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Rejuvenating Old Pastures

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Forage from improved pasture is the most economical source of nutrients for livestock in Idaho. Forage is, in fact, the main source of energy, proteins, minerals and vitamins for the production of meat and wool. More economical livestock production can be realized when feedstuffs are harvested directly by the animal.

Almost every farm or ranch has an old pasture area set aside for livestock grazing. These old pastures usually are located near the farmstead or on wasteland which is less suitable for cultivated crops. Soils may be shallow, infertile, poorly drained, rocky or high in salts which prevent suitable plant growth. The irrigation systems are frequently inefficient. Plants in these pastures are inferior in productivity and nutritional quality. Forage production is minimal.

You can increase livestock production by developing better pastures and especially by rejuvenating old "permanent" pasture areas. This bulletin outlines some of the procedures for rejuvenating irrigated pastures and pastures grown under 16 or more inches of rainfall.

Soil Problems

Critical soil problems need to be corrected before you attempt to establish an improved pasture. In many areas of the state, soil characterization maps and data have been prepared showing physical and chemical characteristics of the soils. Consult your Extension Agricultural Agent or District Soil Conservation Service personnel for soil characterization information for your area. Such information will help you determine how soils should be managed before establishing the new pasture.

Soil Topography

Land leveling or reshaping may be needed to improve irrigation and drainage. Leveling is generally needed for soils to be irrigated by gravity. Install new water distribution systems where necessary.

Drainage

Improve the drainage on pasture sites, especially in the wet valleys where impounded or perched water remains for extended periods of time during the year. Leveling may remedy some problems, but tile drains or open-ditch drains should be installed at some sites. Drainage is necessary to

remove excess water, lower the water, eliminate salt accumulation and provide good soil conditions for improved pasture species. If wet soils are drained and aerated, desirable pasture species can be grown instead of unproductive weedy species.

Salt Problems

Even with good drainage some soils may have excessive salt accumulation and sodium problems. Salt problems slow water permeability and reduce nutrient availability for the plant. Salt crust may appear on the soil. Toxic conditions prevent proper plant growth. Take soil tests to obtain recommendations to improve the salt problems. Leaching with good-quality water or adding a soil amendment such as gypsum may be necessary, depending upon the kind of salty situation.

Soil pH

Soil tests also can provide recommendations on treatment needed to correct soil pH. Desirable pH levels for most forage crops are 6.5 to 7.5. An acid soil (below 6.0 pH) may require lime for optimum plant growth.

Compacted Soils and Hardpans

Soils may be compacted because of previous constant use. Hardpans or impervious layers may be present 2 to 4 feet below the soil surface. Compacted or impervious soils should be tilled, ripped and cultivated to improve soil texture and water movement, and to assure the proper soil environment for good plant growth.

Seedbed Preparation

Ideally, old pasture areas should be summerfallowed for one season or planted to an annual cultivated crop to provide time for residue to decompose. An annual cereal such as oats, barley or peas followed by late summer plowing and fall tillage will provide conditions needed for good seedbed preparation.

Cultivate soil 6 inches deep or more to destroy the old sod. Mix the topsoil to make an adequate seedbed for the new seeding. Light cultivation or renovation by springtooth harrowing or disking is generally not adequate.



Cattle grazing this improved orchardgrass-alfalfa pasture near Meridian were moved three times daily. The management system allowed 28 to 30 days for pasture regrowth. The 14-acre pasture produced more than 17,000 pounds of milk per acre during a 160-day grazing season.

Use selective herbicides on shallow, rocky soils that are difficult to till. Follow with several shallow cultivations to prepare the best possible seedbed.

Soil Pests

Frequently, old pastures have wireworms, sod webworms and other soil-inhabiting pests which are destructive to pasture plants. If you suspect pests exist in your pasture area, consult your Extension Agricultural Agent for control recommendations before seeding the new pasture.

What to Plant

The best investment in a new pasture is to purchase and plant **certified seed**. This is high quality seed of known origin and proven performance, and free of noxious weeds. Inoculate all legumes with the proper inoculum before planting. Alfalfa, trefoil, vetches and sainfoin all require different inoculum.

You can select from several improved pasture species. The proper species depends upon the kinds of grazing animals, area of the state, soil factors and moisture availability. Some desirable combinations of pasture species are listed in Table 1.

A simple one-grass one-legume combination that is matched for similar maturity is usually best for seeding. Properly selected species, managed well, will provide a balanced, productive, nutritive and palatable forage over several years. A grass-legume blend to give a pasture with 40 to 50 percent grass will minimize bloat problems. All-legume pastures using adapted alfalfa alone or with clovers have been used successfully for high-producing dairy cattle. Forage yields are initially higher with alfalfa alone but both legumes and legume-grass blends are high in digestible nutrients when grazed at pre-bloom stage of maturity.

