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EC 85-170 Nebraska Range and Pasture Grasses

J. Stubbendieck

University of Nebraska-Lincoln, jstubbendieck@unl.edu

James T. Nichols

Kelly K. Roberts

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Nebraska Cooperative Extension Service

NEBRASKA RANGE AND PASTURE GRASSES

E.C. 85-170

(Including Grass-like Plants)



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Little bluestem - Nebraska State Grass (On the Cover)

The Nebraska Section of the Society for Range Management and Soil Conservation Society of America sponsored Legislative Bill 729, 80th Session of the Nebraska Unicameral making little bluestem Nebraska's State Grass. The bill was written by Senator Stan W. Matzke, but was introduced by Maurice A. Kremer, 34th District, and Wayne L. Schreurs, 24th District. It was the shortest bill ever signed into law in Nebraska. It read:

"Little bluestem, known as *Andropogon scoparius**, is hereby declared the official state grass of Nebraska."

Its final reading was on May 1, 1969, and it was signed into law by Gov. Norbert T. Tiemann. Thus, Nebraska was the first state in the United States to legally name a state native grass. It was selected because it grows in every county and produces more forage than any other species in Nebraska.

*Botanical name was later changed to *Schizachyrium scoparium*

Acknowledgments

The authors wish to recognize the work of John F. Vallentine who wrote the original "Nebraska Range and Pasture Grasses," E.C. 67-170. Ms. Charlene Cunningham is acknowledged for typing the manuscript. Bellamy Parks is acknowledged for her work in preparing numerous original drawings for this publication. Some drawings are reproduced in this publication courtesy of J. Stubben-dieck and Stephan L. Hatch; North American Range Plants, University of Nebraska Press, 1982 and 1986.



NEBRASKA RANGE AND PASTURE GRASSES

(Including Grass-like Plants)

J. Stubbendieck
Professor of Agronomy (Range Ecology)
James T. Nichols
Extension Specialist (Range Management)
Kelly K. Roberts
Agronomy Research Technologist (Range Ecology)

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INTRODUCTION

Grassland including both natural vegetation and seeded species, comprises about 52% of Nebraska's total land area. Rangeland covers 24 million acres (10 million hectares), and seeded pastures total 1.5 million acres (0.6 million hectares). Range and pasture grasses are the "backbone" of Nebraska's beef cattle industry.

A knowledge of the components that make up one of our most important basic renewable natural resources, grasslands, is the first step in becoming a competent range manager. The second step is acquiring a knowledge of the important range sites in Nebraska. Each range site is unique in vegetation, soil characteristics, grazing potential, and habitat for livestock and wildlife. The reader is referred to the "Range Judging Handbook for Nebraska, E.C. 84-109" for a discussion of range sites.

This manual discusses in detail the identification, distribution, uses and values of 64 grasses and 6 grass-like plants selected as the most important on range and pasture in Nebraska. Additional grasses are discussed in special notes. Some are highly desirable forage grasses, whereas others are troublesome weeds. All have been evaluated as to their desirability and grazing use in perennial grassland, including irrigated pasture. Annual grasses used for temporary pasture have not been considered.

Each plant has one valid scientific name. In general, the scientific names and authorities in this manual are those recognized by both range managers and taxonomists. Each plant has been given a single common name. Some plants may have many common names. For example, the common name of the weedy grass *Bromus tectorum* is listed as downy brome; but it has also been called cheat, cheatgrass, chess, and military grass. The common names have been taken from the book "Common and Scientific Names of Nebraska Plants," Publication Number 101, Nebraska Statewide Arboretum.

Both native and introduced grasses are included. Most grasses native to Nebraska are excellent for grazing and/or haying. However, some native grasses are considered undesirable, and ranges are managed to reduce their abundance. Introduced plants are those that have been brought into North America. Many of the introduced grasses, both desirable and undesirable, have become naturalized in Nebraska grasslands. Others have been selected and used for range and pasture seeding. The origin of grass species does not imply adaptation, forage value, or general utility on Nebraska grasslands.

Plants are arranged by season of growth. Warm-season plants start growth in late spring, continue growing through the summer, and stop growth in early fall. Cool-season plants begin growth in early spring, growth slows or even stops in the summer, and renews in the cool months of fall if adequate soil moisture is available. Both types of plants are important to range managers. Some livestock producers use cool-season pasture grasses, such as crested wheatgrass or smooth brome, for early spring

grazing, and later graze livestock on native rangeland which is primarily composed of warm-season grasses.

Rangeland vegetation is not exclusively grasses. Forbs (broadleaf plants), shrubs (woody plants), and grass-like plants are also important. This manual does not include forbs and shrubs but does describe six of the common grass-like plants; which are frequently confused with grasses.

PARTS OF A GRASS PLANT

Vegetative Parts

Vegetative parts of a grass plant include the stem, the leaves, and the roots. The stem or **culm** is made up of **nodes** (joints) and **internodes** (between the joints). The internodes are usually hollow, but the joints are always solid. Grass culms are erect, **prostrate** (lying on the surface of the ground), or **decumbent** (lying on the ground or horizontal at the base but curving upward at the end).

A grass leaf has two parts: the **sheath** is the lower, tubular part which encloses the stem, and the **blade** is the expanded upper portion that extends away from the stem. The region where the sheath and blade join is called the **collar**. On the inside of the collar, and projecting above the sheath, is a thin lining called the **ligule**. The ligule may appear as a thin membrane, a ring of hairs, or be entirely absent. Two ear-like appendages sometimes projecting from the collar, one on each side, are the **auricles**.

The roots are also helpful in identifying grasses. Some grasses have only fibrous roots below ground. Other grasses may also have **rhizomes**. Rhizomes are jointed, scaly, underground stems which spread horizontally and take root and produce shoots at the joints and tips. **Stolons** (also called runners) are similar to rhizomes except that they grow horizontally above the ground surface and are not scaly.

Reproductive Parts

Reproductive or flowering parts of the grass plant comprise the **inflorescence**. It is composed of an axis or "backbone" called the **rachis** and specialized structures called **spikelets**. A spikelet is the basic unit of a grass inflorescence where the seed is produced. Spikelets are found singularly or in clusters and may vary greatly between grass species.

The two most common kinds of an inflorescence are the **spike** and the **panicle**. A third but less common kind is the **raceme**. A spike inflorescence has the spikelets directly attached (**sessile**) to the rachis. The spikelets of a raceme are attached to the ends of **pedicels** (short stalks or branches) arranged along the rachis. A panicle is a compound inflorescence with at least some of the panicle branches branched again.

A normal spikelet is composed of two **glumes**, the **rachilla**, and one to several **florets**. The glumes, normally two in number, are the chaffy or "empty" bracts at the base of the spikelet. The rachilla is the central axis of a spikelet having more than one floret.


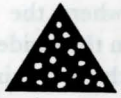




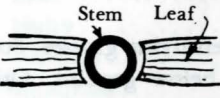

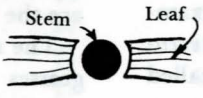


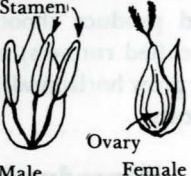



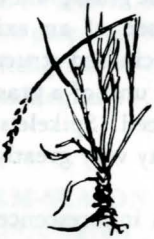




A floret consists of two opposite, chaffy bracts known as the **lemma** and **palea**, which enclose the flower. The lemma is the outer bract and often encloses the seed on three sides. The palea is the inner bract. Each perfect flower usually consists of three stamens and a single pistil containing one ovary. Only one seed is produced from each grass flower. In some grasses, the lemma and palea

remain attached to the seed after they ripen and fall (examples: oats and smooth brome).

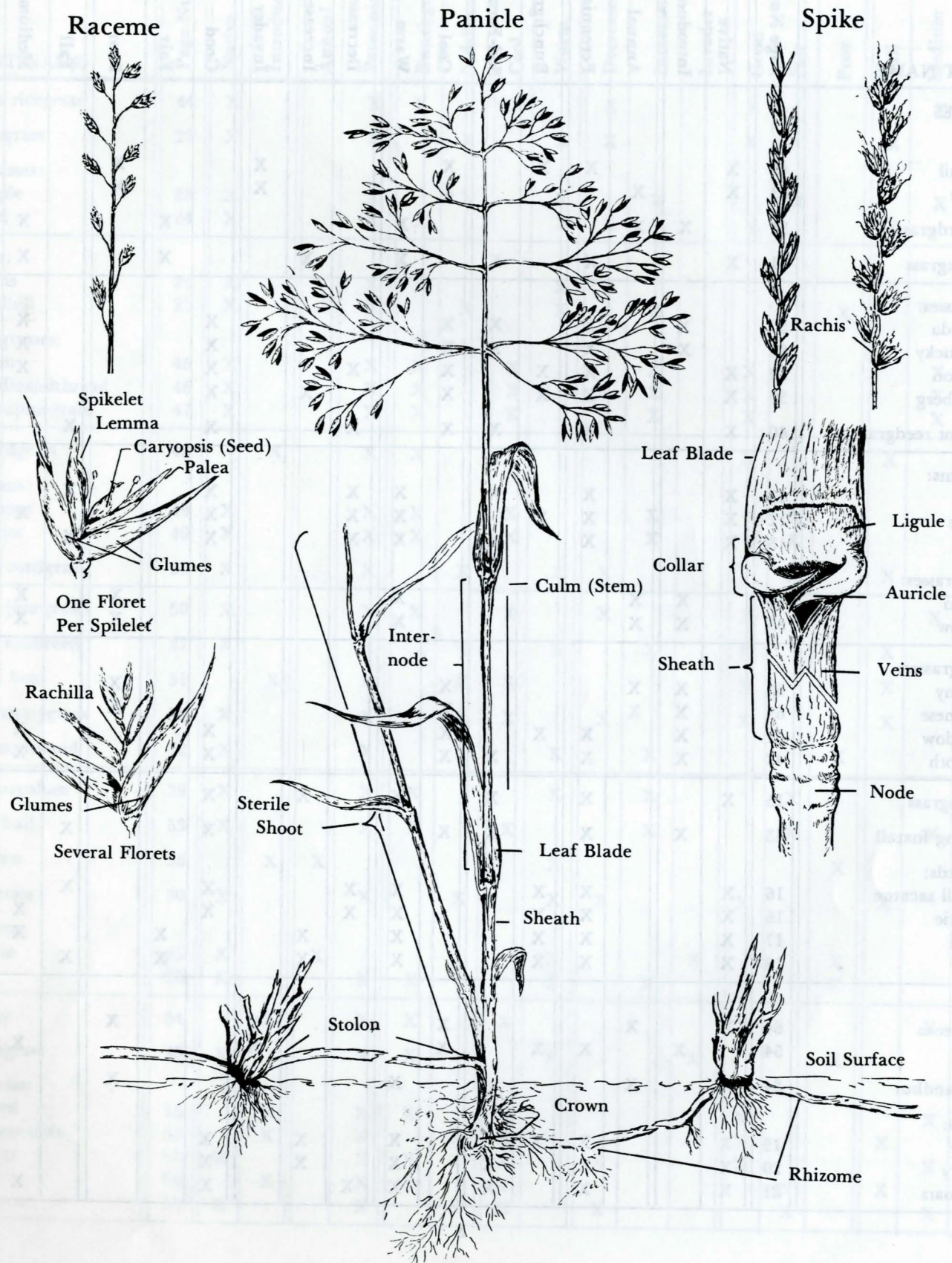
Awns (beards) are found on the glumes and/or lemmas of many grass species. Certain plant parts, particularly the lemma and leaves, are **pubescent** (covered with fine hair) in some species but **glabrous** (hairless) in other species.

Many technical or scientific terms have been necessarily used in the plant description to tell how one species is different from another. These terms are defined in the Glossary near the end of this manual.

IMPORTANT RANGE PLANT GROUPS

Grasses	Grasslike		Forbs	Shrubs
	Sedges	Rushes		
 <p>Jointed Hollow or Pithy</p>	 <p>Solid, not Jointed</p>	 <p>Solid</p>	 <p>Solid</p>	 <p>Growth rings Solid</p>
 <p>Parallel Veins</p>				
 <p>Stem Leaf Leaves on 2 Sides</p>	 <p>Stem Leaf Leaves on 3 Sides</p>	 <p>Stem Leaf Leaves on 2 Sides</p>	 <p>"Veins" are Netlike</p>	
 <p>(Floret)</p>	 <p>Stamen Male Ovary Female (may be combined)</p>	 <p>Compact Clusters</p>	 <p>Usually Showy</p>	 <p>Showy or Small</p>
 <p>Wheatgrass</p>	 <p>Threadleaf sedge</p>	 <p>Bulrush</p>	 <p>Yarrow</p>	 <p>Sagebrush</p>

The Grass Plant



CHARACTERISTICS OF COMMON GRASSES AND SEDGES

PLANT NAME	Page Number	Origin		Life Span		Growth Form ^{1/}		Growth Season		Grazing Response ^{2/}			Grazing Value			Height Growth		
		Native	Introduced	Annual	Perennial	Bunchgrass	Sod-Forming	Cool	Warm	Decreaser	Increaser	Invader	Good	Fair	Poor	Tall	Medium	Short
GRASSES																		
barleys:																		
Foxtail	43	X			X	X		X										X
Little	63	X		X	X			X										X
Barnyardgrass	31		X	X					X					X				X
Blowoutgrass	11	X			X		X		X		X			X				X
bluegrasses:																		
Canada	37		X		X		X	X					X					X
Kentucky	38		X		X		X	X					X					X
Mutton	38	X			X	X		X		X			X					X
Sandberg	39	X			X	X		X		X	X		X					X
Bluejoint reedgrass	40	X			X		X	X		X			X				X	
bluestems:																		
Big	11	X			X		X		X	X			X				X	
Little	12	X			X	X			X	X			X				X	
Sand	13	X			X		X		X	X			X				X	
bristlegresses:																		
Green	32		X	X					X								X	X
Yellow	33		X	X					X								X	X
brome-grasses:																		
Downy	62		X	X					X									X
Japanese	63		X	X					X									X
Meadow	41		X		X	X			X				X					X
Smooth	42		X		X		X		X				X					X
Buffalograss	15	X			X		X		X		X		X					X
Creeping foxtail	43		X		X		X		X				X				X	
dropseeds:																		
Alakli sacaton	16	X			X	X			X	X			X				X	
Prairie	16	X			X	X			X	X			X				X	
Sand	17	X			X	X			X		X		X				X	
Tall	18	X			X	X			X		X		X				X	
fescues:																		
Sixweeks	64	X		X					X									X
Tall	54		X		X	X			X									X
Field sandbur	34	X		X					X									X
gramas:																		
Blue	19	X			X	X			X		X		X					X
Hairy	20	X			X		X		X		X		X					X
Sideoats	21	X			X		X		X	X			X					X

Characteristics of Common Grasses and Sedges (continued)

PLANT NAME	Page Number	Origin		Life Span		Growth Form ^{1/}		Growth Season		Grazing Response ^{2/}			Grazing Value			Height Growth		
		Native	Introduced	Annual	Perennial	Bunchgrass	Sod-Forming	Cool	Warm	Decreaser	Increaser	Invader	Good	Fair	Poor	Tall	Medium	Short
Indian ricegrass	44	X			X	X		X		X			X				X	
Indiangrass	22	X			X		X		X	X			X			X		
lovegrasses:																		
Purple	23	X			X		X		X		X			X			X	
Sand	24	X			X	X			X	X			X			X		
muhlys:																		
Plains	25	X			X	X			X	X				X				X
Sandhill	25	X			X		X		X		X				X			X
needlegrasses:																		
Green	45	X			X	X		X			X		X				X	
Needleandthread	46	X			X	X		X			X		X				X	
Porcupinegrass	47	X			X	X		X			X		X				X	
Orchardgrass	48		X		X	X		X					X			X		
panicums:																		
Scribner	49	X			X	X		X			X			X				X
Wilcox	49	X			X	X		X			X			X				X
Prairie cordgrass	26	X			X		X		X	X				X		X		
Prairie junegrass	50	X			X	X		X		X			X				X	
Prairie sandreed	27	X			X		X		X		X		X			X		
Redtop bent	51		X		X		X		X				X			X		
Reed canarygrass	52	X			X		X		X		X		X			X		
saltgrass, Inland	22	X			X		X		X		X			X				X
Sand paspalum	29	X			X	X			X		X			X				X
Squirreltail	53	X			X	X		X			X			X			X	
Stinkgrass	36		X	X					X					X				X
Switchgrass	30	X			X		X		X	X			X			X		
threeawns:																		
Prairie	35	X		X					X		X			X				X
Red	28	X			X	X			X		X			X				X
Timothy	54		X		X	X		X					X				X	
Tumblegrass	30	X			X	X			X			X			X			X
wheatgrass:																		
Crested	55		X		X	X		X					X				X	
Intermediate	56		X		X		X		X				X		X			
Slender	57	X			X	X		X		X			X				X	
Tall	58		X		X	X		X					X		X			
Western	59	X			X		X		X		X		X				X	

Characteristics of Common Grasses and Sedges (continued)

PLANT NAME	Page Number	Origin		Life Span		Growth Form ^{1/}		Growth Season		Grazing Response ^{2/}			Grazing Value			Height Growth		
		Native	Introduced	Annual	Perennial	Bunchgrass	Sod-Forming	Cool	Warm	Decreaser	Increaser	Invader	Good	Fair	Poor	Tall	Medium	Short
witchgrass, Common	34	X		X					X					X				X
wildryes:																		
Canada	60	X			X	X		X		X		X			X			
Russian	61		X		X	X		X				X				X		
GRASSLIKE PLANTS																		
American bulrush	65	X			X		X	X			X			X	X			
Field horsetail	66	X			X	X		X			X			X		X		
sedges:																		
Nebraska	66	X			X		X	X			X		X					X
Needleleaf	67	X			X		X	X			X		X					X
Sun	68	X			X		X	X			X		X					X
Threadleaf	68	X			X	X		X			X		X					X

^{1/} Growth form of annual grasses is not officially classified, although all of these are bunchgrasses.

