1966

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Recommended Citation
South Dakota State University, Cooperative Extension, "Native Grasses for Pasture or Hay" (1966). SDSU Extension Fact Sheets. 892.
https://openprairie.sdstate.edu/extension_fact/892

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NATIVE GRASSES for PASTURE or HAY

Cooperative Extension Service
South Dakota State University
United States Department of Agriculture
The low production of native or permanent pasture grasses has long been a problem in South Dakota. Most of these pastures are bluegrass or native short grasses such as blue grama and buffalo grass. These grasses are palatable and highly nutritious, but do not produce as much TDN (total digestible nutrients) per acre as native mid-grasses or tall grasses.

The more productive native grasses are discussed in this Fact Sheet. Introduced grasses are considered in another publication. Grass varieties are discussed in South Dakota Experiment Station Bulletin “Grass Performance in South Dakota.”

Native grasses may be divided into two main classes—cool-season grasses and warm-season grasses. Cool season grasses grow best in the spring and fall seasons while warm season grasses make their growth in the summer. Since grass should be harvested (mowed or grazed) during periods of maximum production, the two groups of grasses should be harvested at different times during the summer. Grasses in both categories must be used to produce maximum pasturage throughout the entire grazing season.

Yield of several grasses was obtained at various locations in the state. In eastern locations introduced species had superior yielding ability for several years. However, western wheatgrass yielded approximately the same as crested wheatgrass and bromegrass at central and western locations.

**WESTERN WHEATGRASS**

Western wheatgrass (*Agropyron smithii* Rydb.) is a long-lived, sod-forming, cool-season, drought resistant perennial native grass. It spreads vegetatively by underground rhizomes. Pure stands are found on the heavy and more or less alkaline soils characteristic of the valleys of meandering streams, “gumbo flats,” intermittent swales and shallow lake beds subject to overflow or excess surface drainage from spring runoff. In South Dakota it is also an important grass on upland soils high in clay content.

It is the best yielding and most palatable grass adapted to these areas. It is drought resistant and persistent. Western wheatgrass is one of the first grasses to grow on the ranges in the spring. It produces an abundance of forage early in the season and makes high quality hay if cut just after heads have emerged from the boot. It is readily eaten by livestock, but becomes somewhat harsh and fibrous during late summer. The grass cures well on the stem and retains its protein content, which provides for good winter grazing. Sheep are particularly fond of the heads. If grazed too closely over an extended period of time, the plants are weakened and die.

Few other economically important grasses are as tolerant to alkali soils. In the Great Plains (central and western South Dakota) western wheatgrass is one of the first grasses to become re-established on “go-back” land. Dense, pure stands often develop during a period of 4 to 6 years after croplands are abandoned.

Good stands can be established by seeding. Most seed harvested is from native stands, but the crop is uncertain and seed supply is often short. Do not use seed if it originated over 200 miles north or over 300 miles south of the area on which it is to be seeded.

**SLENDER WHEATGRASS**

Slender wheatgrass (*Agropyron trachycaulum* [Link.] Malte.) is a short-lived, perennial, native bunchgrass with a fibrous root system and jointed stems. It is not as palatable or as persistent as smooth bromegrass or intermediate wheatgrass, but produces good yields of high quality seed. Seedlings are strong and easily established. It is useful for a short time, but normally disappears in two years time. It is sometimes used in a mixture with longer-lived grasses. It becomes established quickly and dies; the longer-lived species then replace it.

Most seed is harvested from native stands. Do not use seed if it originated over 300 miles south or over 200 miles north of the area where it is to be seeded.

**NEEDLEGRASSES**

Needlegrasses are long-lived, cool-season, perennial bunchgrasses native to the Great Plains. Common species are green needlegrass (*Stipa viridula* Trin.), needle-and-thread (*Stipa comata* Trin.), and porcupine grass (*Stipa spartea* Trin.).
Green needlegrass has short awns which are not harmful to livestock, and it is a valuable component of the native range. It grows to a height of 1.5 to 3 feet. It produces a good yield of forage that is palatable and nutritious early in the season.

Porcupine grass and needle-and-thread grass are objectionable because of the long sharp needles on the seed. In early and late periods of the growing season when needles are not present, these grasses provide abundant palatable and nutritious forage.

Green stipagrass is a variety of green needlegrass selected in North Dakota and released in 1946. It produced 4- or 5-year average yields of about 0.4 ton per acre at Eureka and Cottonwood.

Varieties of green needlegrass recommended for use in South Dakota are Green stipagrass and Mandan 2611. Seed from native stands less than 200 miles south or 300 miles north of the area seeded is recommended.

