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IRRIGATED CLOVER-GRASS PASTURES

(Southwest Oregon)

(Coos, Curry, Jackson, Josephine counties)

This guide to fertilization is intended for grass-legume pastures using white clover varieties such as Ladino, Grasslands Huia (New Zealand), or similar varieties in combination with orchardgrass, perennial ryegrass, tall fescue, or meadow foxtail.

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

The following management factors are important:

1. Maintenance of a good stand of adapted, improved legumes and grasses. The stand should be approximately 40-50 % clover.

2. Adequate irrigation without over-irrigation.

3. Harvesting at 5-6" height using rotation grazing or green chop. When manure is not returned to the pasture, green chop management results in more rapid depletion of soil fertility than grazing.

4. Close grazing (to 2" height) favors clover and light grazing (to 4" height or higher) favors grass.

5. Well fertilized grass will outgrow legumes in the fall and early winter. 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. Grasslands Huia (New Zealand) variety of white clover is more resistant to slug feeding than other varieties.

8. Inoculate clover seed with the correct strain of fresh inoculum immediately prior to seeding.

9. Retest the soil and adjust fertilizer applications every 2-4 years.

NITROGEN (N)

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

An application of 30-40 lbs N/A in late February or early March will stimulate the grass and provide early feed. Single applications of N should not exceed 40 lbs/A.

The application of 40 lbs N/A in early June has increased pasture production in some trials.

An application of 30-40 lbs N/A in late August will stimulate grass growth and may provide additional fall grazing.

PHOSPHORUS (P)

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

On new seedings:

If OSU soil test for P reads (ppm):	Apply this amount of Phosphate (P_2O_5)-(lbs/A):
0-10	60-80
10-20	40-60
Over 20	None

P can be applied most effectively by banding 1 to 2" to the side or below the seed when seeding. Some soil should separate seed from fertilizer.

Do not include boron in band applications.

Working P into the surface 2" of soil during seedbed preparation is more effective than broadcasting following seeding.

On established pasture:

If OSU soil test for P reads (ppm):	Apply this amount of Phosphate (P_2O_5)-(lbs/A):
10	40-60
Over 10	None

On established stands the P application should be made in the fall to early spring.

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.

The need for K fertilization can be estimated by a soil test.

On new seedings:

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

If OSU soil test for K reads (ppm):	Apply this amount of Potash (K_2O)-(lbs/A):
0- 75	70-90
75-125	50-70
Over 125	None - Watch soil tests for K depletion

Established Pasture

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

Note that split applications of K are suggested.

If OSU soil test for K reads (ppm):	Apply this amount of potash (K_2O) in fall or early spring and *again* about July 1-(lbs/A)
0-100	70-90
Over 100	None - Watch soil tests for possible K depletion

Whenever K deficiency symptoms become apparent on the leaves, at least 60 lbs K_2O/A should be applied.

A K deficiency is indicated by light colored spots around the margins of the clover leaves and yellow to brown coloring of grass leaf tips. Responses to K fertilizer are often obtained before leaf deficiency symptoms are apparent.

BORON (B)

Adequate B is required by clover-grass pastures. Clovers have a higher B requirement than grass. *Too much B fertilizer can be highly toxic;* therefore, suggested rates of B application should not be exceeded and B should be evenly distributed over the field and not banded.

B applications have failed to increase pasture production in several trials in southwest Oregon. A trial application of 2-3 lbs B/A is suggested when the B soil test is less than 0.5 ppm.

B and other materials should be thoroughly mixed when B application is combined with other fertilizers.

B should be applied in fall or early spring.

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 finely ground (less than 40 mesh) elemental S in warm moist soil.

The S requirements of pasture can be provided by the annual application of 20-30 lbs S/A in the form of sulfate or as finely ground (finer than 40 mesh) elemental S. Elemental S will not be available to plants until the soil warms up.

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

MAGNESIUM (Mg)

Responses of pasture to Mg have not been observed in western Oregon. Trial applications of Mg are suggested where soil test levels are below 0.8 meq/100g soil.

Mg can be banded at 10 to 15 lbs/A at planting. Mg can also be supplied in dolomitic lime which is a liming material that reduces soil acidity to about the same degree as ground limestone. Dolomitic lime should be mixed into the seedbed at least several weeks in advance of seeding.

An application of dolomitic lime will supply magnesium and reduce soil acidity for several years.

LIME

On acid soils clovers are more responsive to liming than are grasses. A lime application is suggested when the pH of the soil is below 5.8. The rate of lime application can be estimated from the following OSU SMP buffer table.

If the OSU SMP buffer test for lime reads:	Apply this amount of lime (T/A):
below 5.5	4-5
5.5-5.8	3-4
5.8-6.1	2-3
6.1-6.5	1-2
Over 6.5	0

The liming rate is based on 100-score lime. Lime should be mixed into the seedbed at least several weeks before seeding. 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 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 T/A) should suffice to neutralize soil acidity.

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

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

This fertilizer guide is based on experiments conducted by Gary Schneider, Mike McCarthy, and Hugh Gardner, Extension Service and Agricultural Experiment Station, Oregon State University.

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