^{2/} By definition, grazing response of introduced grasses is invader, because they are not members of the natural plant community.

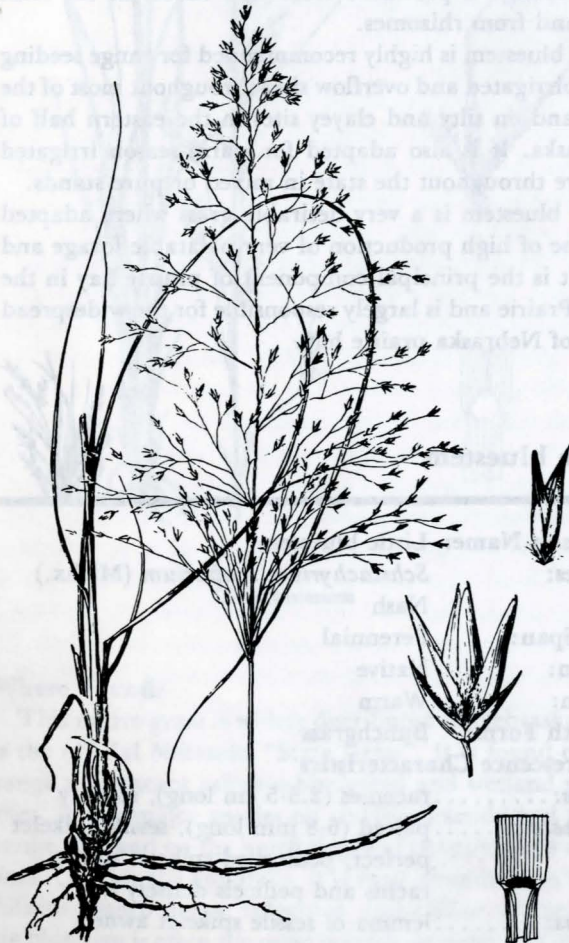
WARM-SEASON PERENNIAL GRASSES

Blowoutgrass



Common Name: Blowoutgrass
Species: *Redfieldia flexuosa* (Thurb.) Vasey
Life Span: Perennial
Origin: Native
Season: Warm
Growth Form: Sod-forming grass
Inflorescence Characteristics:

- type:** panicle, open, and branching often, 1/3 - 1/2 as long as the whole plant, oblong; panicle branches fine and hair-like
spikelets: 1- to 6-flowered (5-8 mm long), V-shaped, lemma translucent; tuft of hair at base of floret
awns: none
glumes: thin, narrow, tapering, slightly unequal (2-5 mm long), first glume 1-nerved, second glume 3-nerved



Blowoutgrass

Vegetative Characteristics:

- culm:** (0.5-1 m tall), coarse, tough, without hairs
sheath: nearly round, smooth, open, may be short hairs on raised veins, collar slightly expanded
blade: (10-50 cm long and 1.5-8 mm wide), rolled, tapering to a point, flexuous, not hairy
ligule: membranous (2-3 mm long), with a fringe of dense hairs, rounded
rhizomes: long, slender straw-colored rhizomes with fibrous roots

Where Found:

Blowoutgrass is prominent only in blowouts and other disturbed sites in the Sandhills. Its natural habitat is loose, windblown, sandy soil, and it is of minor importance on stabilized soil even on the choppy sands site. On active blowouts, it may be found in almost pure stands or mixed with lemon scurfpea and sandhill muhly.

Uses and Values:

The greatest value of this grass is as an early pioneer in active blowouts. Once established, the plants spread rapidly by rhizomes. Rhizomes are produced at different depths, enabling plants to meet sharp shifts in the soil surface. As the blowout begins to stabilize, grasses such as sand bluestem, prairie sandreed, sand lovegrass, and sandhill muhly take over.

Blowoutgrass is less important as a forage grass than as a soil stabilizer. This warm-season grass has fair forage value in the summer and is not readily grazed when other forage grasses are present. It does remain green in the fall after other grasses are mature and dry and may then be eaten by livestock. It is best classified as an increaser. Care should be taken to restrict livestock grazing on areas where blowoutgrass is colonizing a blowout in order to provide maximum ground cover.

Big bluestem



Common Name: Big bluestem
Species: *Andropogon gerardii* Vitman var. *gerardii* Vitman
Life Span: Perennial
Origin: Native
Season: Warm
Growth Form: Sod-forming grass
Inflorescence Characteristics
type: panicle of 2-6 digitate racemes (5-10 cm long), commonly 3, sessile on a terminal pedicel

(Continued)

(Continued)

spikelets: paired, lower spikelet sessile and fertile (7-10 mm long), paired spikelets nearly equal length, pedicelled spikelet sterile

awns: lemma of sessile spikelet awned (1-2 cm long), abruptly bent and tightly twisted below

other: often purplish, sometimes yellowish

Vegetative Characteristics:

culm: erect (0.8-2 m tall), robust, glabrous, may be branched toward top

sheath: often flattened, purplish at base, lower sheaths sometimes with long and soft hairs, transparent margins

blade: flat, keeled, with a prominent midrib on the under side, (10-50 cm long and 5-10 mm wide), lower blades often with long hairs, margins with fine teeth

ligule: membranous (1-2.5 mm long), square- or collar-shaped, with a short fringe

rhizomes: short rhizomes



Big bluestem

Where Found:

Big bluestem grows abundantly on moist, deep, rather well-drained soils of valleys and ravines in conjunction with little bluestem, switchgrass, and indiangrass. It is often the predominant grass on overflow and subirrigated range sites throughout the state. In eastern Nebraska it grows on upland sites. However, since it is not drought tolerant, it is largely replaced by blue grama, needleand-thread, and sideoats grama on upland sites in central and western Nebraska. Small amounts may be found on sharp breaks and moist slopes. Its prominence on adapted sites is due to rapid, dense growth habits, rhizomes, tall stature, and tolerance of shade by mature plants.

Uses and Values:

This warm-season grass grows rapidly from midspring to early fall and produces flowering stalks in late summer and early fall. It is highly palatable and nutritious. It is possibly the most palatable native grass common in Nebraska and is usually eaten in preference to other grasses on summer range. Because of its high palatability even after maturity, big bluestem is a decreaser on all sites. Big bluestem withstands considerable grazing, but if continually grazed closer than 6 to 8 inches (15 to 20 cm) during the growing season, it will be replaced by less desirable grasses. Under proper grazing an abundance of basal foliage is produced from new shoots at the stem base and from rhizomes.

Big bluestem is highly recommended for range seeding on subirrigated and overflow sites throughout most of the state and on silty and clayey sites in the eastern half of Nebraska. It is also adapted for warm-season irrigated pasture throughout the state in mixed or pure stands.

Big bluestem is a very desirable grass where adapted because of high production of very palatable forage and hay. It is the principal component of prairie hay in the True Prairie and is largely responsible for the widespread fame of Nebraska prairie hay.



Little bluestem

Common Name: Little bluestem

Species: *Schizachyrium scoparium* (Michx.) Nash

Life Span: Perennial

Origin: Native

Season: Warm

Growth Form: Bunchgrass

Inflorescence Characteristics

type: racemes (2.5-5 cm long), solitary

spikelets: paired (6-8 mm long), sessile spikelet perfect, pedicelled spikelet sterile, rachis and pedicels densely hairy

awns: lemma of sessile spikelet awned (8-15 mm long), awn bent and twisted

glumes: thickened and rounded on the back
other: base included in sheath, inflorescence
 jointed, breaking apart at the joints

Vegetative Characteristics:

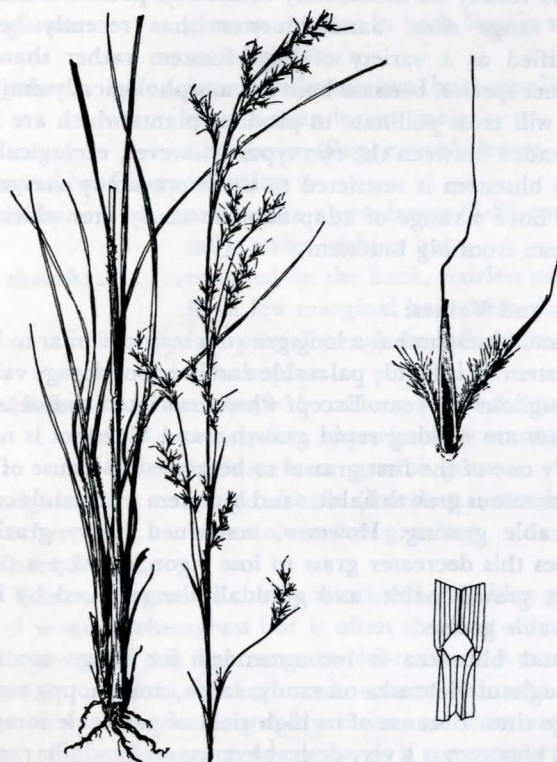
culm: curving upward from the base,
 (0.5-1.5 m tall), tufted, flat, leafy
 base, bluish-waxy color turning
 reddish-brown when mature

sheath: flattened, laterally keeled, smooth

blade: long and narrow (8-25 cm long and
 2-6 mm wide), pointed, may have
 long hairs, rough on upper surface
 and margins

ligule: membranous (1-3 mm long), ending
 abruptly, with a fringe of hairs

rhizomes: rarely with short rhizomes



Little bluestem

Where Found:

This native grass is widely distributed in Nebraska and is the official Nebraska "State Grass". It is found on all range sites except saline subirrigated and wetland range sites. It is a major species on stabilized sandy and sands range sites and on the north slopes of choppy sands range sites. Outside the Sandhills, it is most abundant on rocky hillsides, steep slopes, ridgetops, and rolling terrain. Little bluestem is often the most prominent grass on limy upland, shallow, and thin loess range sites. It is abundant on silty sites in eastern Nebraska but is common on many

other sites. It is only scattered on silty sites in southwestern Nebraska. Where moisture is ample but soils are not wet, little bluestem produces a dense sod in conjunction with other mid and tall grasses. In central and western Nebraska, it grows characteristically as a bunchgrass.

Uses and Values:

This warm-season grass grows rapidly and uniformly from mid-June to early August in Nebraska. It is readily grazed after regrowth has exceeded the old basal growth, and has good forage value when the leaves are tender and succulent. Seed stalks begin to appear by midsummer and exceed the foliage. Although livestock tend to avoid the seed stalks and heads, they continue to select the basal leaves until maturity. Little bluestem has only moderate palatability for fall and winter grazing. Full use during its growing season helps to extend the period of palatable, nutritious forage production. However, continuous close grazing at this time will damage and even kill little bluestem.

Little bluestem is a decreaser in the 15-19 inch (38-48 cm) precipitation zone but is an increaser on favorable sites in central and eastern Nebraska. Season of grazing also affects the grazing response of little bluestem, since it tends to be a decreaser under late spring and summer grazing and an increaser under winter use. Little bluestem is severely damaged by prolonged drought, particularly on upland clayey and silty sites, and is replaced by more drought hardy grasses such as the grammas. On adapted sites, it is a high forage producer. It is an important component of upland prairie hay and makes good quality hay if cut early.

Little bluestem is widely used for range seeding in Nebraska. It is recommended for use in warm-season mixtures on sandy soil and overflow sites throughout the state and on silty and clayey sites in the 20 to 24 inch (50 to 60 cm) and higher precipitation zones. It is less adapted for seeding on clayey and silty sites receiving less than 20 inches (50 cm) of precipitation. Even if successfully established here, little bluestem often produces no more forage than blue grama and tends to be replaced by blue grama even under moderate grazing. Several improved cultivars of little bluestem are available from seed dealers.



Sand bluestem

- Common Name:** Sand bluestem
- Species:** *Andropogon gerardii* var. *paucipilus* (Nash) Fern.
- Life Span:** Perennial
- Origin:** Native
- Season:** Warm
- Growth Form:** Sod-forming grass

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Sand bluestem

Inflorescence Characteristics:

- type:** 2 to 5 racemes, (5-10 cm long), all arising from a single point, very hairy, golden-yellow to reddish-brown color; the base may be included in the sheath
- spikelets:** in pairs, one attached to the raceme branch, and one on a pedicel, the lower spikelet (7-10 mm long) awned, the pedicelled spikelet awnless and slightly larger, this pedicel with long yellow hair
- awns:** lower spikelet usually awned (awn less than 5 mm long)
- glumes:** unequal, first glume slightly longer with tiny teeth on the nerves, the second glume slightly keeled
- other:** inflorescence with fewer, shorter awns and with more hair than big bluestem

Vegetative Characteristics:

- culm:** stout (0.8-2 m tall) smooth, may be bluish-color
- sheath:** smooth and hairless, prominent veins, sometimes with auricles on upper sheaths

- blade:** flat or loosely rolled (20-30 cm long, 3-9 mm wide), smooth or slightly rough with tiny teeth on lower surface and margins
- ligule:** membranous (3-4 mm long) with a few long hairs from behind
- rhizomes:** well-developed, long, and creeping

Where Found:

This native grass is common on sandy soils throughout Nebraska and grows abundantly on the upper reaches of the sand dunes. On choppy sands and sands range sites in excellent condition, it is normally exceeded in percentage composition and herbage production only by prairie sandreed. Although less abundant on sandy range sites and shallow sites of sandy texture, it is still common and a major forage contributor. Sand bluestem is occasionally found locally on moderately coarse soil pockets on thin silty range sites. Sand bluestem has recently been classified as a variety of big bluestem rather than a distinct species, because both are morphologically similar and will cross pollinate to produce plants which are intergraded between the two types. However, ecologically, sand bluestem is restricted to the more sandy sites and does have a range of adaptation to sandy sites which is distinct from big bluestem.

