

Big Bluestem

High Quality Summer Forage for the Northern Plains

USDA Natural Resources Conservation Service, Plant Materials Center, Bismarck, North Dakota

Most livestock producers have adequate cool-season pasture for early and late season grazing. What about mid-summer? Big bluestem can provide large quantities of high quality forage in July and August when cool-season species such as brome grass and intermediate wheatgrass go through summer dormancy and rapid decline in digestibility and crude protein. Northern adapted varieties of big bluestem are now available for summer grazing.



'Bison' big bluestem being grazed at the NDSU Central Grasslands Research Extension Center in central North Dakota (photo by Paul Nyren).

Better Protein and Digestibility

Yield and quality of big bluestem forage will vary depending on soils, moisture, and management. Average, oven-dried, annual yields from NRCS test plots in North Dakota, South Dakota, and Minnesota varied from approximately 3,000 pounds per acre to over 7,000 pounds per acre with no fertilization. The application of nitrogen fertilizer and more than one harvest can greatly increase production. Crude protein levels in early June for big bluestem would be expected to be twice that of cool-season species, such as smooth brome grass, and dry matter digestibility would be about 50 percent greater.

Summer Growth

Warm-season grasses such as big bluestem start growing at temperatures near 55 degrees F and grow best in mid-summer at temperatures of 80-90 degrees F. Inclusion of warm-season grasses in a grazing system allows cool-season grasses a rest period in mid-summer (see Figure 1). This improves vigor and enhances forage production of the cool-season grasses in late summer and fall.

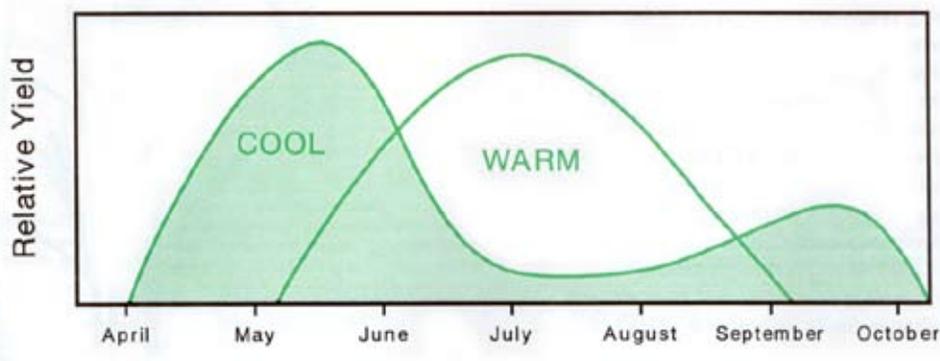


Figure 1. Seasonal distribution of cool- and warm-season grass production.

Harvesting Big Bluestem

Mature big bluestem is 3 to 6 feet tall with coarse stems and abundant leaves. Big bluestem is highly selected by livestock. If given the opportunity, livestock will graze the plants to ground level. For high quality forage, start grazing at boot stage (immediately before seed heads emerge) and graze to a six-inch stubble height. Stocking density should be high enough to use most of the grass before the stems develop. Rotational grazing is recommended to reduce trampling and enhance utilization. For hay production, cut big bluestem at boot stage, leaving a six-inch stubble. Grazing or haying at heading may result in greater yields but forage quality will be lower.

Seeding Rates and Sites

When selecting seed, certified seed is recommended. The recommended seeding rate varies from 6 to 10 pure live seed (PLS) pounds per acre. The higher rate is used in Minnesota. The lower rate is used in the western Dakotas. Debearded seed is desirable for ease of seeding. Shallow seeding depth and a firm seedbed are essential to good stands. Big bluestem performs best on silt and silt loam soils. Excellent stands can be maintained for 20 years or more under favorable management.

Varieties

Six improved varieties of big bluestem are recommended for planting in North Dakota, South Dakota, and Minnesota (see Table 1). The maturity varies considerably among the six varieties. Generally, it is best to use the variety whose origin is closest to the planting area. Later maturing varieties will generally provide the best forage quality and quantity, but stand longevity may be reduced. One management alternative is to use two varieties with significantly varying maturity dates to establish separate pastures and rotationally graze. Check with your local Natural Resources Conservation Service office or county extension agent for recommended varieties in your area.

Table 1. Big bluestem varieties recommended for North Dakota, South Dakota, and Minnesota.

Variety	Origin	Days to Ripe Seed after July 15*	Where Adapted
Bison	central North Dakota	60	ND, SD, MN
Bonilla	east central South Dakota	80	ND, SD, MN
Sunnyview	southeast South Dakota	90	ND, SD, MN
Champ	Iowa, Nebraska	95	SD, MN
Rountree	west central Iowa	100	SD, MN
Pawnee	central Nebraska	105	SD, MN

*This is an indication of relative maturity dates.



For more information on big bluestem or other plant species, visit
<http://plants.usda.gov>
 and
<http://Plant-Materials.nrcs.usda.gov>

Contact information:
 USDA-NRCS Plant Materials Center
 3308 University Drive
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Sunnyview big bluestem exceeds six feet in height on this 10-year old stand located in north central North Dakota. The soil is a silty clay loam with no fertilizer applied.

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