**CANADA WILDRYE**

Canada wildrye (Elymus canadensis L.) is a short-lived, native, cool-season bunchgrass. It is commonly found in eastern South Dakota and more favorable sites in the west. It yields as much as introduced species when first established, but stands are not maintained. It is palatable, but has produced disappointing gains when grazed. It is tolerant to alkaline soils.

Mandan wildrye is a variety selected in North Dakota. It has more and softer textured leaves, shorter stems and is longer-lived than unselected native Canada wildrye.

**SWITCHGRASS**

Switchgrass (Panicum virgatum L.) is a tall, sod-forming, warm-season, perennial grass that is native to the Great Plains. It has coarse stems, broad leaves and grows from 3 to 5 feet in height. The grass spreads slowly by short rhizomes.

It starts growth about June 1 and makes its maximum growth during the warm part of the summer when cool-season grasses are dormant. Its palatability is not as high as that of smooth brome grass or intermediate wheatgrass.

It is a summer grass widely used for hay, summer pasture and erosion control. Its value for standing winter feed is poor. Switchgrass occurs naturally on fertile soils well supplied with moisture, but will produce better growth and cover on droughty, infertile, eroded soils than most introduced grasses.

Summer, developed in South Dakota, and Nebraska 28, developed in Nebraska, are the two varieties recommended for use in South Dakota. Average forage yields at Brookings are 2.40 tons per acre for Summer and 1.68 tons for Nebraska 28. Summer produced 500 pounds of seed per acre at Centerville.

These varieties are recommended for use as supplementary pasture from mid-July to mid-September when cool-season grasses are less productive.

**BIG BLUESTEM**

Big bluestem (Andropogon gerardi Vitman.) is a tall, sod-forming, warm-season, perennial grass that is native to the eastern Great Plains. It spreads vegetatively by short underground stems. Growth begins with warm weather in early June and continues until fall. Its major distribution is on moist, well-drained loams of relatively high fertility.

It is the dominant species in eastern South Dakota in well-managed native pastures and provides abundant, palatable forage during summer months.

The leafy forage is highly palatable and nutritious for all classes of livestock. It makes good quality hay if mowed before it becomes stemmy and seed heads form. It is vigorous and will recover from close grazing if allowed to make adequate growth before being grazed. Good pasture management is required to prevent stands from being depleted.

Seed from native stands less than 200 miles south or 300 miles north of the area seeded is recommended.

**SIDEOATS GRAMA**

Sideoats grama (Bouteloua curtipendula [Michx.] Torr.) is a mid-tall, native, warm-season bunchgrass with short rhizomes that sometimes spread to form a sod. It is found in favorable sites in central and western South Dakota. In drier areas it is replaced by blue grama grass. It rarely forms pure stands. It usually grows in association with bluestems or with needlegrasses or western wheatgrass in a mixed prairie. It is palatable to all classes of livestock, having about the same forage value as the bluestems. Forage yields are greater than for blue grama, slightly less than little bluestem, and much less than big bluestem or switchgrass. Its main use will be in a mixture of warm-season grasses for grazing in July and August.

Butte and Pierre are the varieties recommended for use in South Dakota. Butte was developed in Nebraska, and Pierre was developed in North Dakota from seeds collected from vigorous native plants growing 5 miles west of Pierre, South Dakota. Seed from native stands, less than 200 miles south or less than 300 miles north of the site to be seeded, is recommended.

**BLUE GRAMA**

Blue grama (Bouteloua gracilis [H. B. K.] Lag. ex Steud.) is a short, sod-forming, native, warm-season, perennial grass that spreads by means of short rhizomes. It is found on exposed sites, where growing conditions are poor, or on overgrazed ranges. It is palatable and nutritious, but does not produce enough forage to make it worthwhile to plant in a pasture or hay mixture.
NATIVE GRASSES FOR PASTURE AND HAYLAND

Read these Fact Sheets for additional information on stand establishment, utilization, and improvement of grasslands:

- Interseeding for Pasture Improvement
- Planting Tame Pasture & Hayland
- Grazing Management Based on How Grasses Grow
- A Pasture System For You
- Fertilizing Pasture and Hayland
- Weed Control in Pasture and Hayland
- So. Dak. Range—Its Nature and Use
- "Proper" Range Use
- Reseed Native Range Grass? or
- Plant A Tame Pasture?
- Range Seedings
- Graze Longer and Feed Less Roughage
- My Rangelands—What Kinds? How Good?