Uses and Values:

Sand bluestem has a long growing season similar to big bluestem. It is highly palatable and has good forage value throughout the year. Except when associated cool-season grasses are making rapid growth, sand bluestem is normally one of the first grasses to be grazed. Because of its rhizomatous growth habit, sand bluestem withstands considerable grazing. However, continued heavy grazing causes this decreaser grass to lose vigor, develop a prostrate growth habit, and gradually be replaced by less desirable grasses.

Sand bluestem is recommended for range seeding throughout Nebraska on sandy, sands, and choppy sands range sites. Because of its high yield of palatable forage, sand bluestem is a very desirable grass on Sandhills range and should be given special consideration in grazing programs. Sand bluestem is an important component of upland hay in the Sandhills and provides palatable and nutritious hay. It readily invades blowouts where its rhizomes aid in stabilizing the sandy soil. It grows typically in large patches, and its extensive rhizome system makes it an important sand stabilizing grass.

Buffalograss



Common Name: Buffalograss
Species: *Buchloe dactyloides* (Nutt.) Engelm.
Life Span: Perennial
Origin: Native
Season: Warm
Growth Form: Sod-forming grass
Inflorescence Characteristics:

type: Male and female inflorescences produced on separate plants; male inflorescence is a panicle of 1-2 spike-like primary branches, female has bur-like cluster of spikelets
spikelets: male spikelets 6-12 flowered (4-5.5 mm long); female spikelets 1-flowered in bur-like clusters of 3-7
awns: none
glumes: glumes unequal in both female and male spikelets
other: female inflorescence (bur) usually shorter than leaves, male inflorescence (flag) exceeds leaves

Vegetative Characteristics:

culm: male culm above leaves (5-25 cm tall), nodes without hairs
sheath: rounded on the back, hairless except for a few marginal hairs near the collar, partially encloses inflorescence in female plant
blade: curly (2-15 cm long and 1-2.5 mm wide), flat, sparsely hairy on one or both surfaces, grayish-green
ligule: fringe of hairs (less than 1 mm long)
other: with stolons, low growing

Where Found:

This native grass is chiefly associated with blue grama and western wheatgrass but is often the least abundant component of this type range in Nebraska. It is most frequently found in southern and western Nebraska. It is best adapted to swales and depressions on heavy to medium texture soils and on bottomlands if competition from tall grasses is reduced. It occurs less frequently on well drained upland soils. It is uncommon in the Sandhills.

Uses and Values:

This warm-season grass makes rapid growth in late spring and summer. It is somewhat less palatable than blue grama and is grazed primarily in late summer and fall. Buffalograss cures well but is often too short for dependable winter grazing. In general, it is of minor importance in Nebraska. Shortgrass ranges in western Nebraska commonly referred to as "buffalograss" normally support primarily blue grama and threadleaf sedge with only small amounts of buffalograss.

Buffalograss is less drought resistant than blue grama but recovers rapidly following drought. It withstands heavy grazing and trampling even better than blue grama

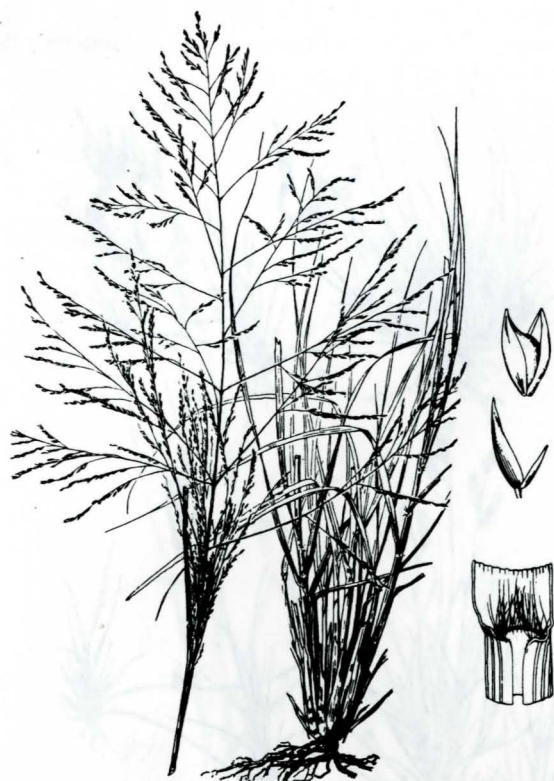


Buffalograss

and increases under heavy grazing. Tallgrass communities may be invaded by buffalograss when damaged by drought or heavy grazing.

Seeding mixtures which include buffalograss have been planted on silty and clayey range sites in western Nebraska. Buffalograss can be readily established from seed. However, its low herbage yield makes it mediocre to undesirable as a forage plant in Nebraska, and its use in range seeding is not recommended. It is well adapted as a low maintenance lawn grass on dry soils, and stands can be established either from seed or in sod plantings. Buffalograss makes a dense sod and effectively controls erosion on silt loam to clay soils.

Note: False buffalograss [*Munroa squarrosa* (Nutt.) Torr.] grows in mats 5 to 20 inches (12 to 50 cm) wide and is common on recently disturbed sites such as ant-hills, prairie dog towns, gopher mounds, and drought bared soil. It resembles buffalograss but differs in having bisexual flowers and sharp-pointed leaves which grow in fascicles. Seeds are not produced in a bur but in a cluster of spikelets enclosed on a broad leaf sheath overtopped by blades of other leaves. Culms grow along the ground and commonly root at the nodes. False buffalograss is a native, warm-season, annual, invader having poor forage value.



Alkali sacaton



Alkali sacaton

Common Name: Alkali sacaton
Species: *Sporobolus airoides* (Torr.) Torr.
Life Span: Perennial
Origin: Native
Season: Warm
Growth Form: Bunchgrass

Inflorescence Characteristics:

type: panicle (20-45 cm long and 15-25 cm wide), pyramid-shaped, open, usually not enclosed in sheath
spikelets: 1-flowered (1-3 mm long), mostly on spreading pedicels (0.5-2 mm long), branchlets naked at the base, spikelets distinct and not overlapped
awns: none
glumes: unequal, first glume 1/2 as long as lemma, second glume as long as lemma

Vegetative Characteristics:

culm: erect (0.5-1.5 m tall), stout, tufted; hard or woody, bleached base; shiny, not hairy
sheath: rounded, collar without hairs to sparsely hairy (2-4 mm long), fringed with hairs

blade: flat or inrolled (5-45 cm long and 2-6 mm wide), pointed, wide at base
ligule: mainly a dense band of hairs, (less than 1 mm long with longer hairs 1-3 mm long)

rhizomes: none

Where Found:

This native grass is well adapted to dry or moist saline bottomland. It is common in river valleys in western Nebraska, particularly along the North Platte, White, and Niobrara rivers. Although most common in the western one-third of Nebraska, it also occurs along the Platte River in central Nebraska. It grows in pure stands or intermixed with inland saltgrass, western wheatgrass, and switchgrass.

Uses and Values:

This warm-season grass has fair to good forage value. During early growth stages the herbage is palatable, but it becomes coarse and tough as it matures and is not a desirable hay grass. Palatability is much lower than in grasses such as the bluestems and the grammas. However, when compared to the plants which grow with it on saline subirrigated sites, forage value is good. Forage value before maturity is similar to western wheatgrass. Alkali sacaton is a decreaser on saline soils.

Alkali sacaton produces an abundance of forage. Solid stands of this grass are best grazed in the spring and early summer. However, mature cattle make fair use of alkali sacaton as winter range when adequate protein and phosphorous supplements are provided. Alkali sacaton has good salt tolerance and is recommended for native grass seeding on saline subirrigated sites in mixture with grasses such as western wheatgrass and switchgrass.

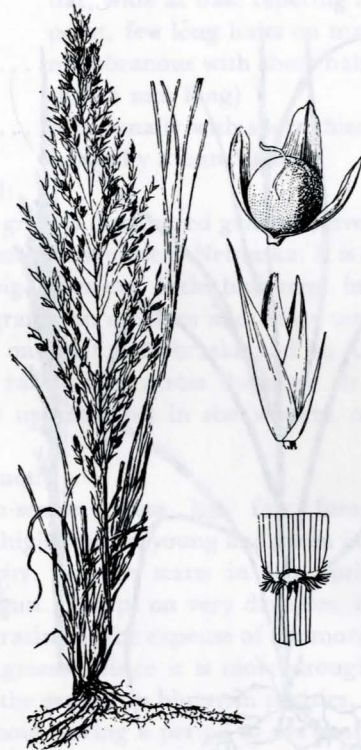


Prairie dropseed

Common Name: Prairie dropseed
Species: *Sporobolus heterolepis* (A. Gray) A. Gray
Life Span: Perennial
Origin: Native
Season: Warm
Growth Form: Bunchgrass

Inflorescence Characteristics:

type: narrow, pyramid-shaped panicle (5-20 cm long); panicle branches spreading or somewhat erect
spikelets: 1-flowered (4-6 mm long), awnless, lead-colored; the fruit globe-shaped
awns: none
glumes: sharp-pointed, shiny; unequal, the first glume 2/3-3/4 as long as the second



Prairie dropseed

Vegetative Characteristics:

- culm:** slender (30-70 cm tall), not hairy, unbranched above the base
- sheath:** rounded, purplish at the base, may be hairy on the throat, lower sheath may have long hairs
- blade:** folded or inrolled, (20-50 cm long and 1-2 mm wide), upper ones shorter
- ligule:** (less than 1 mm long), fringed with hairs
- rhizomes:** occasionally with short rhizomes but normally a bunchgrass
- other:** forms a distinct clump

Where Found:

This native grass appears largely on upland sandy to silt loam soils in the eastern one-half of Nebraska. It is normally found as scattered plants growing on ridges with needleandthread, little bluestem, and porcupinegrass but occasionally is found on lowlands with big bluestem and indiagrass.

Uses and Values:

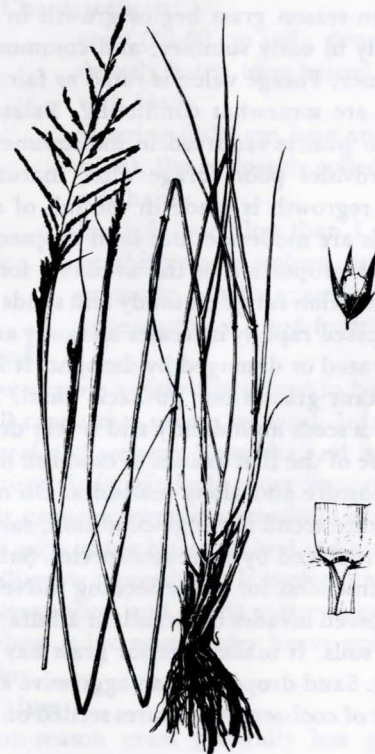
This warm-season grass is rated good in forage value before maturity. When cut early, it provides good quality hay, but its fine leaves are rather difficult to mow. For both hay and pasture it is somewhat more palatable than sand dropseed and tall dropseed. It decreases under heavy grazing. Prairie dropseed is locally important as a pasture or hay grass in eastern Nebraska.



Sand dropseed

- Common Name:** Sand dropseed
- Species:** *Sporobolus cryptandrus* (Torr.) Gray
- Life Span:** Perennial
- Origin:** Native
- Season:** Warm
- Growth Form:** Bunchgrass
- Inflorescence Characteristics:**

- type:** panicle (15-40 cm long and 2-15 cm wide), contracted, branches distant, occasionally hairy at panicle axis, inflorescence totally or partially enclosed in sheath
- spikelets:** 1-flowered (1.5-3 mm long), densely crowded on upper part of panicle branches, overlapping, short-pedicelled, florets blunt
- awns:** none
- glumes:** thin, pointed, unequal, first glume 1/2 as long as second; second glume equaling or slightly shorter than lemma
- other:** often reddish or lead-colored at flowering



Sand dropseed

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Vegetative Characteristics:

- culm:**upright to spreading, (0.3-1.2 m tall), in small tufts
- sheath:**rounded, densely hairy at throat with a conspicuous tuft of hairs (2-4 mm long), longer than internode; with transparent margins
- blade:**flat, inrolled on drying (4-35 cm long and 2-8 mm wide), tapering to long and slender tip, margins with fine teeth
- ligule:**(0.5-3 mm long), composed of a line of dense hairs
- other:**blade beneath inflorescence at right angle to the culm, forming a light tan "flag" in the winter
- rhizomes:**none

Where Found:

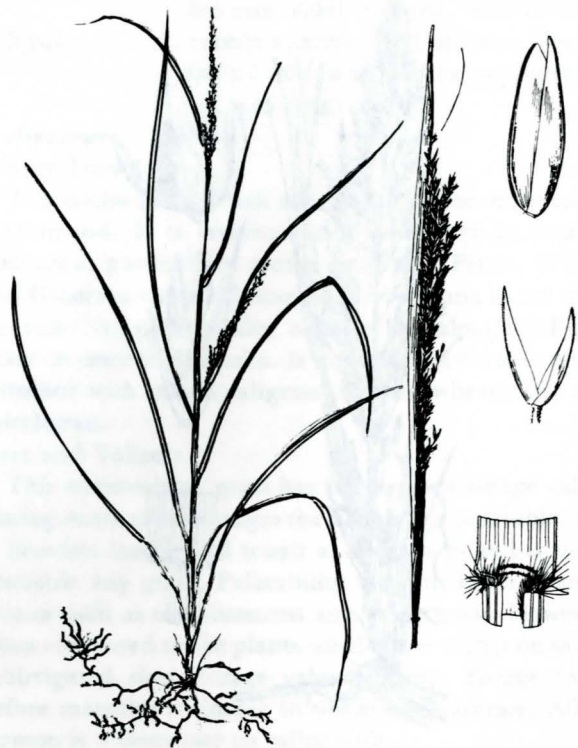
This native grass is common and widely distributed on dry soils throughout the state. It can be found on all range sites except wetland. Although most abundant on sandy soils, it frequently becomes locally prominent on medium textured soils.

Uses and Values:

This warm-season grass begins growth in midspring, grows rapidly in early summer, and commonly matures by midsummer. Forage value is rated as fair. Reports of palatability are somewhat conflicting. Palatability may be similar to prairie sandreed in midsummer, but sand dropseed provides poor forage after maturity, except when basal regrowth is made in the fall of some years. Forage yields are moderate, but sand dropseed may produce a major proportion of the available forage on fair and poor condition range on sandy and sands range sites.

Sand dropseed rapidly increases on sandy and silty soils when overgrazed or damaged by drought. It is one of the most important grasses on "go-back" land. Sand dropseed produces seeds abundantly and is very drought resistant. It is one of the first grasses to establish on disturbed range and pasture and along roadsides. On native range with an upward trend in range condition, sand dropseed is gradually replaced by decreaser species. Sand dropseed is not recommended for range seeding in Nebraska.

Sand dropseed invades old stands of alfalfa, particularly on sandy soils. It makes inferior grass hay and is very low yielding. Sand dropseed is an aggressive and undesirable invader of cool-season pastures seeded on sandy soils.



Tall dropseed



Tall dropseed

- Common Name:** Tall dropseed
- Species:** *Sporobolus asper* (Michx.) Kunth
- Life Span:** Perennial
- Origin:** Native
- Season:** Warm
- Growth Form:** Bunchgrass
- Inflorescence Characteristics:**
 - type:** narrow or compact panicle (5-30 cm long and 4-15 mm wide)
 - spikelets:** 1-flowered (3-7 mm long), flattened, densely crowded, long-pointed; lemma somewhat rounded at the tip, lemma 1-nerved
 - awns:** none
 - glumes:** keeled, unequal, first glume 1/2 as long as lemma, second glume 2/3 to 3/4 as long as lemma, bright-green midnerve
 - other:** panicle entirely or partially enclosed in inflated sheath, pale or whitish, sometimes purplish
- Vegetative Characteristics:**
 - culm:** upright (0.6-1.2 m tall), slender, stout, solitary or small tufts
 - sheath:** oval, split, without hairs or lower ones with long hairs near the collar

- blade:** (10-60 cm long and 1-4 mm wide), flat, wide at base tapering to a fine point, few long hairs on margin
- ligule:** membranous with short hairs (less than 1 mm long)
- rhizomes:** occasionally with short rhizomes but normally a bunchgrass

Where Found:

This native grass is distributed generally over the state but is more common in eastern Nebraska. It is a common associate of big bluestem, little bluestem, indiagrass, and sideoats grama on medium and heavy textured soils in the eastern one-half of Nebraska and on subirrigated and overflow range sites across the state. It is seldom found on dry upland sites in the western one-half of Nebraska.