Planting the New Pasture

A fine, firm, weed-free seedbed with adequate moisture is necessary to obtain a good stand. The soil should be free of debris. If soils are sandy and subject to wind erosion, plant the forage seeds in cereal stubble. Use a drill equipped with depth regulators and plant 1/2-inch deep on fine textured soils, 1 to 1 1/2 inches deep on sandy soils.

Cultipacking the soil before and after drilling the seed may be necessary on some soils to prevent excessive moisture losses. Special drills with packers or press wheels are available.

Oats, barley or peas are frequently used as companion crops in spring seedings. They may help reduce weed competition and erosion and will produce some grain or forage. Cross-drill the companion crop at one-half rate and manage the companion crop to benefit the pasture seeding. Clip 4 inches high if moisture is limited. Do not pasture until forage is 10 to 12 inches high. Irrigate to meet the needs of the new seeding.

When to Plant

An ideal time to plant the new pasture is during the spring months, March through May, depending on your area of the state and the time when the soil is tillable. Spring seedings of forage species correspond with seeding dates for spring crops such as barley, spring wheat or peas. This is after hard freezing of the soil. Spring-planted forages will make adequate growth for light grazing by early fall of the seeding year.

In areas with long fall growing seasons, you can plant pasture grasses in August or early September after a row or grain crop has been harvested. Favorable growing conditions will allow sufficient fall growth so the pasture will be ready for light grazing by mid-summer the following year.

Table 1. Guide to grasses and legumes for pastures

Variety or combinations	Seeding rate* (lb./acre)	Comments
Pasture for beef and dairy cattle		
Major Combinations		
Alfalfa alone	10 to 12	Use adapted varieties such as Vernal, Saranac, Ranger, Gladiator, Ladak-65. May be a bloat hazard. High feeding value, productive.
Alfalfa + Latar orchardgrass	6 + 4**	Good production, hardy, persistent; Latar palatable, good regrowth. Some bloat.
Alfalfa + Regar brome	6 + 8	High production, palatable. Regar good regrowth.
Alfalfa + Kenmont or Fawn tall fescue or Greenar intermediate wheatgrass	6 + 6	Productive, alkali tolerant. Fescue vigorous coarse, low palatability, late.
Ladino white clover + Latar orchardgrass	2 + 4	Very palatable, nutritious, careful grazing to prevent bloat.
Other legumes for above grasses		
Cascade birdsfoot trefoil	4	Moist areas, slow establishment, palatable non-bloat, careful fall management, salt tolerant.
Lutana Cicer milk vetch	10	Non-bloat, palatable, leafy, persistent, late spring green-up, frost tolerant.
Remont sainfoin	40	Higher elevations, deep soils, frost and drought resistant, very palatable, no bloat, good seedling growth.
Alsike clover	2	Good on heavy wet soils, lacks persistence, reseeds.
Pasture for sheep		
Major combinations		
White clover + Latar orchardgrass	2 + 4	Persistent, palatable, good regrowth, high water requirements. Watch for bloat.
Alfalfa + Latar orchardgrass	2 + 4	Productive, palatable, abundant early growth.
Alfalfa + Tegmar intermediate wheatgrass	2 + 10	Productivity excellent, long season grazing, winter hardy, drought tolerant.

Fertility Program

Soil testing to determine nutrient deficiencies is the best guide for a fertilizer program. Soils of most pastures are deficient in one or more essential elements. These usually are nitrogen (N), phosphorus (P₂O₅), potassium (K₂O) and sulfur (S).

For new pasture establishment, 200 or 300 pounds of 16-20-0-17 per acre worked well into the top 6 inches of soil are frequently desirable to get a good seeding established. P is particularly important to assure good root development.

Variety or combinations	Seeding rate* (lb./acre)	Comments
Pasture for sheep (cont.)		
Other legumes with these grasses		
Cascade birdsfoot trefoil	4	Palatable, nutritious, requires careful fall grazing, high moisture areas, salt tolerant, non-bloat.
Alsike clover	2	Good for wet areas, late grazing, tolerates flooding and some alkalinity, biennial.
Lutana Cicer milk vetch	10	Non-bloat, good stand longevity on wet soils, persistent, tolerant to frost, later maturing than alfalfa.
Other grasses with above legumes		
Merion, Delta or Newport Kentucky bluegrass	4	Nutritious, palatable, tolerant to close grazing, productive, early and late season growth.
Kenmont or Fawn Tall Fescue	6	Coarse, needs close grazing, persistent, less palatable.
Pasture for horses		
Major combinations		
White Clover + Troy, Delta or Newport Kentucky bluegrass	2 + 4	Very nutritious, palatable, withstands close grazing, hardy, longlasting.
Alfalfa + Climax timothy	2 + 4	Productive, excessive early summer growth, high grazing, palatable, nutritious.
Alfalfa + Regar brome	2 + 8	Productive early in season, good regrowth, hardy perennials.
White Clover + Latar orchardgrass	2 + 4	Persistent close grazing, nutritious, palatable, long season grazing, high fertility and moisture requirements.
Alfalfa + Alta tall fescue	2 + 6	Productive, alkali tolerant, long grazing, hardy, persistent.

