

PERENNIAL WARM SEASON GRASSES IN GRAZING PROGRAMS

Mark Kennedy
State Grassland Specialist
USDA-NRCS
Houston, MO

Many warm season perennial grasses were once an important part of the plant community in much of the Midwest. Conversion to cropping systems, overgrazing, lack of regular fire and increased competition from cool-season grasses and legumes have caused many of these grasses to disappear from much of the region. However, warm season grasses can compliment cool-season pastures if managed properly. Midwest stockmen are rediscovering the usefulness of warm season grasses in their overall forage program. Adding these grasses to forage systems has resulted in increased gains and improved livestock performance during the summer months when cool-season grasses are at their low point of growth and quality. Warm season grasses are highly palatable to livestock prior to heading and can produce beef gains of over 2 pounds per day during the summer season. Graziers should take advantage of the inherent differences in the seasonal growth cycles of various forages to supply desirable forage to livestock throughout the grazing season.

There are some distinct advantages and potential disadvantages to incorporating warm season grasses into a forage system. Warm season grasses provide good summer production and can aid in managing fescue endophyte problems. Warm season grasses can be managed for high quality and good animal performance. If used in haying systems, warm season grasses are harvested during more favorable weather conditions. Native warm

season grasses provide valuable wildlife habitat. They are adapted to this region and are very persistent with proper management. The potential drawbacks to utilizing warm season grasses are the high cost of establishment and they may be slow to establish. Most warm season grasses may need specialized drills or other equipment for planting and may take a couple of years to get a fully productive stand. Many warm season grasses, especially the native warm season grasses, will require good grazing management to maintain a productive stand.

When selecting forage species 3 criteria should be considered: persistence, yield distribution, and forage quality. Many forage species are marketed based solely on one or two of these characteristics; however, when selecting a new forage species to compliment an existing forage system; the forage should possess all three characteristics. Warm season grasses are adapted to a wide range of soil and climatic conditions. The following table illustrates the adaptability of warm season grasses.

Warm season grasses start growth about four to six weeks later than cool-season grasses. As a result, spring soil moisture is conserved. Warm season grasses initiate growth at temperatures of 55 – 60 degrees Fahrenheit. The growth rate increases as temperature increases to a maximum of about 95 degrees. They usually produce at least 60% of their growth between June 1 and August 31. However, warm season grasses have differing growth

Species	Yield	Wetness Tolerance	Low Fertility	Drought Tolerance	Heat Tolerance	Cold Tolerance
Bermudagrass	M – H	Fair	Fair	Fair	Good	Fair
Old World Bluestem	M - H	Poor	Fair	Good	Good	Good
Big Bluestem	M – H	Good	Good	Good	Good	Good
Indiangrass	M – H	Fair	Good	Good	Good	Good
Eastern Gamagrass	H	Good	Fair	Good	Good	Good
Switchgrass	M – H	Good	Good	Good	Good	Good

cycles. Switchgrass and Eastern Gamagrass are the earliest to break dormancy and are also the earliest maturing. Switchgrass produces 40% of its growth in June, two to three weeks earlier than big bluestem. Eastern gamagrass produces 85% of its growth between May 15 and August 31. Big Bluestem produces 70% of its growth between June 15 and August 31. Indiangrass is 2 to 3 weeks later than Big Bluestem, producing 70% of its growth between July 1 and September 15. The growth curve for Bermudagrass is similar to Big Bluestem with about 70% of the growth occurring between June 15 and August 31. The old world bluestems, particularly Caucasian, stretch their growth out over a longer season with 50% of the growth being produced between May 15 and July 15, and 50% produced between July 15 and October 1. Warm season grasses use less water than cool-season grasses to produce similar growth and are more efficient in nitrogen utilization. Warm season grasses fill in the ‘summer slump’ associated with cool-season grasses and extend the grazing season. By having warm season grasses in a forage system, a producer can make maximum use of cool season forages in the spring, rest them during the summer while grazing warm season grasses and extend the grazing on cool-season pastures in the fall and winter.

Forage quality measurements (protein, fiber, and digestibility) of warm season grasses have consistently been lower than measurement for cool-season grasses at the same growth stage in the past. However, more careful studies of actual

animal gains from cool-season and warm season pastures has revealed that warm season grasses may be much more nutritious than their quality analysis indicates. In a University of Missouri trial at the Forage Systems Research Center at Linneus, Missouri, milk production of beef cows grazing big bluestem was equivalent to that of cows grazing high quality brome-grass-alfalfa pastures. May through August average daily gains on steers were 1.7 lb/head per day at the MDC Talbot Demonstration Farm near Mt. Vernon and 2.5 lb/head at the Seat Demonstration Farm in Worth County, MO. Nebraska tests recorded 1.35 lb/day on switchgrass, 1.74 lb/day on indiangrass and 1.97 lb/day on big bluestem. Dairy heifers grazing eastern gamagrass in a grazing trial at the University of Missouri Southwest Research Center had equal gains to those grazing alfalfa pastures (2.4 lb/hd/day). Dairy cattle at the Southwest Research Center’s seasonal grass based dairy had mean seasonal milk production of 49.38 lbs. on bermudagrass and 53.63 lbs. on Caucasian bluestem. Stocker cattle grazing Caucasian bluestem in a demonstration on a private farm in southwest Missouri gained from 1.5 to 2.4 lbs/hd/day for 90 days during a 4-year study. This farm consistently produced 200 lbs. of beef gain per acre per month every month that the Caucasian could be grazed. Other producers across south Missouri have reported 400 to 1000 lbs. of beef gain per acre for stockers grazing various warm season grasses. The following table summarizes data collected from over 20 participating farms in south Missouri that were involved in a collaborative forage

quality diet study with Texas A&M University and the Natural Resources Conservation Service. Diet quality was estimated by

analyzing fecal samples through near-infrared spectrometry and comparing to databases of known diet quality.

Warm Season Grass Quality – Southern MO Data (1994-2000)		
Species	Crude Protein	Digestible Organic Matter
Big Bluestem	6.35 – 15.28	60.20 – 69.32
Indiangrass	6.83 - 14.61	56.24 – 67.70
Switchgrass	6.43 – 15.78	58.70 – 67.20
Eastern Gamagrass	5.73 – 16.31	58.87 – 68.74
Bermudagrass	9.25 – 15.28	62.44 – 75.29
Caucasian Bluestem	8.93 – 21.53	61.56 – 73.31

Warm season grasses are good, viable options to complement cool-season pastures in much of the Midwest and Corn Belt regions. They are adapted, provide high yields of good quality forage and are persistent. The native warm season grasses may provide additional wildlife benefits and may provide additional cost-share opportunities. If managed properly, good animal performance should be expected while grazing warm season grasses. Proper grazing management is crucial to maintain dense, productive, nutritious stands of warm season grass. Most of the native warm season grasses will need rest periods of 35 - 40 days or more and maintain stubble heights of 8 inches or

more. The introduced warm season grasses generally can persist with shorter rest period and shorter minimum grazing heights usually 2 – 4 inches.

In summary we should realize that there are no “silver bullets” when it comes to forages. Producers should choose a forage that:

- Best compliments the present forage system
- Fills needed gaps in forage production
- Meets producer goals and management
- And fits within you budget!