Uses and Values:

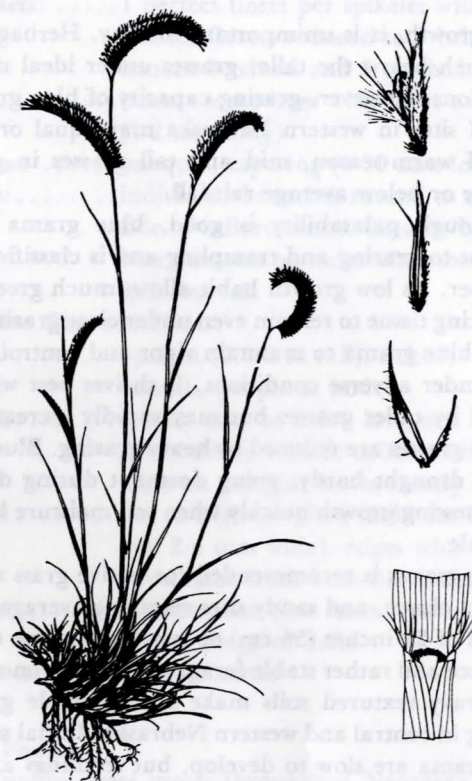
This warm-season grass has fair forage value. Palatability is highest when young and green but becomes low at maturity. Growth starts in late spring and it flowers in August. Except on very dry sites, it increases under heavy grazing at the expense of the more palatable mid and tall grasses. Since it is more drought tolerant than many of the grasses on bluestem prairies, it becomes more conspicuous during a period of dry years. It is not nearly as drought hardy as sand dropseed.

Except in small localized areas, tall dropseed makes up only a minor part of the total vegetation. Yields are not very large, and it is not a particularly desirable forage grass. It is not recommended for range seeding in Nebraska. Small amounts of tall dropseed normally occur in seed harvested from native bluestem stands but are of little concern.



Blue grama

- Common Name:** Blue grama
- Species:** *Bouteloua gracilis* (H.B.K.) Lag. ex Steud.
- Life Span:** Perennial
- Origin:** Native
- Season:** Warm
- Growth Form:** Bunchgrass
- Inflorescence Characteristics:**
 - type:** panicle of 1-3 (sometimes 4) spike-like primary branches (branches 1.5-5 cm long)
 - spikelets:** 1 perfect floret, 1 or more reduced florets, 40-90 spikelets per branch; in two rows on one side of rachis
 - awns:** lemmas awned, generally 3 (1-3 mm long)
 - glumes:** 1-nerved, hairless or with swollen-based hairs on the nerve
 - other:** rachis not projecting beyond spikelets



Blue grama

Vegetative Characteristics:

- culm:** erect (20-60 cm tall), densely tufted
- sheath:** densely hairy, long-haired at junction with blade
- blade:** tapering (5-25 cm long and 3-5 mm wide), flat or loosely rolled with few soft hairs
- ligule:** few soft hairs (less than 1 mm long)
- rhizomes:** no rhizomes or stolons, but blue grama in heavily grazed areas has the appearance of a sod-forming grass

Where Found:

This native grass is widely distributed in Nebraska and occurs on all range sites except wetland. It is most common in central and western Nebraska and is adapted to all soil textures. It is relatively more important on dry soils, since it cannot compete successfully with the taller grass species such as big bluestem and indiagrass where the latter will grow successfully. It is often the dominant grass on clayey, silty, and sandy range sites in western Nebraska where it increases under heavy grazing or frequent mowing.

Uses and Values:

This warm-season grass generally has good forage value. Preference for this grass by range cattle is low to moderate in the spring and early summer but very high in late summer and fall. It cures well and is grazed during the winter but is easily covered by snow. Because of its

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short growth, it is unimportant for hay. Herbage yields are much below the taller grasses under ideal moisture conditions. However, grazing capacity of blue grama on upland sites in western Nebraska may equal or exceed that of warm-season, mid and tall grasses in years of average or below average rainfall.

Although palatability is good, blue grama is very tolerant to grazing and trampling and is classified as an increaser. Its low growth habit allows much green food-producing tissue to remain even under close grazing. This allows blue grama to maintain vigor and control erosion even under adverse conditions. It thrives best when not shaded by taller grasses but may rapidly increase when the tall grasses are reduced by heavy grazing. Blue grama is very drought hardy, going dormant during drought, but renewing growth quickly when soil moisture becomes available.

Blue grama is recommended for native grass seedings on silty, clayey, and sandy sites receiving average annual rainfall of 22 inches (56 cm) or less. Its extreme drought tolerance and rather stable forage production on medium and heavy textured soils make it a valuable grass for seeding in central and western Nebraska. Initial stands of blue grama are slow to develop, but seedlings are more tolerant of drought and salinity than seedlings of sideoats grama.



Hairy grama

- Common Name:** Hairy grama
Species: *Bouteloua hirsuta* Lag.
Life Span: Perennial
Origin: Native
Season: Warm
Growth Form: Sod-forming grass
Inflorescence Characteristics:
type: panicle of 1-4 spike-like primary branches, (branches 2-4 cm long), comb-like, dark glands
spikelets: 20-50 spikelets (6 mm long), with 1 perfect and 1-3 reduced florets per spikelet
awns: lower reduced floret with 3 awns (4 mm long), glumes minutely awned at the tip
glumes: unequal, first short, second longer (3-5 mm long), very narrow to awn-like tip; with short, stiff hairs and black glandular dots
other: rachis extending beyond spikelets as a long needle (5-20 mm long) rachis straight or only slightly curved



Hairy grama

Vegetative Characteristics:

- culm:** tufted (15-60 cm tall), 4-8 nodes, curving upward slightly from the base
sheath: veined, hairless, or lowermost thinly soft-haired; collar hairy with glandular-marginal hairs
blade: flat or inrolled (3-10 cm long and 1-3 mm wide), narrow, pointed, glandular-marginal hairs, may be hairy on upper surface near base
ligule: membranous (less than 1 mm long), flat
rhizomes: no rhizomes or stolons

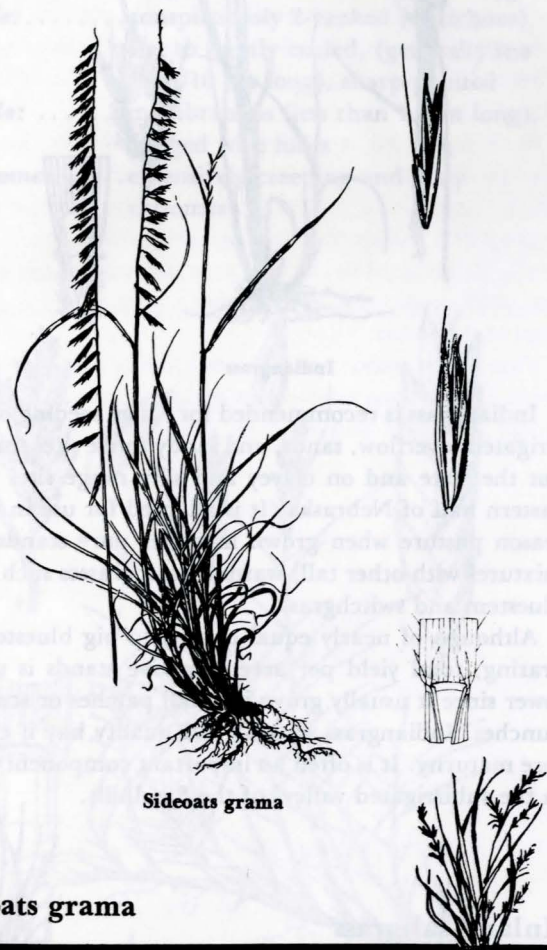
Where Found:

This native grass is distributed widely over the state, but it is more common in central and western Nebraska. It grows intermixed with blue grama but becomes particularly abundant on rough, rocky ridges and on loose sands. In the Sandhills, it is most common on ridge tops and south and west slopes on sands and choppy sands range sites. Elsewhere, it may become common on dry soils of shallow and limy upland range sites.

Uses and Values:

Growth starts by mid-July or when moisture is available near that time period. Palatability is highest in late summer and fall, but hairy grama is not as readily grazed as blue grama.

Hairy grama is resistant to both drought and heavy grazing and increases under these pressures. Because of short growth and low forage yield, hairy grama makes a very small contribution of forage even on sites where it is the most abundant. It is not recommended for range seeding, but hairy grama seed is commonly mixed with blue grama when seed is from a native harvest. Sites where hairy grama is abundant are more valuable for grazing than for hay production.



Sideoats grama

Sideoats grama

- Common Name:** Sideoats grama
Species: *Bouteloua curtipendula* (Michx.) Torr.
Life Span: Perennial
Origin: Native
Season: Warm
Growth Form: Sod-forming grass
Inflorescence Characteristics:
type: panicle (10-30 cm long) of 35-80 short-pendulous spikes (1-2 cm long) with 2-5 spikelets on a flattened rachis

- spikelets:** 1 perfect floret per spikelet with imperfect florets reduced to 3 bristles; lemma 3-veined and 3-toothed at top
awns: lemma sometimes with short awn (1-2 mm long)
glumes: unequal, tapering (6-10 mm long)
other: individual branches turned to one side of inflorescence, distant, branch base remains on culm after the spikelets fall

Vegetative Characteristics:

- culm:** upright (0.1-1 m tall), tufted, smooth, purple at nodes
sheath: round, may be a few long soft hairs, prominently veined; collar with long hairs on margin, leaves mostly basal
blade: flat to slightly rolled (2-30 cm long and 2-4 mm wide), edges with scattered hairs from bulb-like bases
ligule: membranous (less than 1 mm long), with a fringe of hairs
rhizomes: scaly rhizomes

Where Found:

This native grass grows throughout Nebraska but is more common in central and eastern than western Nebraska. It occurs on all upland sites except sands and choppy sands and often is particularly abundant on shallow, limy upland, silty, and thin loess range sites. It is more drought tolerant than big bluestem and indiagrass but less drought tolerant than blue and hairy grama. In eastern Nebraska it is more common on hills and drier slopes.

Uses and Values:

This warm-season grass grows rapidly in late spring and early summer and may remain green into late summer when soil moisture is adequate. Forage value is good. It is grazed mostly in late summer and fall but remains moderately palatable into the winter. The stems are unpalatable and are not normally grazed. Sideoats grama makes good quality hay but is low in yield. Sideoats is a decreaser on all range sites in the 15-19 inch (38-48 cm) precipitation zone. It increases under close grazing on favorable sites in the higher precipitation zones and replaces the taller grasses, but it does not withstand prolonged heavy grazing.

Sideoats grama is widely used for range seedings. It is recommended for seeding in native grass mixtures on silty, clayey, and sandy sites throughout Nebraska and also on overflow and subirrigated sites in the western part of the state. Sideoats grama is easily established, long lived, and readily spreads by seed and rhizomes. Density and vigor decrease during drought, but survival and recovery are good.

Indiangrass



Common Name: Indiangrass
Species: *Sorghastrum nutans* (L.) Nash
Life Span: Perennial
Origin: Native
Season: Warm
Growth Form: Sod-forming grass

Inflorescence Characteristics:

type: panicle (15-30 cm long), dense
spikelets: paired, hairy (6-8 mm long),
pedicelled spikelet sterile and
reduced
awns: lemma of perfect spikelet awned
(1-2 cm long), bent and twisted
glumes: leathery, brown or yellow, first with
long stiff hairs and with edges turned
up over the second
other: inflorescence yellow or gold;
branches of inflorescence hairy and
grayish

Vegetative Characteristics:

culm: upright, robust (1-2 m tall), nodes
hairy
sheath: round or sometimes flattened, with
long hairs, especially near collar
blade: flat or somewhat keeled (10-30 cm
long and 5-10 mm wide), constricted
at the base, midvein conspicuous on
lower side
ligule: membranous (2-5 mm long), deeply
notched (horn-like or leaf-like)
rhizomes: short, scaly rhizomes

Where Found:

This native grass is most common on subirrigated and overflow range sites throughout Nebraska. It is best adapted to moist, well-drained bottomlands but also grows on sandy soils. It is commonly associated with big bluestem but is less abundant. Indiangrass is moderately salt tolerant and may be common on saline subirrigated sites if the salt content is not excessive. Indiangrass also occurs sparingly on most other range sites where soil moisture is adequate. It will withstand occasional flooding. On upland range sites with medium to heavy textured soils, indiangrass is more common in eastern than in western Nebraska.

Uses and Values:

This warm-season grass provides palatable forage throughout the summer, when its forage value is nearly as high as that of big bluestem. Indiangrass does not cure particularly well and is generally considered to be only moderately palatable after maturity producing only fair forage for winter grazing. Indiangrass is not tolerant of repeated close grazing and is a decreaser on all range sites.



Indiangrass

Indiangrass is recommended for range seeding on sub-irrigated, overflow, sands, and sandy range sites throughout the state and on clayey and silty range sites in the eastern half of Nebraska. It is adapted for use in warm-season pasture when grown in either pure stands or in mixtures with other tall, warm-season grasses such as big bluestem and switchgrass.

Although of nearly equal quality to big bluestem for grazing, total yield per acre in native stands is usually lower since it usually grows in small patches or scattered bunches. Indiangrass makes good quality hay if cut before maturity. It is often an important component of hay in the subirrigated valleys of the Sandhills.



Inland saltgrass

Common Name: Inland saltgrass
Species: *Distichlis spicata* (L.) Greene
Life Span: Perennial
Origin: Native
Season: Warm
Growth Form: Sod-forming grass

Inflorescence Characteristics:

type: panicle (1-6 cm long), contracted
spikelets: male and female inflorescence pro-
duced on separate plants (both sexes
6-10 mm long); strongly compressed;
female spikelet 3- to 8-flowered and

greenish, male spikelet 6- to 11-flowered and yellowish; lemma firmer than glumes and sharp-pointed (3-6 mm long); palea soft, narrowly winged

awns:none

glumes:unequal, sharp-pointed, smooth, 3-9 nerved, (female 3-6 mm, male 2-4.5 mm long)

Vegetative Characteristics:

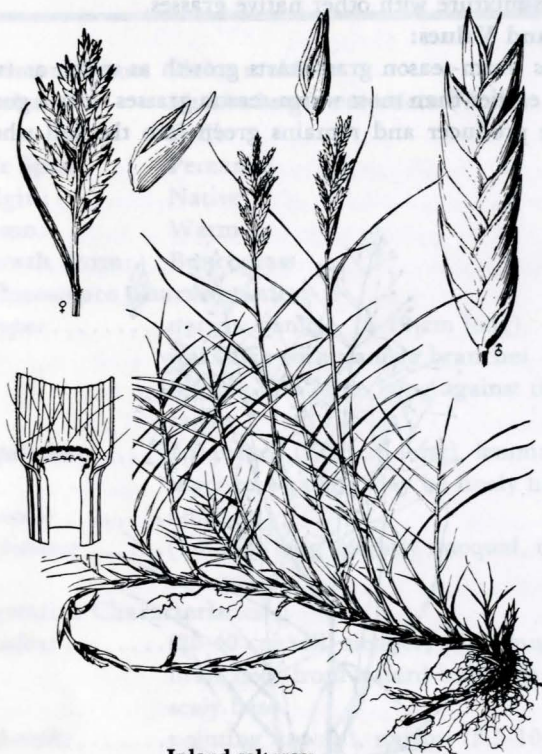
culm:usually parallel to the soil surface (10-40 cm tall), internodes short and numerous

sheath:closely overlapping, sometimes with long hairs in collar and upper edges

blade:conspicuously 2-ranked (distichous), flat to tightly curled, (generally less than 10 cm long), sharp-pointed

ligule:membranous (less than 1 mm long), fringed with hairs

rhizomes:extensively creeping and scaly rhizomes



Inland saltgrass

Where Found:

This native, warm-season grass is found on saline subirrigated sites often in pure stands where it forms a dense sod, or in mixed stands with alkali sacaton, foxtail barley, and other salt tolerant plants. It tolerates high soil salinity and can grow even on soils crusted with salt. Inland saltgrass is also capable of growing on dry soils of silty, clayey, and even sandy and sands sites.

