | 40 - 60 | 18 - 26 |
| over 15 | | none |

Broadcast P in fall or early spring.

New Seedings

| If OSU soil test for P reads (ppm): | Apply this amount (lbs/A) | |
|-------------------------------------|-------------------------------|---------|
| | P ₂ O ₅ | P |
| 0 - 5 | 80 - 100 | 35 - 44 |
| 5 - 15 | 50 - 80 | 22 - 35 |
| over 15 | | none |

The P content of fertilizer is expressed as the oxide (P₂O₅) on fertilizer labels. Multiply P₂O₅ by 0.44 to convert to P.

If possible, band phosphate 1/2" to 1" to the side or below seed when seeding. Some soil should separate the seed from the fertilizer.

Do not band fertilizer which contains boron.

Pure grass does not require as much P as clover. Where the pasture consists of grass only, apply 40 lbs P₂O₅/A if the soil test reads less than 10 ppm P. When the soil test for P exceeds 10 ppm P fertilization of pure grass is not necessary.

POTASSIUM (K)

An adequate level of available K is essential to the optimum growth of clover grass pastures. K is particularly important to the growth of clover. Grass competes vigorously with clover in the uptake of K.

Most of the soils in eastern Oregon contain adequate amounts of K for pasture production. The need for K fertilization can be determined by a soil test.

High producing pasture can cause rapid depletion of soil K. Soils should be tested frequently to determine available K levels.

K can be supplied most effectively by working into the seedbed prior to planting. On established stands, K should be applied in the fall or early spring.

| If OSU soil test for K reads (ppm): | Apply this amount (lbs/A) | |
|--|---------------------------|--------|
| | K ₂ O | K |
| 0 to 75 | 100-120 | 83-100 |
| 75 to 150 | 50-100 | 41-83 |
| over 150 | none | |

The K content of fertilizer is expressed as the oxide (K₂O) on fertilizer labels. Multiply K₂O by 0.83 to convert to K.

In *central Oregon* a response to K fertilizer may be obtained when soil test value exceeds 150 ppm.

SULFUR (S)

S requirements will vary with soil texture, leaching losses, and the soil parent material. Soils developed on pumice in central Oregon have a particularly high S requirement. In some cases, irrigation water contains appreciable amounts of S.

1. In *central Oregon*, 60 to 80 lbs S should be applied annually on the coarse sandy loam and loamy sand soils; 30 to 50 lbs S should be applied annually on the silt loam and finer-textured soils.
2. In *north central, south central, and northeast Oregon*, 15-25 lbs S/A should be

applied on an annual basis. Two years' needs for S can be provided by applying double the recommended annual rate.

3. S response has not been obtained on some soils, such as the river bottom soils in Crook County and Malheur or Harney Counties and on some fields irrigated from the Columbia River.
4. S should be applied in the fall or early spring.

BORON (B)

In *central Oregon*, B responses have not been observed and B applications are not recommended at the present time.

In other areas of eastern Oregon, if the soil test for B is less than 0.50 ppm, 2 to 4 lbs B/A should be applied.

B should not be banded near to the seed.

ZINC (Zn)

Zn deficiency may occur in irrigated pastures in some instances. Where the soil test for Zn is below 0.8 ppm, apply Zn at 10 lbs/A.

Zn deficiencies are more prevalent on areas where limey subsoil has been exposed through land levelling.

MAGNESIUM AND OTHER MICRONUTRIENT ELEMENTS

Economic responses of pastures from the application of magnesium or micronutrients, except B or Zn, have not been observed in eastern Oregon.

LIME

Responses to lime have not been measured in experiments with forages in eastern Oregon.

In some fields, surface soil values below pH 6.0 cause some concern about the need for lime.

Before liming, soil samples, including sub-soil samples (8"-20" depth) should be tested.

In many cases, the subsoil is more basic and the acid reaction in the surface soil can be corrected by deep plowing.

Liming rates should be based on a lime requirement soil test.

For the satisfactory growth of white clover the pH of the soil should exceed 5.6.

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

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