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*Idaho Fertilizer Guide*

# IRRIGATED PASTURES, SOUTHERN IDAHO

The following guidelines are based on University of Idaho research results and relationships between soil tests and yield responses.

Lack of adequate fertilizer and irrigation, poor stands and non-adapted plant species are probably the major causes of low forage production.

Pastures will respond to fertilization and produce large quantities of forage and livestock products when well managed.

Irrigated pastures are usually composed either of grass-legume mixtures or only grass. The composition of the pasture can be changed by fertilizer management and method of grazing.

Adapted and high quality grasses include Regar Bromegrass and Latar Orchardgrass for well-drained soils, Alta Fescue for saline soils and Garrison Creeping Meadow Foxtail for wet soils. These grasses make excellent summer regrowth.

Highest producing grass-legume mixtures usually include one of the above grasses with an adapted wilt-resistant alfalfa. Several good wilt-resistant alfalfa varieties are available.

## NITROGEN (N)

Grass pastures have responded well to nitrogen applications up to 150 lb./acre. The nitrogen rate depends upon the frost-free growing days of the area and the number of cuttings or grazing periods.

As the amount of legume increases in a mixture, the need for nitrogen fertilizer decreases. When the legume composes over 60% of the mixture, responses from nitrogen are limited.

Split applications of nitrogen (30 to 50 lb. N/acre) maintain a more uniform level of forage production through summer and fall. Broadcast nitrogen following each cutting or grazing cycle.

On pastures containing a high percentage of legumes, nitrogen applications will reduce the quantity of legume in the forage.

## PHOSPHORUS (P)

Intensively managed and high producing pastures respond to phosphorus. Phosphorus can best be applied during seed bed preparation. Established pastures may be top-dressed with phosphorus preferably in the fall.

Rates of phosphorus needed for optimum forage production as determined by a soil test are shown in Table 1. Since soil samples are taken at both plow depth (0 to 9 inches) and at the 0 to 12 inch depth, levels for both depths are shown.

**Table 1. Phosphorus fertilizer rates based on soil test.**

| Soil Test inches soil depth | | Apply lb./acre | |
|---|---|---|---|
| 0-9 | 0-12 | | |
| Phosphorus (P) ppm* | | $P_2O_5$ | P** |
| 0 | 0 | 160 | 70 |
| 4 | 3 | 120 | 53 |
| 8 | 7 | 60 | 26 |
| over 12 | over 10 | 0 | 0 |

*P test is by $NaHCO_3$ extraction.

**Phosphorus is expressed as both the oxide and elemental forms: $P_2O_5 \times 0.44 = P$ or $P \times 2.29 = P_2O_5$.

## POTASSIUM (K)

Potassium should be incorporated during seed bed preparation or broadcast in the fall.

Rates of potassium needed for optimum forage production as determined by a soil test are shown in Table 2.

## SULFUR (S)

Sulfur demand is higher for legume plants than grasses. Soil testing less than 10 ppm sulfate sulfur ($SO_4$-S) in the plow layer should receive 30 pounds sulfur per acre.

Areas irrigated with Snake River water should not experience a shortage of sulfur. Higher rainfall areas, mountain valleys and foothill areas are likely areas for sulfur deficiencies.

Table 2. Potassium fertilizer rates based on soil test.

| Soil Test inches depth 0-9 | 0-12 | Apply lb./acre | |
|---|---|---|---|
| Potassium (K) ppm* | | $K_2O$ | K** |
| 0 | 0 | 200 | 166 |
| 50 | 38 | 140 | 116 |
| 100 | 75 | 80 | 66 |
| 150 plus | 112 | 0 | 0 |

*Potassium test (K) is by $NaHCO_3$ extraction.

**Potassium is expressed as both oxide and elemental forms: $K_2O \times 0.83 = K$ or $K \times 1.20 = K_2O$.

## MICRONUTRIENTS

Deficiencies of micronutrients such as zinc, copper, manganese and iron have not been observed on irrigated pastures. Grasses and alfalfa are not as sensitive to low levels of micronutrients as are row crops such as beans and corn.

Boron deficiencies may be observed on alfalfa in gravelly textured soils. If the soil tests less than 0.25 ppm B, apply 1 to 3 lb./acre of boron (B). Do not use higher rates as boron is toxic to plants in excessive amounts.

## GENERAL COMMENTS

1. Nitrogen and phosphorus are the elements of major need on Idaho irrigated pastures. Potassium, sulfur, zinc and boron may be needed and are best determined by soil tests.
2. Refer to Idaho Extension Bulletin 452, *Fertilizing Irrigated Pastures* for additional information and research results.
3. Maximum production from irrigated pastures requires as much management as row crop farming.
4. Irrigated pastures make good use of sloping land and shallow soil which are less desirable for row crops. Pastures reduce soil erosion losses during irrigation on sloping land.
5. Legume population in a grass-legume mixture is reduced by nitrogen fertilization and increased by phosphorus and potassium when these nutrients are lacking in the soil.
6. Fertilizers are only one part of pasture management — they respond best when plant selection, irrigation and harvest techniques are not limiting production.
7. Rotational grazing will provide more forage than continuous grazing. Greater returns are also obtained when rotational grazing is used.

If you have any questions regarding the interpretation of this information, please contact your county Extension agent.

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