Uses and Values:

Inland saltgrass has low palatability since it is wiry and tough, but it may be grazed when other forage is not available. It is grazed to best advantage during late spring and summer when green and actively growing. Growth starts in early summer at a slow growth rate, and often remains green until fall.

When used for winter forage, saltgrass is low in phosphorus, protein, and vitamin A, and palatability is rated as very low. Livestock grazed almost solely on dried saltgrass sometimes develop severe rumen compaction. Straight inland saltgrass diets should be avoided in the late fall and winter.

Inland saltgrass is highly resistant to grazing and trampling damage because of its vigorous rhizomes. This is a desirable feature around areas of livestock concentration such as windmills, corrals, and trails. Continuous, close grazing is the most efficient way to use saltgrass, but this may quickly destroy the more palatable and more productive associated grasses. Inland saltgrass is a strong increaser on saline subirrigated sites, but it is also very aggressive and may invade dry sites when competition from other grasses is reduced.



Purple lovegrass

Common Name: Purple lovegrass
Species: *Eragrostis spectabilis* (Pursh) Steud.
Life Span: Perennial
Origin: Native
Season: Warm
Growth Form: Sod-forming grass

Inflorescence Characteristics:

type: open panicle (25-45 cm long, 15-30 cm wide) widely spreading; hair-like branches that are stiff and wiry; prominent hairs at the junction of panicle branches

spikelets: 7- to 11-flowered (5-7 mm long); long oval-shaped, compressed

awns:none

glumes:slightly unequal (1-2.5 mm long) sharp-pointed, oval-shaped; slightly rough

other: inflorescence separates from the plant at maturity, purplish

Vegetative Characteristics:

culm: tufted from a knotty base (20-75 cm tall)

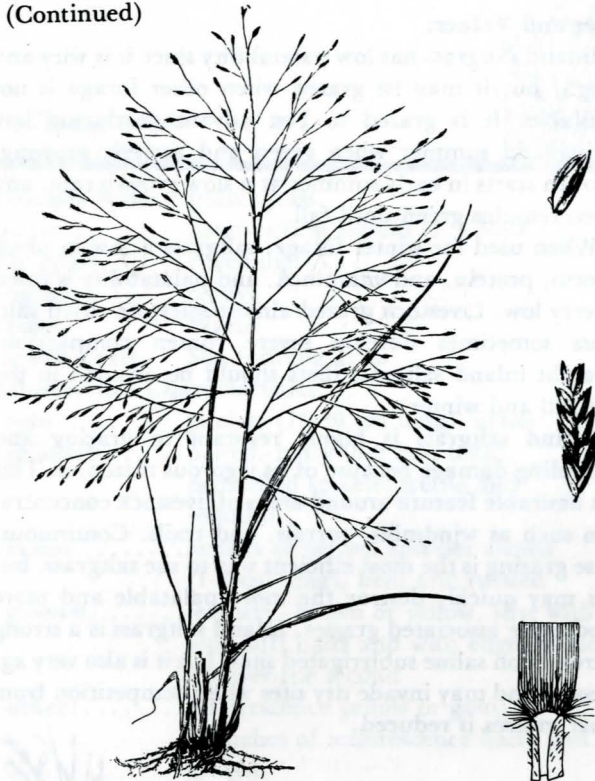
sheath: overlapping, usually with long hairs on collar and upper margins

blade: flat (15-40 cm long, 3-7 mm wide); folded or inrolled in drying; stiff, may be with long hairs

ligule: ring of hairs (2-4 mm long)

rhizomes: usually with short, stout rhizomes; but has a tufted appearance

(Continued)



Purple lovegrass

Where Found:

Purple lovegrass occurs in scattered stands over most of the state, except in the extreme west. It is most abundant on sandy, sands, and choppy sands sites. It may be found in small amounts on dry, silty, or clayey soils.

Uses and Values:

This native, warm-season grass is a common increaser in the Sandhills and is readily established on "go-back" land. The herbage produced by purple lovegrass is rather coarse, and the forage value is only fair when green and growing. The seedheads and the mature foliage are largely ignored by cattle. Purple lovegrass is not a high forage producer.

spikelets: 4- to 18-flowered (4-10 mm long), long pedicels, lemmas 3-nerved, lateral nerves strong

awns: none

glumes: thin, pointed

other: panicle purple or red, panicle branches in groups of 3 or 4, with a few long hairs in the axils

Vegetative Characteristics:

culm: erect (0.4-1.8 m tall), tufted

sheath: prominent hairs on upper edges, and on the collar, occasionally hairy on the back or margins

blade: flat (15-40 cm long and 2-8 mm wide), rough on upper surface, taper to a slender point

ligule: ring of hairs (less than 1 mm long)

rhizomes: none

Where Found:

Sand lovegrass is native to the Nebraska Sandhills where it is an important and abundant grass on sands and choppy sands sites. It grows best on north and east facing slopes where moisture conditions are more favorable. It is found as scattered plants on sandy sites and rarely on silty sites in mixture with other native grasses.

Uses and Values:

This warm-season grass starts growth as much as two weeks earlier than most warm-season grasses. It is a good forage producer and remains green into the fall when

Sand lovegrass



Common Name: Sand lovegrass

Species: *Eragrostis trichodes* (Nutt.) Wood

Life Span: Perennial

Origin: Native

Season: Warm

Growth Form: Bunchgrass

Inflorescence Characteristics:

type: panicle (35-55 cm long and 7-30 cm wide), open and much-branched, may be 1/2 the length of the plant, hair-like branches



Sand lovegrass

good soil moisture prevails. It is a decreaser under heavy grazing. When green and growing it is very palatable and nutritious. During the summer it is highly preferred and may be overgrazed. Palatability is fair to good after maturity.

Sand lovegrass is valuable for range seeding on sands and sandy sites throughout Nebraska. It is commonly seeded to stabilize disturbed areas such as that which occurs with highway construction in the Sandhills. On sandy soils, it is commonly seeded with other palatable, warm-season, native grasses or sometimes in pure stands. It is also recommended as a component in warm-season grass mixtures on all except the driest silty sites and in eastern Nebraska on clayey sites. Sand lovegrass is valuable in mixtures since it increases yields at least for the first 3 or 4 years. It has high seedling vigor, establishes quickly, and withstands low soil fertility. Although individual plants are somewhat shortlived, it reseeds itself readily.

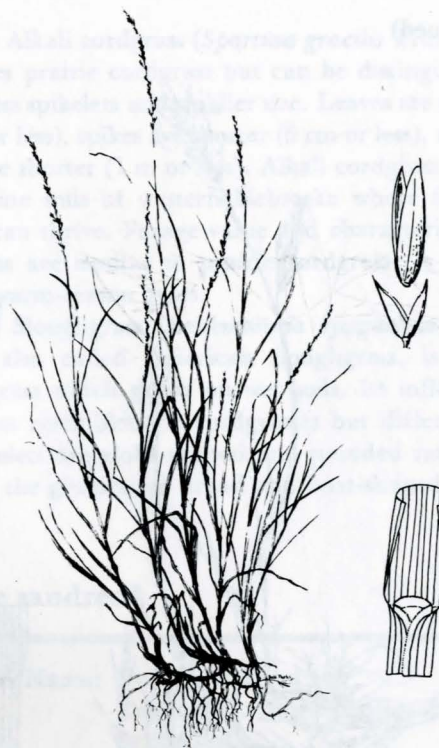


Plains muhly

- Common Name:** Plains muhly
Species: *Muhlenbergia cuspidata* (Torr.) Rydb.
Life Span: Perennial
Origin: Native
Season: Warm
Growth Form: Bunchgrass
Inflorescence Characteristics:
type: narrow panicle, (5-10 cm long), spike-like with panicle branches upright and often lying against the rachis
spikelets: 1-flowered (2-3 mm long), lemmas taper to a point; may be finely hairy
awns: none
glumes: (1-2 mm long) slightly unequal, taper to a point
Vegetative Characteristics:
culm: (20-40 cm tall) slender, wiry, much-branched; from a hard bulb-like and scaly base
sheath: pointing upward, narrow (2.5-10 cm long, 1-2 mm wide), flat or loosely rolled
blade: prominently veined, with fine stiff hairs on upper surface
ligule: membranous (less than 1 mm long)
rhizomes: none

Where Found:

This native grass is found on uplands and hillsides over much of the state except on loose sands. It is particularly abundant on limy upland and thin loess range sites.



Plains muhly

Uses and Values:

This warm-season grass commonly grows intermixed with little bluestem and sideoats grama and has good forage value. Stands are often somewhat scattered but may thicken up on hillsides and produce considerable forage. Plains muhly decreases under heavy grazing and is found principally on range in good and excellent condition.

Note: Green muhly [*Muhlenbergia racemosa* (Michx.) B.S.P.] grows on moist places in the prairie such as overflow and subirrigated range sites. Shaded, forested areas are also a common habitat. It is rhizomatous, grows upright, has leaves of medium width, and has a dense, spike-like inflorescence. Palatability is fair to good before maturity, and it is an increaser on favorable sites.



Sandhill muhly

- Common Name:** Sandhill muhly
Species: *Muhlenbergia pungens* Thurb.
Life Span: Perennial
Origin: Native
Season: Warm
Growth Form: Sod-forming grass
Inflorescence Characteristics:
type: open panicle, many-branched, (5-15 cm long, 2-6 cm wide when completely out of sheath); with numerous hair-like and spreading branches; reddish in color

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Sandhill muhly

- spikelets:** 1-flowered (4-5 mm long) purplish-reddish
- awns:** present on glumes and lemmas (0.5-1.5 mm long)
- glumes:** (1.5-2.5 mm long) 1/3 as long as spikelet, often notched or toothed, midnerve extending into a short awn

Vegetative Characteristics:

- culm:** (20-40 cm) arising from a low-growing, curved, much-branched, leafy base; may be covered with fine, short, bristly hairs
- sheath:** crowded toward the base, wide transparent margins
- blade:** (2-4 cm long, 1-2 mm wide) inrolled, stiff, pointed; nerves on upper surface are raised and covered by short, bristly hairs
- ligule:** membranous (up to 1 mm long) with a fringe of hairs
- rhizomes:** large, scaly, creeping rhizomes; causing the plants to be "ring-shaped"

Where Found:

This native grass is found on sands and choppy sand range sites throughout Nebraska. It is most common on sandy ridge tops, edges of blowouts, and dry south and west sides of choppy sand hills.

Uses and Values:

This warm-season grass produces harsh, prickly foliage of poor forage value and is undesirable as a forage grass. It is seldom grazed unless cattle are forced to eat it because of a lack of other forage. It increases under heavy grazing or following fires and remains indefinitely on badly overgrazed range.

The primary importance of sandhill muhly is as a "pioneer" species or soil stabilizer. It often grows with blowoutgrass and lemon scurfpea and provides preliminary control of active blowouts. Its extensive, much-branched root system and moderately dense foliage cover make it adapted to protect loose sands from wind erosion. As the sands begin to stabilize, sandhill muhly is replaced partly or entirely by grasses such as prairie sandreed, switchgrass, sand bluestem, sand lovegrass, and little bluestem.

Prairie cordgrass



- Common Name:** Prairie cordgrass
- Species:** *Spartina pectinata* Link
- Life Span:** Perennial
- Origin:** Native
- Season:** Warm
- Growth Form:** Sod-forming grass
- Inflorescence Characteristics:**

- type:** panicle of 6-40 spike-like primary branches (each branch 4-15 cm long)
- spikelets:** 1-flowered, densely arranged alternately in two rows on one side of the rachis
- awns:** second glume awned (4-10 mm long), stout with fine teeth on base
- glumes:** unequal (first glume 6-7 mm long and second 8-9 mm long, excluding the awn), rough with stiff hairs on keel, saw-toothed margins

Vegetative Characteristics:

- culm:** solitary or in small clusters (1-2.5 m tall), coarse, robust
- sheath:** open, distinctly veined, usually hairy only in the throat
- blade:** flat when green (20-80 cm long and 6-15 mm wide), rolled when dry, saw-toothed margins, tapering to a point, rough
- ligule:** ring of hairs (1-3 mm long)
- rhizomes:** stout, scaly, widely spreading, woody rhizomes

Where Found:

Prairie cordgrass is one of the dominant native grasses on wetland range sites. Here it occurs in pure stands or mixed with sedges and other grasses. Soils on which it grows are normally wet for several weeks each year and



Prairie cordgrass

are too wet for big bluestem, switchgrass, and indian-grass. However, on subirrigated sites prairie cordgrass grows in scattered stands with these grasses. Prairie cordgrass is abundant on wet, non-saline soils throughout the state but is most common in sloughs and along the edges of lakes and marshes in Sandhill valleys and along the Elkhorn, Loup, Platte, and Missouri rivers and their tributaries.

Uses and Values:

This warm-season grass grows rapidly in late spring and throughout the summer. It is readily grazed in early growth stages. Relative forage value is good when growing in association with coarse sedges but only fair when growing with big bluestem, indiagrass, switchgrass, and bluejoint reedgrass. Under heavy spring grazing, prairie cordgrass is a decreaser. As it matures, prairie cordgrass becomes harsh and stemmy and only the leaf tips are eaten.

Wetland sites are normally better adapted to hay production than grazing. A high yield of fair quality hay can be obtained from prairie cordgrass on wetland sites if cut before seedheads emerge. If cut late, stems become woody and hay is coarse and tough. Since regrowth is rapid, two or three cuttings can often be made if soils are dry enough to support haying machinery. Reproduction is usually by rhizomes except in bare areas where seedlings can establish. Redtop bent, creeping foxtail, and reed canarygrass are preferred over prairie cordgrass for seeding or transplanting on wetland range sites.

Note: Alkali cordgrass (*Spartina gracilis* Trin.) closely resembles prairie cordgrass but can be distinguished by its awnless spikelets and smaller size. Leaves are narrower (5 mm or less), spikes are shorter (5 cm or less), and seed-stalks are shorter (1 m or less). Alkali cordgrass grows in wet, saline soils of western Nebraska where few other grasses can thrive. Forage value and characteristics as a hay grass are similar to prairie cordgrass. It is also a native, warm-season grass.

Note: Sloughgrass [*Beckmannia syzigachne* (Steud.) Fern.], also called American sloughgrass, is another native grass which grows on wet soils. Its inflorescence somewhat resembles the cordgrasses but differs in that the spikelets are globe-shaped and rounded rather than narrow, the glumes are broad and boat-shaped.



