

Managing Grass Pastures in Lancaster County Nebraska

300-02

By Tom Dorn, Extension Educator

Forage Species Selection

Forage grasses fall into two general classes, cool-season and warm-season grasses. Each class of grass has distinctive growth characteristics and when managed correctly, can provide high-quality feed to grazing animals. Cool-season grasses alone or combined with warm-season grasses can provide season-long forage production if used in a rotational grazing system.

In eastern Nebraska, cool-season grass pastures are the most common. Cool-season grasses begin growth in early spring and often produce 70-80 percent of their total annual forage production by July 1. They are largely unproductive during the hot summer months unless irrigated. If moisture is available in the fall, they grow again until freezing temperatures bring on dormancy.

When planting a cool-season pasture, it is wise to plant a mixture of species as each has slightly different growth habits. This will extend the grazing time and prolong the productivity of the pasture. Inclusion of legumes in the mix is also a good idea. One recommended cool-season grass mix is a combination of three pounds orchardgrass, four pounds smooth bromegrass, one pound red clover and one pound grazing-type alfalfa. For horse hay or pasture, add one to two pounds of Timothy to the mix.

Warm-season grasses start growth about a month later in the spring than cool-season grasses and grow slowly until soil temperatures exceed 65° F and air temperatures exceed 80° F. As a result, in a purely warm-season pasture, spring soil moisture is conserved and used from June 1 to Sept. 1 when forage growth is most rapid. Most warm-season grasses become dormant in September and provide no new forage production for fall grazing.

No matter the species or forage type, (warm- or cool-season), forage quality is highly correlated to maturity, with immature growth stages providing highest nutritional quality. Forage quality (both energy and protein) drop rapidly once seed heads emerge.

Cool-Season Pastures

If only cool-season grass pastures are to be used, extra management is required to ensure adequate forage for season-long grazing. Forage production and quality can be optimized

by splitting the pasture into paddocks then grazing in a rotation allowing time for regrowth to occur between grazing periods.

If one does not plan to supplement grass production by feeding hay or grain during the slow growth period in the summer months (summer slump), the stocking rate must be matched to the season-long forage production of the pasture. If one stocks a cool season grass pasture with the number of animals that it can carry through the entire five-month grazing season, forage production will exceed utilization by the animals during the rapid growth period in the spring. Frequent rotation from paddock to paddock in the spring will help keep the grasses in immature growth stages thus preserving palatability and forage quality into the summer months. Forage that is stockpiled for later grazing during the rapid growth stage in the spring, can then be utilized during the summer months.

Rotation times can be lengthened once growth begins to slow in the hotter months, but one should not graze the grasses so short that there is insufficient photosynthesis to support a healthy root system. A good rule of thumb for cool-season grasses during the summer months is to turn animals in to graze when there is 12 inches of top growth and rotate to a new paddock when six inches of growth remain.

Alternatively, when managing an all cool-season pasture system, one could harvest one or more paddocks in the spring as hay prior to seed stalk elongation to balance forage production with utilization. This will result in excellent quality hay that can then be fed to animals as necessary to help carry them through the summer forage production slump. If not needed during the summer, this hay can be fed during the winter season or sold.

Warm-Season Pastures

Forage production can be leveled out and rotation management simplified, if some of the paddocks in a rotation are planted to warm-season grasses.

Switchgrass — Switchgrass is a warm-season grass that, in a pure stand, can provide excellent forage production for beef animals. Before seedstalks develop, forage quality is high and palatability is good. After seed heads emerge, palatability and nutrient levels drop and Switchgrass becomes unacceptable pasture. One should therefore begin grazing Switchgrass

when it is ready to graze, regardless of how much grazing potential remains on the cool-season paddocks. One option is to begin grazing when Switchgrass is eight to ten inches tall. Graze to keep plant height between eight and 16 inches for six to eight weeks, then remove livestock for 30 to 45 days. Any regrowth can then be grazed to a stubble height no shorter than eight inches. Usually it is better to stock Switchgrass too heavily and move the animals to other paddocks sooner than to stock lightly which results in abundant seed head development.

Switchgrass is often included in warm-season grass mixtures, especially for CRP acres, but it is less palatable than many other species and is generally under-utilized in a mixed warm-season pasture.

Switchgrass does not make good horse pasture because of poor acceptance.

Mixtures — If Switchgrass is not used, a mixture of warm-season grasses is recommended. A warm-season mixture that works well in Lancaster and surrounding counties includes three pounds Big bluestem, two pounds Indiangrass, 1.5 pounds Sideoats grama, 0.5 pounds Blue grama and 0.3 pounds Sand lovegrass per acre.

Fertility

The two primary nutrients of concern for pastures in eastern Nebraska are nitrogen (N) and phosphorus (P). Apply N fertilizer yearly to grass pastures and haylands for profitable livestock production.

Nitrogen improves both grass yield and protein content. It also improves the vigor of grass plants, which can thicken stands and reduce weed invasion. When adequate soil moisture is present, economical rates of nitrogen more than double forage production. Nitrogen fertilizer applied just prior to the period of most rapid grass growth assures that the applied N is available to the plants. For cool-season grasses, early spring application is preferred.

Spring and fall split applications of N to cool-season grasses are recommended only if more than 100 pounds of N are applied per year, and then only if adequate moisture is

available in the fall for good growth in September and October.

Apply fertilizer in mid- to late-May to pastures and hay lands containing warm-season grasses. If the pasture is a mix of cool and warm-season grasses, fertilize when appropriate for the warm-season grass because the fertilizer will stimulate growth of cool-season grasses and weeds before the warm-season grasses get started. Early fertilization of a mixed-grass pasture can crowd out the warm-season grasses.

Nitrogen Fertilizer Rates — Nitrogen rates depend on whether the grass is warm-season or cool-season and rates vary across Nebraska, with higher rates in areas receiving more rainfall. On cool-season grasses in southeast Nebraska annual applications of 80 to 120 pounds of N per acre are recommended for pastures and 100 to 150 pounds of N per acre are recommended for hay lands. Warm-season nitrogen rates in southeast Nebraska are 60 to 90 pounds for pastures and 75 to 100 pounds for hay lands. Avoid over fertilizing warm-season pastures as carry-over N can stimulate growth of cool-season grasses and weeds in the fall and the next spring, putting the warm-season grasses at a disadvantage.

In addition to N, P fertilizer also is needed on many pastures in Nebraska. Research in eastern and northeastern Nebraska shows that the combination of N and P frequently produces higher yields than the application of either nutrient alone.

Phosphorus Fertilizer Rates — Phosphorus recommendations are based on the availability of P in the soil, as measured by a soil test. The University of Nebraska recommends 40 pounds per acre of phosphate (P_2O_5) on soils classified as very low, 20 pounds per acre P_2O_5 on soils classified as low, and 10 pounds per acre P_2O_5 on soils classified as medium in available P.

For more information, refer to the following NebGuides: *Establishing Dryland Forage Grasses*, G81-543, *Fertilizing Grass Pastures and Haylands*, G78-406 and *Switchgrass and Big Bluestem for Grazing and Hay*, G94-1198. These, and related publications, can be found on the Lancaster County Web site at: <http://lancaster.unl.edu/ag/crops/forages.htm>

Acknowledgment: This educational resource is based partially on information provided by Dr. Bruce Anderson, UNL extension forage specialist.