*Based on 100 percent Pure live seed (PLS) = $\frac{\text{Purity} \times \text{Germination} \%}{100}$

Increase seeding rate for PLS percentages lower than 100.

**Indicates 6 pounds of alfalfa and 4 pounds of Latar orchardgrass or 10 pounds of seed per acre.

A pasture with 50 to 60 percent well-nodulated legume in a stand will provide adequate N but as the legume thins out, 30 to 40 pounds of N fertilizer per acre per year may be desirable. An all-grass pasture will require 30 to 50 pounds of N fertilizer per acre. Apply after each grazing or cutting period. Legumes and grasses consume large amounts of P. An average annual application of 90 to 100 pounds of P per acre is desirable. The K needs may vary depending on sources in the soil and water. Rely on the soil test to determine the P and K needs.

Most forages respond to S fertilizers which may be supplied in irrigation waters. When the sulfur is not available in the water, 40 to 50 pounds of S per acre would usually be needed. Boron and zinc may be limited minor elements in some areas of Idaho. For additional information see University of Idaho Extension Bulletin 452, Fertilizing Irrigated Pastures.

Irrigation

Maximum forage production requires supplemental irrigation in Idaho. Irrigate the pasture immediately after the livestock has been rotated to a different pasture. Plan your rotation system to include the proper irrigation schedule. Shallow-rooted grasses and legumes require frequent light irrigations to 1- to 2-foot depth. Deep-rooted legumes like alfalfa benefit from deeper, less frequent irrigations. Irrigate to meet the needs of the grass in the grass-alfalfa mixture. Apply water when the moisture falls below 50% of the soil water holding capacity at the root zone. As a guide the peak consumptive use for irrigated pastures in south central Idaho is 0.28 inches per day. (See University of Idaho CIS 272, Solid Set Sprinkler Systems.) Soil texture has influence on irrigation programs. Sandy soils hold less water than loam soils. Thus, they require frequent, lighter applications of water for best plant growth.

Rotational Grazing Management

A good rotation grazing system is necessary to maintain young, productive and nutritive vegetation and to maximize carrying capacity over the entire grazing season.

For best results, divide the pasture acreage into 5 or more units. Turn the animals into the first unit when the forage is 8 to 10 inches high, graze until the forage is 4 to 5 inches high, then rotate to the next pasture. Allow 25 to 30 days rest and regrowth for each pasture unit before allowing the animals to regraze the unit. The grazing periods vary with different forage species and number of animals. With 5 pasture units the animals would be allowed to graze each pasture 6 to 7 days before being rotated to the next unit. This will also allow time for irrigation, fertilization and regrowth. Other

rotational systems such as daily strip grazing may also be used, especially for high-producing dairy cows.

After each grazing, clip the excess spotty growth to maintain uniform juvenile and succulent regrowth. Drag the pasture when necessary to spread droppings.

The number and size of your pastures will be determined by the number of animals that are grazed. A large number of animals will graze a small pasture rapidly, so several small pastures would be needed. On the other hand, large pastures require a large number of cattle to properly graze the area in 6 to 7 days and then allow 25 to 30 days regrowth.

As a general guide, a good irrigated pasture should carry 3 to 5 yearling cattle or equivalents per acre in early season and 1 to 2 yearlings when forage production declines in later season. Graze to obtain the maximum digestible nutrients and productivity per acre. Cut the excessive forage produced in the spring and feed it later in drylot to those animals which must be removed when forage productivity is less in the late summer and fall.

Allow the forage to produce 6 to 8 inches of fall growth just before the first killing freeze. This regrowth is required to replenish root reserves and assure good production the next year. Then, after the forage is dormant from cold weather, the animals can graze it into early winter although some vegetation to hold snow cover is desirable.

Bloat Prevention

Good pasture management will help reduce bloat in cattle grazing legume-grass pastures. In early spring let the forage grow to 10 to 12 inches before grazing. Keep the grass actively growing but don't over fertilize. Do not place hungry animals in a growing succulent pasture. Feed them first. Having dry hay available in the pasture at all times aids consumption and may help prevent bloat. Have plenty of water and salt available at all times.

Commercial preparations of poloxalene are available to reduce bloat of cattle on alfalfa and ladino clover. Follow the manufacturer's recommendation when using this material.

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