Prairie sandreed

- Common Name:** Prairie sandreed
- Species:** *Calamovilfa longifolia* (Hook.) Scribn.
- Life Span:** Perennial
- Origin:** Native
- Season:** Warm
- Growth Form:** Sod-forming grass
- Inflorescence Characteristics:**

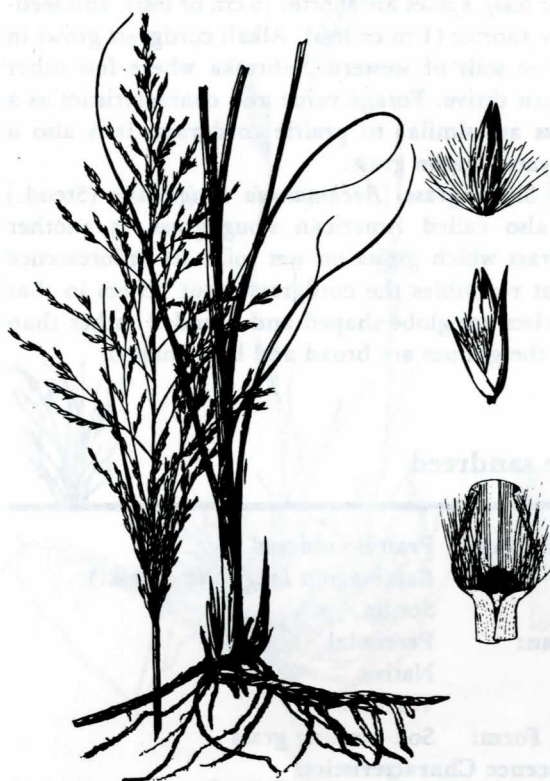
- type:** panicle (15-35 cm long), narrow, shiny
- spikelets:** 1-flowered (6-7 mm long) pale, base of spikelet with long hairs, lemma fringed with hairs
- awns:** none
- glumes:** boat-shaped, smooth, first shorter than the second
- Vegetative Characteristics:**
- culm:** (0.5-1.8 m tall) solitary, robust, smooth
- sheath:** may be hairy, distinctly veined, short hair on margin; inflated collars with hair at the throat (2-3 mm long)
- blade:** tapered (10-50 cm long and 3-12 mm wide), rolled, long and stiff, basal portion keeled
- ligule:** ring of hairs (0.5-3 mm long)
- rhizomes:** stout, scaly rhizomes

Where Found:

This native grass is the most uniformly distributed and most abundant grass in the Nebraska Sandhills on sandy, sands, and choppy sands range sites. It grows on blowouts as well as on stable valley floors. Prairie sandreed may also be locally common on deep, medium textured soils on overflow, silty, and limy upland range sites. It is rarely found on wetland, saline subirrigated, and shallow range sites. On rolling sand hills, it grows evenly distributed in the vegetation stand, but on finer textured soils it tends to grow in large open clumps.

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Prairie sandreed

Uses and Values:

Prairie sandreed is a warm-season grass, which grows rapidly in late spring and throughout the summer, remains green until frost, and cures rather well. Although somewhat coarse and stemmy, palatability is fair to good and rather stable throughout the growing season. Prairie sandreed is more palatable during early spring growth than later. However, it is primarily grazed in the mid-summer through winter, because other Sandhill grasses are more palatable early in the growing season. Upland hay cut in the Sandhills includes large amounts of prairie sandreed and is of acceptable quality if not cut too late.

Prairie sandreed is drought tolerant and tends to replace the bluestems in the Sandhills during periods of low rainfall. It is also tolerant of intensive grazing and increases under heavy grazing pressure. However, it may be killed by prolonged overgrazing. Because of its stable and uniformly high production of forage on sandy soils, it is one of the most important Sandhills forage grasses.

Prairie sandreed is recommended in warm-season grass mixtures for seeding on sandy soils. Some prairie sandreed commonly occurs in seed mixtures harvested from native stands. Commercial seed availability is very limited.

Red threeawn

- Common Name:** Red threeawn
- Species:** *Aristida longiseta* Steud.
- Life Span:** Perennial
- Origin:** Native
- Season:** Warm
- Growth Form:** Bunchgrass
- Inflorescence Characteristics:**
 - type:** panicle (2-10 cm long), pointing upward, somewhat flexuous, purple to red
 - spikelets:** 1-flowered, pedicelled
 - awns:** lemma awn branches into 3 awns (6-8 cm long), equal, spreading
 - glumes:** first glume (8-10 mm long), 1/2 as long as second glume
- Vegetative Characteristics:**
 - culm:** tufted (10-35 cm tall)
 - sheath:** smooth to slightly rough, collar with a tuft of long and soft hairs on either side
 - blade:** inrolled (2-12 cm long and 1-2 mm wide), sharp-pointed, curved, rough, mostly basal
 - ligule:** membranous (up to 1 mm long), fringed with hairs
 - rhizomes:** none



Red threeawn

Where Found:

This native grass is widely distributed in central and western Nebraska except on low, wet sites. It grows on a wide range of soil textures and is found on all upland range sites. It is a common component on low condition, silty range sites. Stands are normally quite scattered, but red threeawn may be locally abundant on dry, sandy soils, hillsides, and rocky slopes, particularly on disturbed sites.

Uses and Values:

This warm-season grass provides a minor amount of usable forage, which is only occasionally grazed in early growth stages. After awns develop, the grass is worthless as forage. When sheep are grazed on range containing red threeawn, the long awns get into the fleece and also may cause irritation and abscesses in the mouth and nostrils.

Because this grass is seldom eaten, it is able to invade areas where productive and palatable grasses have been weakened by heavy grazing. It is a vigorous seed producer, and the awned seeds are scattered by wind and animals. It is very drought resistant and rapidly invades bare or disturbed soil. It is sometimes a troublesome weed in new grass seedings. It grows best after a wet summer and fall followed by a dry winter, especially on range where the desirable grasses have been depleted.

Note: Several other perennial threeawns including Fendler threeawn (*Aristida fendleriana* Steud.) are found in western and central Nebraska. Purple threeawn (*Aristida purpurea* Nutt.) is more common in the central and eastern parts of Nebraska. All are characterized by three-branched awns, are warm-season grasses, grow on dry plains and hillsides, are poor to worthless for forage, and are increasers or invaders under heavy grazing.



Sand paspalum

Common Name: Sand paspalum

Species: *Paspalum setaceum* Michx. var. *stramineum* (Nash) D. Banks

Life Span: Perennial

Origin: Native

Season: Warm

Growth Form: Bunchgrass

Inflorescence Characteristics:

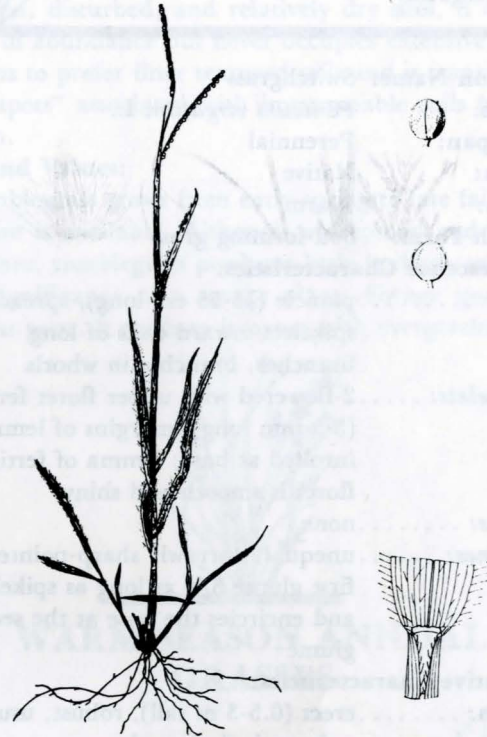
type:raceme (3-17 cm long) 2 or 3 racemes produced on each culm, the lower raceme often remaining partially in the sheath

spikelets:oval-shaped (1.5-2.5 mm long); may be hairy; pale-yellow to light-green, sometimes spotted; placed in 2 rows on one side of rachis

awns:none

glumes:first glume usually missing, second glume as large as the spikelet

other:herbage yellowish-green



Sand paspalum

Vegetative Characteristics:

culm:erect to spreading (30-80 cm tall)

sheath:somewhat flattened, loose; hairy on the margins and throat, otherwise few or no hairs

blade:flat, soft, (6-25 cm long, 3-15 mm wide) may have a few long hairs to densely hairy

ligule:membranous (up to 1 mm long)

rhizomes:knotty base or very short rhizomes, but it has the appearance of a bunchgrass

Where Found:

This native grass is found on sands, sandy, and choppy sands range sites throughout Nebraska. It grows as scattered, small bunches on dry, sandy soils intermixed with typical Sandhill plants. It is most prevalent along roadways and areas where competition from other perennial grasses is minimal.

Uses and Values:

This warm-season grass is considered to have fair forage value. Although widely distributed on sandy soils, plants of sand paspalum are normally scattered and comprise only a minor part of the vegetation. For this reason, herbage yield is low, and the grass warrants only minor consideration by the range manager. Although not recommended for range seeding, it readily establishes naturally on "go-back" land and seeded range.

Switchgrass



Common Name: Switchgrass
Species: *Panicum virgatum* L.
Life Span: Perennial
Origin: Native
Season: Warm
Growth Form: Sod-forming grass
Inflorescence Characteristics:

type: panicle (15-55 cm long), spreading, spikelets toward ends of long branches, branches in whorls

spikelets: 2-flowered with upper floret fertile (3-5 mm long), margins of lemma inrolled at base; lemma of fertile floret is smooth and shiny

awns: none

glumes: unequal, narrowly sharp-pointed, first glume 3/4 as long as spikelet and encircles the base at the second glume

Vegetative Characteristics:

culm: erect (0.5-3 m tall), robust, usually unbranched above base

sheath: rounded, often purple to red at base, margins may be hairy

blade: firm, flat (10-60 cm long and 3-15 mm wide), margin weakly barbed; triangular patch of hair at collar extending outward along midrib of leaf blade

ligule: fringed membrane (1.5-3.5 mm long), mostly hairs, rounded

rhizomes: numerous, creeping, scaly rhizomes

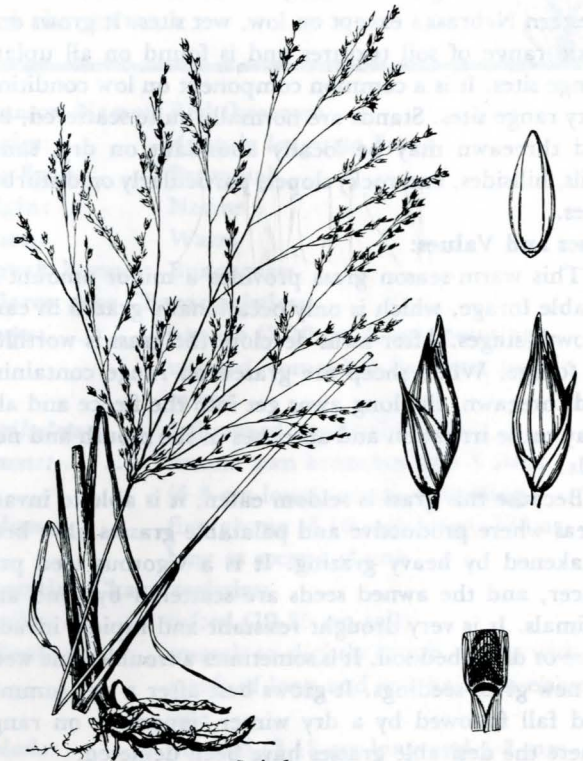
Where Found:

This native grass occurs throughout Nebraska on subirrigated, overflow, sands, sandy, and choppy sands range sites. In the eastern half of the state, it is also found on upland silty and clayey sites. It grows best where moisture is abundant and thrives on sites where big bluestem grows. However, like big bluestem, it is unable to survive prolonged drought and seldom grows on dry, upland plains of western Nebraska. It is moderately salt tolerant and is common on saline subirrigated sites. It withstands considerable flooding for short periods.

Uses and Values:

This warm-season grass grows rapidly in late spring and early summer. At this time it has good forage value and is readily grazed by cattle, horses, and sheep. As the stems and seedheads begin to mature in midsummer, nutrient content and palatability decline rapidly. On fall and winter range, palatability is low, and only the leaves and seedheads are normally eaten.

On adapted sites, switchgrass is a high yielder of good quality hay when cut early. Palatability and feeding qualities drop more rapidly with maturity than for sand or big



Switchgrass

bluestem. Switchgrass is a decreaser when grazing during the growing season but may replace other tall grasses when winter grazed. It is a major component of warm-season, native grass seedings and is most commonly planted in mixture with the bluestems, sideoats grama, indian-grass, and sand lovegrass. High quality seed is readily available. Although seedlings are somewhat slow to establish, stands tend to improve through natural reseeding and reproduction by rhizomes.

Switchgrass is recommended for seeding throughout Nebraska on subirrigated, overflow, sands, and sandy range sites and on most moderately saline subirrigated range sites. It is recommended also for silty and clayey range sites receiving 20 inches (50 cm) or more of average annual precipitation. Switchgrass is adapted for use in warm-season pastures when seeded alone or in mixture with other tall, warm-season grasses. Because it provides good soil erosion control, it is commonly seeded in waterways.

Tumblegrass



Common Name: Tumblegrass
Species: *Schedonnardus paniculatus* (Nutt.) Trel.
Life Span: Perennial
Origin: Native
Season: Warm
Growth Form: Bunchgrass

Inflorescence Characteristics:

type: panicle of several spike-like primary branches (30-60 cm long), with a few shorter branches (2-20 cm long), curved at maturity

spikelets: 1-flowered, slender, sessile (3-4 mm long), imbedded in branch

awns: glumes may be awn-pointed

glumes: unequal, second glume as long as lemma; narrow and tapering at both ends

other: inflorescence breaks off at the base and tumbles in the wind

Vegetative Characteristics:

culm: tufted (10-70 cm tall), growing along the ground at the base and curving upward stiffly

sheath: loose, flattened, crowded at the base

blade: flat, stiff (2-10 cm long, 1-2.5 mm wide) smooth or with fine teeth on margins, margins white, midrib prominent; mainly basal, wavy and becoming twisted at maturity

ligule: membranous, (2-3 mm long) rounded

rhizomes: none



Tumblegrass

Where Found:

This native grass is common over most of Nebraska. On open, disturbed, and relatively dry sites, it can be found in abundance but never occupies extensive areas. It seems to prefer finer textured soils and is common on "slick spots" associated with impermeable soils high in sodium.

Uses and Values:

Tumblegrass grows from early spring to late fall when moisture is available. Although widespread and locally abundant, tumblegrass produces little herbage and is of little significance as a forage plant. Forage quality is rated as poor. It tends to increase with overgrazing.



WARM-SEASON ANNUAL GRASSES



Barnyardgrass

Common Name: Barnyardgrass

Species: *Echinochloa crusgalli* (L.) Beauv.

Life Span: Annual

Origin: Introduced

Season: Warm

Growth Form: Not applicable

Inflorescence Characteristics:

type: panicle (5-21 cm long) upright or nodding, consisting of 5-12 raceme-like branches from the main branch; spikelets arranged on one side of each branch

spikelets: 1-flowered, round, slightly flattened (2.5-3.5 mm long), somewhat rigid, covered with stiff hairs on glandular bumps

awns: glumes may be awned (first glume awn very short, less than 1 mm; awn of second glume up to 1.5 mm long), lemma ending in an awn that may reach 3 cm long

glumes: unequal, first glume broad, claspings, sharp-pointed, often with a short awn, 1/3 as long as the second; second glume (2.5-3.5 mm long), pointed to awned

other: seeds are shiny, nearly oval, light brown to yellowish-gray

(Continued)



Barnyardgrass

Vegetative Characteristics:

culm:stout, tufted (0.3-1 m tall) arising from a jointed base which trails along the ground

sheath:without hairs, without a ligule, often with small glands on the margins near the collar

blade:flat (10-40 cm long and 5-25 mm wide), hairless but rough to the touch, margins often saw-toothed, veins prominent

ligule:none

rhizomes:none

Where Found:

Barnyardgrass is an introduced weed found throughout Nebraska. It grows primarily on old fields, feed grounds, waste places, and corrals and is particularly common on low, moist, disturbed areas high in fertility.

Uses and Values:

This warm-season grass has fair to poor forage value. It furnishes fair pasture when grazed during early growth but becomes harsh and unpalatable at maturity. It is occasionally a component of hay but is of low quality unless harvested before maturity. This grass is an abundant seed producer and rapidly invades overflow and subirrigated range sites which have been denuded or disturbed. It is an unreliable forage producer and is generally considered an undesirable forage grass.



Green bristlegrass

Common Name: Green bristlegrass

Species: *Setaria viridis* (L.) Beauv.

