

# Cool Season Grasses – Establishment and Management

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Cool season grasses are grouped into two broad categories – annuals and perennials. The most commonly used annual grasses in Oklahoma and north Texas are rye, wheat and ryegrass; with oats, barley and triticale being utilized to a lesser extent. The perennials most often planted as forages in Oklahoma and north Texas are tall fescue (east of I-35) and Jose tall wheatgrass (west of I-35). Other perennial grasses used as forages in the area include orchardgrass, matua and smooth bromegrass, intermediate and pubescent wheatgrasses, and Russian wildrye.

Most annual cool season grasses are cereal grains with ryegrass being the most recognized exception. There are numerous varieties commercially available for each annual grass. Often, too much emphasis is placed on variety. Dr. Dick Bates, NF forage breeder for many years, was once quoted, "Management is equal to or greater than the importance of varieties!" Selecting the most appropriate annual for establishment on a particular soil for a particular situation is much more important.

Cereal rye is best suited for sandy, well-drained soils. Rye is tolerant of low soil pH. Approximately 35-40 percent of its annual production can occur in the fall. Recommended planting rate is 100-120 pounds per acre PLS. Common varieties include Oklon, Maton, and Elbon.

Wheat performs best on loamy and well-drained clayey soils, and is not tolerant of low pH soils. Only about 15-20 percent of its annual production can be expected to occur in the fall. Recommended planting rate is 100-120 pounds per acre PLS. Coker 9663, Jagger, 2174, Custer, and Lockett are a few commercially available varieties.

Ryegrass is not a cereal grain, and is not to be confused

with cereal rye. Ryegrass has very little fall production in the Oklahoma region but produces forage much later in the spring than rye and wheat. When planted in conjunction with cereal rye or wheat, the complementary effect of this grass extends the spring grazing season of a cool season forage program well into May most years. Recommended seeding rate is usually 15-20 pounds per acre with Marshall, TAM 90, Rio, Jackson, and Ribeye being just a few of the commercially available varieties.

Proper fertility is required to insure stand establishment and expected forage production. Fertilize based on soil test results. Phosphorus and potassium should be applied at planting for seedling development. Nitrogen can be applied at planting or soon thereafter for optimum growth. For maximum fall forage production, 80-100 units of nitrogen (ie. 250-300 pounds of nitrate per acre) are required, and annuals need to be planted as early as possible in the fall – preferably by September 15. Top-dressing with nitrogen in February may be necessary to reach production goals for the spring grazing season.

Some rules of thumb for annual average production of cool season annual grasses based on nitrogen levels are as follows: 50 lbs N/ac = ~2500 lb/ac forage, 100 lbs N/ac = ~3500 lb/ac forage, 100 lbs N fall and 100 lbs N spring = ~5000 lb/ac forage. If using growing calves, expected beef yields can range between 400-700 lbs gain/acre on well fertilized annual grasses. This can be easily converted to gross dollars. For example, 500 lbs. gain per acre at \$0.30 per pound of gain equals \$150.00/ac gross revenue.

There are numerous establishment techniques when planting cool season annual grasses. Those demonstrated on the Noble Foundation farms include conventional

## About Hugh Aljoe

Hugh Aljoe is a forage specialist at the Samuel Roberts Noble Foundation. He was raised on a family farm in the rural west Texas community of Roscoe. Hugh attended Texas A&M University where he received a bachelor's degree in animal science (1983) and a master's of science in range management (1987). The emphasis in his master's degree program was grazing management.

Hugh served as ranch manager of Belvedere Land and Cattle Corporation from the spring of 1985 until joining the Noble Foundation in December of 1995. He supervised the growth of the ranch from a small 450-acre, 150 head purebred

ranch into an intensive 3,900 acre, 1,500 head purebred and commercial cow-calf operation. Forage resources were predominately introduced Bermuda grass pastures (overseeded to ryegrass) that were operated in modified short-duration grazing systems.

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summer fallow + roll and drill, late summer tillage + roll and drill, chemical summer fallow + roll and drill, Bermuda grass suppression with Landmaster + sod-drill, volunteer ryegrass and matua following disk and roll, rye and crabgrass double-crop no-till, Bermuda grass sod-drilled with rye, and Bermuda grass with volunteer ryegrass.

All techniques provide good spring production of cool season annuals. However, the conventional summer fallow, late season tillage, and chemical summer fallow methods are much more reliable at producing fall production. Fall production potential rapidly declines from mid-September to mid-November with delayed planting. For every day after the optimum planting date (early September), 30-60 pounds of grass is not produced each day which can be costly. For example, consider planting two weeks too late. Fourteen days growth lost at 45 lb/day equals 630 lbs NOT produced. If conversion of grass production to beef gain is 8 to 1, then 79 lbs. of gain were lost ( $630/8=79$ ). At \$0.30 per lb of gain, \$23.70 ( $\$0.30 \times 79$  lbs) of potential income per acre will never be recovered. Keep in mind: Very little production occurs after mid-November until spring production is initiated.