Life Span: Annual

Origin: Introduced

Season: Warm

Growth Form: Not applicable

Inflorescence Characteristics:

type:cylindric, upright panicle (3-15 cm long) main branch with long hairs, the branches short

spikelets:with 1-3 bristles (4-11 mm long) coming from the base, bristles with tiny barbs; spikelets rounded, nearly flat on one side (2-3 mm long)

awns:none, numerous bristles

glumes:glumes unequal, first glume about 1/3 as long as the spikelet sharp-pointed; second glume about the same length as the spikelet

Vegetative Characteristics:

culm:tufted, solid (0.2-1 m tall) straight or bent upward from the base, lower nodes may have long hairs

sheath:may be keeled; margins and collar hairy, may be slightly hairy on lower sheaths



Green bristlegrass

blade: flat or folded (8-20 cm long, 3-10 mm wide), without hairs, may be rough

ligule: dense fringe of hairs (1-2 mm long)

rhizomes: none

Where Found:

This grass is a native of Europe but commonly grows intermixed with yellow bristlegrass in Nebraska. It is widely distributed throughout the state and is more abundant in western Nebraska than yellow bristlegrass. It is also a serious pest on disturbed lands.

Uses and Values:

This warm-season, weedy grass flowers and matures somewhat earlier than yellow bristlegrass. Forage value, response to grazing, and management considerations are the same as for yellow bristlegrass.

Note: Another weedy grass which resembles large plants of green bristlegrass is hooked bristlegrass [*S. verticillata* (L.) Beauv.], also called bristly or bur foxtail. It differs from both green and yellow bristlegrass in having bristles which are downwardly rather than upwardly barbed, making the seedheads sticky and burlike. It is found in central and eastern Nebraska but is less common than green and yellow bristlegrass.



Yellow bristlegrass

Common Name: Yellow bristlegrass

Species: *Setaria glauca* (L.) Beauv.

Life Span: Annual

Origin: Introduced

Season: Warm

Growth Form: Not applicable

Inflorescence Characteristics:

type: dense, cylindric panicle (3-15 cm long) main branch with long hairs, branches short

spikelets: 1-flowered, with 4-12 yellow bristles coming from the base of each spikelet, the bristles with tiny barbs and irregular in length (3-8 mm long) spikelets rounded (2.5-3.5 mm long)

awns: none, numerous bristles

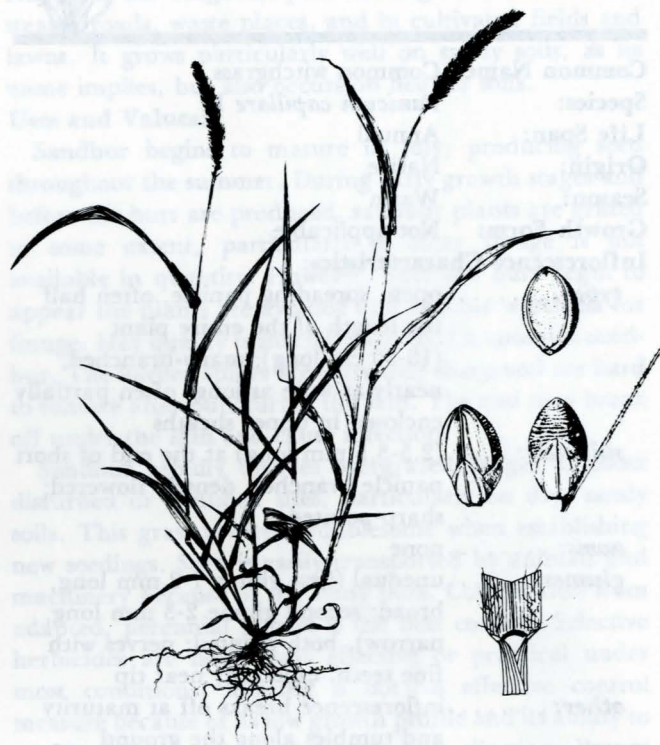
glumes: unequal, first glume 1/2 as long as the spikelet, second glume 2/3 the length of the spikelet

Vegetative Characteristics:

culm: branched from the base often growing along the ground (0.2-1.2 m), nodes smooth

sheath: distinctly flattened, somewhat keeled, smooth and hairless

blade: flat to folded (5-15 cm long, 4-10 mm wide) twisted in a loose spiral, long hairs near throat



Yellow bristlegrass

ligule: fringed membrane (less than 1 mm long)

rhizomes: none

Where Found:

This weedy grass is a native of Europe. It is common on cultivated ground, lawns, waste places, roadsides, and range and pasture in low condition. Although widely distributed over Nebraska, it is most abundant in central and eastern Nebraska.

Uses and Values:

This warm-season grass is moderately palatable and considered fair forage when rapidly growing. However, it becomes unpalatable upon maturity and has poor forage value thereafter. It is not considered a desirable plant on grazing lands or in hay meadows.

Yellow bristlegrass rapidly invades disturbed areas and its presence on range or pasture in considerable amounts indicates a deteriorated stand of forage plants. It is an early invader on "go-back" land. It is very troublesome in range seedings since it often produces dense stands which strongly compete with new seedlings of seeded grasses.

Practices which reduce competition from weedy grasses such as the bristlegrasses in new pasture and range seedings are: providing a weed-free seedbed, using a cover crop such as close-sown sorghum, seeding early in the season directly into the stubble, and mowing if weedy grasses outgrow the new seedlings.

Common witchgrass



Common Name: Common witchgrass

Species: *Panicum capillare* L.

Life Span: Annual

Origin: Native

Season: Warm

Growth Form: Not applicable

Inflorescence Characteristics:

type: open, spreading panicle, often half the length of the entire plant (10-30 cm long); many-branched, nearly as wide as long; often partially enclosed in upper sheaths

spikelets: (2.5-3.5 mm long) at the end of short panicle branches, densely flowered; sharp-pointed

awns: none

glumes: unequal (first glume 1-2 mm long, broad; second glume 2-3 mm long, narrow), both pointed; nerves with fine teeth, especially near tip

other: inflorescence breaks off at maturity and tumbles along the ground

Vegetative Characteristics:

culm: tufted, upright or curving upward from curved base (15-45 cm tall), sparingly branched at lower nodes; may be with hairs, especially at the nodes

sheath: with long hairs

blade: flat or folded (10-25 cm long, 4-12 mm wide) sparingly hairy with long soft hairs

ligule: fringe of hairs (1-1.5 mm long)

rhizomes: none

other: often rooting at the lower nodes of curved base, forming mats

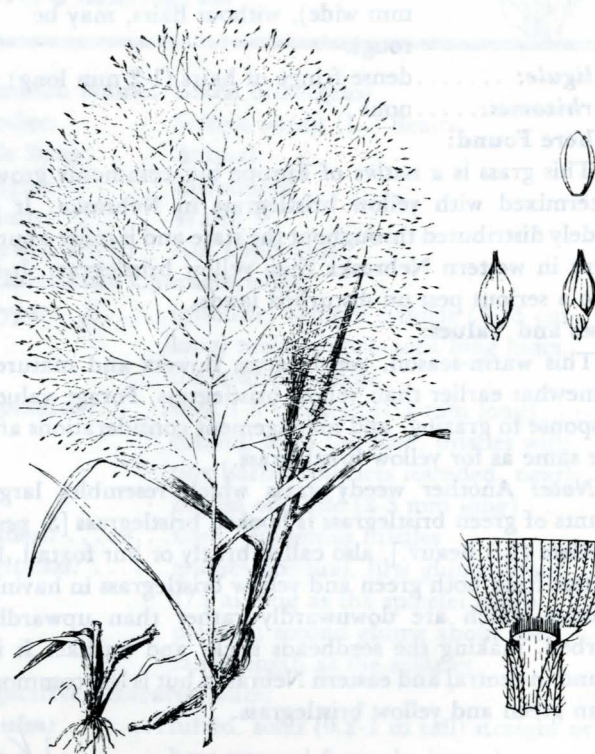
Where Found:

This native weedy grass is found throughout Nebraska on cultivated land, waste places, and poor condition range, particularly where the soil is somewhat sandy.

Uses and Values:

This undesirable, warm-season grass has poor forage value. Early growth stages are grazed slightly, but it is ignored after the seedhead begins to develop. Witchgrass invades land where competition from perennial plants is at a very minimum. It is often very common for one or two years on "go-back" land but is soon replaced by more competitive plants. When present in great abundance in new grass seedings, witchgrass may reduce establishment of the desirable grasses by removing soil moisture during dry periods.

Note: Fall panicum (*Panicum dichotomiflorum* Michx.) is a rather coarse, weedy annual that has a spreading panicle. It is commonly found on disturbed



Common witchgrass

areas in southeastern Nebraska but probably extends westward over most of the eastern two-thirds of the state. It is a warm-season grass which invades pastures under heavy grazing. Forage value may be fair when young and growing but otherwise poor. It can be easily distinguished from witchgrass since the foliage has very little hair. It differs from all other annual panicums in Nebraska in having first glumes which are truncate or triangular tipped and not over one-fourth as long as the spikelet. Other annual panicums have first glumes which are pointed at the tips and are at least one-third as long as the spikelet.

Field sandbur



Common Name: Field sandbur

Species: *Cenchrus longispinus* (Hackel) Fern.

Life Span: Annual (rarely a short-lived perennial)

Origin: Native

Season: Warm

Growth Form: Not applicable

Inflorescence Characteristics:

type: terminal spike (3-8 cm long) of 6-20 spiny, hairy burs, spikes sometimes partially enclosed in the upper leaf

spikelets: each bur surrounds spikelets; the bur is round or oval, densely hairy (3-8 mm wide), and covered with 45-65 upward pointing spines (3-7 mm long); the bur contains one fertile and one sterile spikelet (5.5-7.5 mm long), fertile spikelet larger; lemmas narrow, pointed, smooth

awns: none, numerous spines

glumes: unequal, first glume less than 1/3 length of spikelet (1.5-4.5 mm long), narrow, pointed; second glume wider, pointed (4.5-6 mm long)

other: one to several spikes per plant, may be close to the ground or extending above the leafy base

Vegetative Characteristics:

culm: flattened (10-90 cm long), may be upright or growing flat on the ground, mat-forming

sheath: loose, smooth, flattened, slightly hairy on the margins

blade: flat, sometimes folded (2-18 cm long, 2-6 mm wide) tapering to a point; may be rough to touch

ligule: membranous (about 1 mm long) fringed with hairs (up to 1.5 mm long)

rhizomes: none, occasionally roots at the lower nodes of the stems forming a mat



Field sandbur

Where Found:

This native weedy grass is common throughout Nebraska on range in poor condition, around farmsteads, roads, waste places, and in cultivated fields and lawns. It grows particularly well on sandy soils, as its name implies, but also occurs on heavier soils.

Uses and Values:

Sandbur begins to mature in July, producing seed throughout the summer. During early growth stages and before the burs are produced, sandbur plants are grazed to some extent, particularly if other forage is not available in quantity. However, once the burs begin to appear the plants are avoided and become worthless for forage. Hay quality is sharply lowered if it contains sandbur. The barbed spines are extremely sharp and are hard to remove after puncturing the skin. The end may break off under the skin and cause infection.

Sandbur rapidly invades overgrazed ranges or other disturbed or denuded sites, particularly on dry, sandy soils. This grass is often troublesome when establishing new seedings. Seed is easily transported by animals and machinery because of the spiny burs. Competition from adapted, perennial grasses is the best control. Selective herbicides are not always effective or practical under most conditions. Mowing is not an effective control measure because of its low growth profile and its ability to readily initiate new seed heads after clipping. Proper seedbed preparation including use of a cover crop and timely seeding helps to control sandburs in grass seedings.



Prairie threeawn

Common Name: Prairie threeawn

Species: *Aristida oligantha* Michx.

Life Span: Annual

Origin: Native

Season: Warm

Growth Form: Not applicable

Inflorescence Characteristics:

type: panicle (10-20 cm long), loose

spikelets: 1-flowered, with short pedicel

awns: lemma awn branches into 3 awns (4-7 cm long), nearly equal, spreading

glumes: nearly equal (2-3 cm long), tapering to awn-like point

Vegetative Characteristics:

culm: base grows along ground, (15-80 cm long), branches at lower nodes, wiry, tufted

sheath: rounded on back, may be a few hairs, hairy at collar

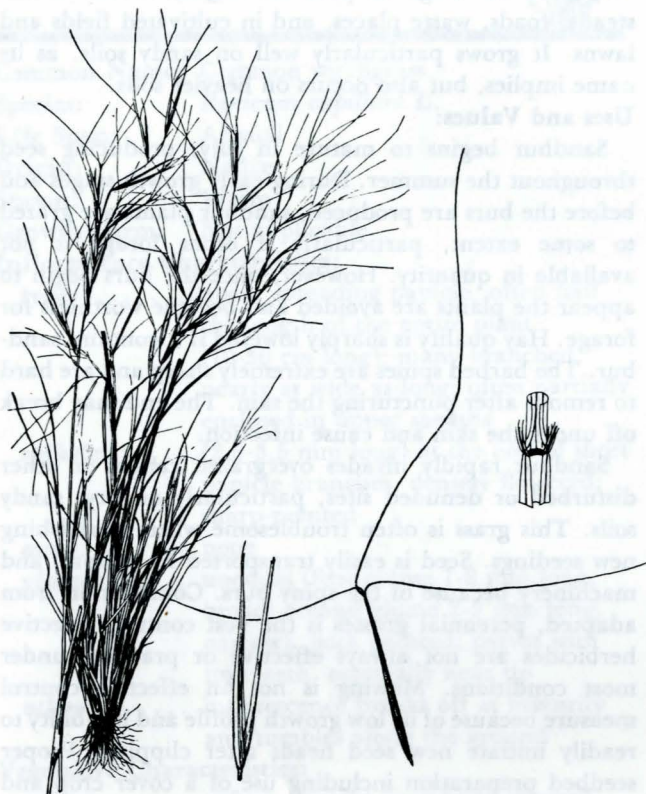
blade: few (10-20 cm long and 2-4 mm wide), flat or loosely inrolled

ligule: membranous, minute, fringed

rhizomes: none

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Prairie threeawn

Where Found:

This native grass is common over most of the state on dry soils. Generally, it becomes abundant only on badly deteriorated range and pasture or on abandoned fields.

Uses and Values:

Except for a brief period of fair to poor forage value in very early growth stages, this warm-season grass is worthless for forage. The long awns are tough and brittle and can cause injury to livestock from grazing or eating it in contaminated hay. Prairie threeawn in hay sharply reduces hay quality, and the tough, fine stems interfere with mowing.

This undesirable grass is a common invader on low condition range and rundown, overgrazed pastures. Since it is seldom eaten, continued heavy grazing removes the perennial grasses, thereby allowing prairie threeawn to thrive. Sound range and pasture management is the best control, since a vigorous stand of the better grasses will crowd out prairie threeawn or prevent it from becoming established.