Cool season perennials are more difficult to establish than cool season annuals. Seeds of the perennials are generally smaller than annuals, and early growth the initial growing season is much slower than annual grasses. Therefore, more care should be taken when establishing cool season perennials. For best results, prepare a fine and firm seed bed well ahead of planting. Plant at depth of one-quarter to one-half inch using a grain drill. Seed can be broadcasted or air-seeded but increase seeding rate by 25 percent and then lightly drag or culti-pack. No-till planting is possible but it is best to chemically fallow area rather than plant into a four-inch residue. In all cases, defer grazing until spring. Allow time for the perennials to establish roots and to acquire a minimum of six inches of growth before initiating grazing.

Required fertility for cool season perennial grass establishment is similar to the annuals. Phosphorus and potassium need to be supplied as indicated from a soil test at planting. Nitrogen at planting can be reduced to 25-40 units of N, but then 50-80 pounds of nitrogen should be top-dressed on stand in February or March for best results. Plant perennials in late August or September into good soil moisture conditions. When grazing stand the first season, graze lightly leaving a minimum of six-eight inches of residual forage going into the summer. Also allow new plants to seed.

Some recommended seeding rates are as follows. Tall fescues such as K-31, MaxQ fescues, AU Triumph, Dovey and Penngrazer should be planted at 10-16 lbs. per acre minimum, as should be the wheatgrasses such Jose, Luna,

Manska, Barton, and Oahe. Bromegrasses (Regar and Lincoln) and orchardgrass should be planted at 8-12 lb/ac rate. The planting rate for Matua is 25-40 lbs/ac and Bozoisky wildrye is 10-16 lb/ac.

Fescue is the most predictable perennial cool season forage producer. Results from demonstration projects at the Noble Foundation farms indicate that with 50-60 lbs. N/ac, 1500-2500 lb/ac of fall forage can be expected. With 80-100 lbs N/ac, expect 1800-3500 lbs/ac of fall forage. As a rule, 25-30 percent of the annual production of fescue is produced in the fall. Seasonal production can range from 5000-9000 lb/ac with good fertility, depending on soil types. Other perennials are less predictable and more variable, which is a function of the extremes in weather conditions.

The greatest benefits of cool season perennials are: (1) no annual establishment costs which could easily be \$15-\$50/acre or more, and (2) early fall grazing (September and October) which could mean 45-60 days of additional grazing and gain (or \$25-\$35/ac additional income at \$0.30 COG and ~2.0 ADG) during a period of time when cool season annual grasses are becoming established.

The most common means of setting the stocking rate of stocker calves on cool season pastures is by rule of thumb – one head per acre in the fall and two head per acre in the spring. This assumes good fertility and proper planting rates, adequate moisture, and good growing conditions. Adjustments to the rule of thumb are based on soils and actual seasonal conditions.

The stocking rate for the fall season can be calculated by comparing the actual dry matter forage production at onset of grazing by the estimated dry matter requirement of the grazing animals. In most cases, the grazing animals are purchased or contracted early in the fall growing season, before the fall forage production can be assessed. However, the grazing duration can be estimated if dry matter production is determined and the quantity and average weight of the stocker calves are known. Grazing duration = (dry matter forage production (lb/ac) x number of acres) / (average weight per head x number of head x 3% intake).

In any grazing situation, the question of rotationally grazing versus continuous grazing is asked. When applied properly, either can be used successfully. There is more potential for greater harvest efficiency with rotational grazing. With annuals utilizing growing calves, continuous grazing is usually recommended unless facilities and management are capable of successfully implementing a rotational system. When grazing perennials, a rotational system is preferred to allow recovery and better stand management.

Occasionally cool season grasses are utilized by mature cattle. Annuals are an expensive and inefficient means of

pasturing mature cattle. Cool season perennials can be most effective with a fall calving cow herd. Cool season forage of any kind can produce rapid gains on stocker cows and bulls. Limit grazing cool season forage is a more efficient and more cost-effective means of wintering mature cattle. The purpose of limit grazing would be to provide a potential low-cost protein supplement when winter pasture is available. Limit grazing requires knowledge of forage quality and livestock requirements, and some training of the cow herd.

To conclude, the following is a list of other grazing management tips one might find helpful when grazing cool season annual grasses:

- (1) Use cool season perennials for early fall grazing, and pull off in May
- (2) Maintain an "off area" with solid footing for feeding and loafing
- (3) Prevent trampling damage during poor weather conditions such as excessively wet and muddy pastures and iced-over pastures
- (4) Always fertilize according to soil tests and for identified production goals
- (5) Manage pastures for luxury consumption condition until graze-out
- (6) Monitor reserves frequently.