Stinkgrass

Common Name: Stinkgrass
Species: *Eragrostis cilianensis* (All.) E. Mosher
Life Span: Annual
Origin: Introduced
Season: Warm
Growth Form: Not applicable
Inflorescence Characteristics:

type: dense panicle (5.5-16 cm long, 2-8.5 cm wide), dark-green to tan, branches upright to spreading

spikelets: 7- to 40-flowered, flattened, oblong to egg-shaped (6-20 mm long, 2-4 mm wide); at the end of panicle branches; lemmas strongly overlapping, broad and rounded at the tip, (2-2.5 mm long, 1 mm wide)

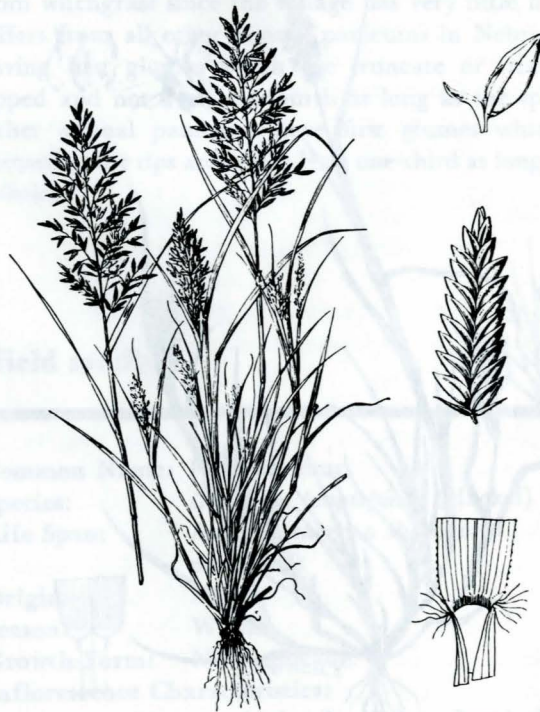
awns: none

glumes: unequal, membranous, egg-shaped, narrow and may be pointed, (first glume 1-2.5 mm long, second glume slightly longer)

other: with glandular, pit-like depressions (appearing warty) on the branches of the inflorescence, and on the keels of lemmas

Vegetative Characteristics:

culm: much branched at the base, tufted (10-60 cm tall) usually with a ring of hairs and glands at the nodes



Stinkgrass

- sheath:** overlapping, with hairs (1-3 mm long) at the throat, with glandular pits on the keel
- blade:** flat (10-20 cm long, 2.5-7 mm wide); glandular on margins and backside; conspicuous nerves, rarely hairy
- ligule:** fringe of short, dense hairs
- rhizomes:** none

Where Found:

Stinkgrass was accidentally introduced from Europe and is a common weed throughout Nebraska in waste places, fields, roadsides, and badly abused ranges and pastures. It grows on most soils.

Uses and Values:

This warm-season, weedy invader is worthless for forage. When crushed it has a disagreeable odor which may contribute to it being unpalatable. Since it is unable to compete with native forage grasses, it is found on ranges only where the native cover has been removed or damaged. Abundant stands often follow plowing and may reduce soil moisture otherwise available to young grass seedlings. Providing a cover crop on land to be seeded to grass helps control weedy grasses such as stinkgrass.



COOL-SEASON PERENNIAL GRASSES

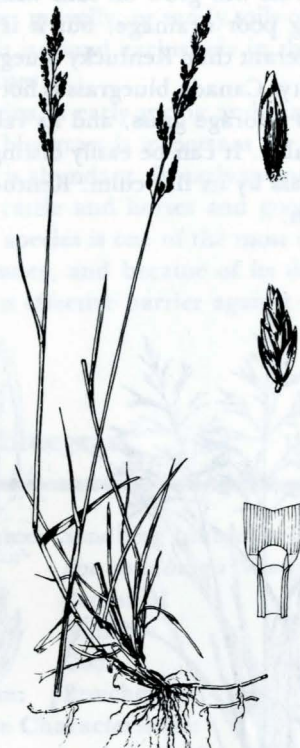


Canada bluegrass

- Common Name:** Canada bluegrass
- Species:** *Poa compressa* L.
- Life Span:** Perennial
- Origin:** Introduced
- Season:** Cool
- Growth Form:** Sod-forming grass

Inflorescence Characteristics:

- type:** narrow panicle (3-10 cm long), panicle branches usually short and stay lying close together
- spikelets:** 3- to 6-flowered (4-6 mm long) crowded, may have few cobwebby hairs at the base of lemma
- awns:** none
- glumes:** broad, usually strongly keeled, slightly unequal in length (1.5-3 mm), second glume broader



Canada bluegrass

Vegetative Characteristics:

- culm:** wiry, solitary or few together (20-60 cm tall), flat; base growing along the ground; bluish-green
- sheath:** strongly compressed and sharply keeled, split with hyaline margins; hairless
- blade:** folded or flat (2-15 cm long and 1-4 mm wide), boat-shaped tip
- ligule:** membranous (1-2 mm long), rounded
- rhizomes:** slender, creeping rhizomes

Where Found:

This grass is a native of eastern Europe, and was introduced to North America in the late 1700's. It is widely distributed in Nebraska and has become naturalized on native hay meadows, bottomland pastures, sparse timber, waste areas, and roadsides. It is also commonly found in lawns. It requires more moisture for successful growth than occurs on upland sites of central and western Nebraska.

Uses and Values:

Canada bluegrass is a cool-season grass which grows rapidly early in the spring. It is very palatable and nutritious in the spring and fall. Since it matures later than Kentucky bluegrass, a grass with which it commonly grows intermixed, Canada bluegrass remains rather palatable through the summer. It is resistant to grazing and trampling but recovers slowly after grazing.

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Canada bluegrass will grow on soils with low fertility and those having poor drainage, but it is only slightly more drought tolerant than Kentucky bluegrass. Because of low productivity, Canada bluegrass is not recommended for seeding as a forage grass, and its value as a lawn grass is questionable. It can be easily distinguished from Kentucky bluegrass by its flat culm. Kentucky bluegrass has a round culm.



Kentucky bluegrass

Kentucky bluegrass

Common Name: Kentucky bluegrass

Species: *Poa pratensis* L.

Life Span: Perennial

Origin: Introduced

Season: Cool

Growth Form: Sod-forming grass

Inflorescence Characteristics:

type: panicle (3-13 cm long and 3-8 cm wide), pyramid-shaped, open; with long branches, branches at base in clusters of 3-5

spikelets: 3- to 6-flowered (3-6 mm long), flattened, nearly as wide as long; lemmas with a tuft of long, silky hairs at the base

awns: none

glumes: nearly equal (2-3.5 mm long), strongly keeled very small barbs on margin

Vegetative Characteristics:

culm: slender (0.2-1 m tall), wiry, tufted, curving upward from the base, round

sheath: smooth to slightly rough, keeled, distinctly veined, closed about 1/2 of the length, flattened

blade: folded or flat (5-40 cm long and 1-5 mm wide), soft and smooth or nearly so, ending in a boat-shaped tip

ligule: membranous (1-2 mm long), blunt

rhizomes: numerous, creeping rhizomes

Where Found:

Kentucky bluegrass is reported to have been introduced from Europe as a pasture grass before 1700. Its spread was so rapid, and its naturalization was so complete, that it commonly preceded settlers into new areas. Thus, its classification as an introduced rather than a native grass is a mere technicality. It is found in Nebraska on most range sites but is abundant only on those sites that have favorable soil moisture conditions such as subirrigated and overflow sites and in eastern Nebraska on upland sites. It is a major problem on subirrigated meadows and eastern Nebraska pastures, replacing the more productive and desirable grasses.

Uses and Values:

This cool-season grass is often the earliest growing grass in the lowlands. It goes into semi-dormancy in the summer, but is revived by late summer and fall rains. Seedstalks begin appearing in early May. When green and growing, Kentucky bluegrass is highly palatable and nutritious to all classes of livestock. Few grasses are able to withstand continued heavy grazing as well as this grass. For this reason it increases rapidly on overgrazed pastures and meadows. Ample ground mulch and competition from the taller grasses will discourage Kentucky bluegrass. Controlled use of fire at the proper time has been used as a means of reducing Kentucky bluegrass when it is growing in tall prairie grass environments.

Summer dormancy and low herbage yield greatly limit the desirability of this grass. It is very sensitive to heat and to summer drought. Kentucky bluegrass is undesirable as a hay grass because of its low growth form, poor yield, and maturity before other grasses are ready to cut. Kentucky bluegrass is the principal lawn grass in Nebraska.

Mutton bluegrass

Common Name: Mutton bluegrass

Species: *Poa fendleriana* (Steud.) Vasey

Life Span: Perennial

Origin: Native

Season: Cool

Growth Form: Bunchgrass



Inflorescence Characteristics:

type: panicle (2-10 cm long), narrow, densely flowered, 2-3 branches per node, branches erect or erect-spreading

spikelets: 3- to 8-flowered (6-10 mm long), flat, usually twice as long as wide; florets papery; lemma marginal nerves hairy

awns: none

glumes: broad, thin, unequal, usually 1/2 to 2/3 as long as the lowest floret, strongly keeled

Vegetative Characteristics:

culm: upright (15-80 cm tall), tufted, rough below inflorescence, curving upward from the base

sheath: short, margins transparent, sheath bases white and expanded

blade: stiff, folded or involute (10-20 cm long and 1-4 mm wide), leaves short basal, rough, bluish-green color, often remaining green

ligule: membranous (less than 1-3 mm long) round or blunt

rhizomes: rarely has slender rhizomes and generally has the appearance of a bunchgrass



Mutton bluegrass

Where Found:

Mutton bluegrass grows most commonly on drier, less fertile, shallow, gravelly, or sandy soils on open hillsides. In Nebraska it is found exclusively in the Panhandle.

Uses and Values:

Growth begins in early spring and matures by June or July. Mutton bluegrass is important for early grazing in areas where it is abundant. In early spring, forage value is excellent for cattle and horses and good for sheep and wildlife. This species is one of the most drought tolerant of the bluegrasses, and because of its deep fibrous root system, it is an effective barrier against erosion.



Sandberg bluegrass

Common Name: Sandberg bluegrass

Species: *Poa sandbergii* Vasey

Life Span: Perennial

Origin: Native

Season: Cool

Growth Form: Bunchgrass

Inflorescence Characteristics:

type: panicle (2-10 cm long), narrow, 2 to 3 branches per node; branches unequal in length, yellowish, lateral branches lying against center branch

spikelets: 2- to 5-flowered (4-6 mm long), round and slender, longer than wide; short hairs on the back, low portion of lemma rounded on back, purple

awns: none

glumes: unequal, papery, second glume (3-4 mm long) is shorter than lemma of lowermost floret

Vegetative Characteristics:

culm: upright and straight (10-45 cm tall), tufted, without hairs, nodes occasionally red

sheath: hairless, veins prominent; compressed with overlapping transparent margins

blade: basal, short (3-16 cm long and 1-3 mm wide); flat, folded or in-rolled; without hairs, double midrib, margin slightly barbed

ligule: membranous (2-4 mm long), sharp-pointed

rhizomes: none

Where Found:

This grass is native to western Nebraska, where it is found on upland range sites of medium and heavy textured soils. It is particularly abundant on infertile shallow, dry, rocky soils of slopes and ridgetops. Under heavy grazing it may become prominent on upland silty and clayey sites.

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Sandberg bluegrass

Uses and Values:

Sandberg bluegrass is a cool-season grass which begins growth very early in the spring, usually before needleand-thread and western wheatgrass. It furnishes considerable forage by mid-April. Sandberg bluegrass is palatable to livestock when green and growing, but nutritive content drops sharply as it matures. Seed is produced by mid-June, and maturity is reached by early July. It is largely ignored by livestock after about mid-June, unless soil moisture is sufficient for late summer and fall regrowth.

The volume of forage produced by this plant is low even when plants are abundant. It is quite drought tolerant because of its abundant, shallow roots and ability to grow and mature early while moisture supplies are still adequate. It acts typically as an increaser and replaces the more desirable perennial grasses under heavy grazing. It is not recommended for range seeding.

Note: Canby bluegrass [*Poa canbyi* (Scribn.) Piper] is a native grass resembling Sandberg bluegrass in general growth form and morphology. Both species may be part of the same species complex since Canby bluegrass reportedly differs only in having taller seedstalks and being generally more robust. Since distribution and forage characteristics are similar, precise differentiation is unnecessary.

Note: Another native perennial bluegrass is Plains bluegrass (*Poa arida* Vasey). It also resembles Sandberg bluegrass in having a narrow panicle and no cobwebby

hairs at base of lemma. Plains bluegrass can be distinguished by the presence of rhizomes. Like other bluegrasses, it is a cool-season plant. Plains bluegrass reportedly occurs throughout most of Nebraska but seldom is sufficiently abundant to produce much forage.



Bluejoint reedgrass

- Common Name:** Bluejoint reedgrass
Species: *Calamagrostis canadensis* (Michx.) Beauv.
Life Span: Perennial
Origin: Native
Season: Cool
Growth Form: Sod-forming grass
Inflorescence Characteristics:
type: nodding panicle (10-25 cm long) dense to open
spikelets: 1-flowered (3-4 mm long); lemma may have teeth at the tip, long hairs from the base of seed
awns: lemma awned from the middle of the back of the lemma with a fine awn (1-2 mm long)
glumes: equal, (3-4 mm long), sharp-pointed, rough with minute teeth especially on the keel
other: purplish, sometimes greenish or straw-colored



Bluejoint reedgrass

Vegetative Characteristics:

- culm:* tufted (0.6-1.5 m tall)
- sheath:* smooth, fine hairs may be present
- blade:* (15-40 cm long, 4-8 mm wide), numerous; lax or drooping
- ligule:* membranous (3-8 mm) rounded and slightly toothed or split
- rhizomes:* creeping rhizomes

Where Found:

This native grass is locally common in Nebraska. It grows on wet soils but not on upland sites. It is found on marshy lands, wet meadows, along streams, and in moist, shaded draws.

Uses and Values:

Forage value of this cool-season grass is fair to good in the spring for cattle and horses. Best grazing use is made when plant growth is young and succulent since palatability drops in the summer. However, wet meadows where bluejoint reedgrass commonly grows normally cannot be grazed in the spring because of high water tables and muddy soil conditions. Excessive trampling under these conditions is undesirable.

Since bluejoint reedgrass is common only on wetland range sites, its major use is for hay. It makes good quality hay when it can be cut before advanced stages of maturity. Bluejoint reedgrass often occurs in dense patches which are high yielding. This grass is not commonly included in seeding programs on wet meadows because of inadequate seed supplies.

Note: Northern reedgrass (*Calamagrostis inexpansa* A. Gray) and narrow reedgrass [*Calamagrostis neglecta* (Ehrh.) Gartn.], also called ponygrass, are two closely related reedgrass species which occur in Nebraska. Both resemble bluejoint reedgrass, but have more compact and erect panicles, shorter stature, and have narrower and more erect leaf blades. Both are similar in forage value, growth habits, and distribution to bluejoint reedgrass but are less common in the state.



Meadow brome

Common Name: Meadow brome

Species: *Bromus biebersteinii* Roem. & Schult.

Life Span: Perennial

Origin: Introduced

Season: Cool

Growth Form: Bunchgrass

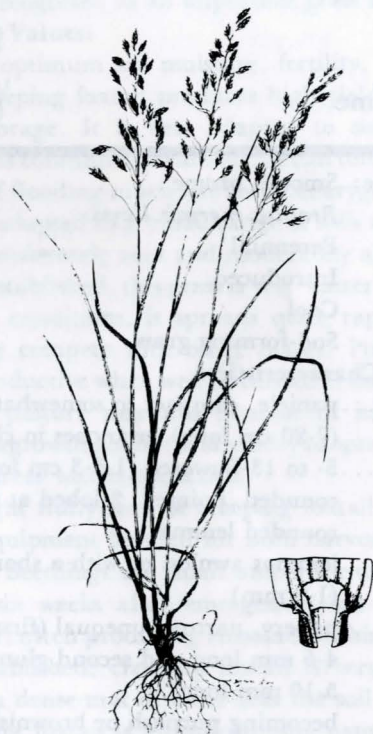
Inflorescence Characteristics:

- type:* open panicle (7-20 cm long), branches in clusters at base, inflorescence is high above foliage
- spikelets:* 5- to 13-flowered (1.5-3 cm long), rounded to flattened, pointed; lemma rounded, slightly toothed at the tip, with an awn rising from between the teeth

- awns:* lemma awned (5-10 mm long), glumes awn-tipped to short awned
- glumes:* unequal (5-15 mm long); midnerve prominent, with tiny barbs and extending into short awn

Vegetative Characteristics:

- culm:* numerous, upright (0.5-1 m tall)
- sheath:* closed, very pubescent when young, with transparent margins
- blade:* flat, lax (15-40 cm long and 4-15 mm wide), upper surface pubescent
- ligule:* membranous, (less than 1-2 mm long)
- rhizomes:* none



Meadow brome

Where Found:

Meadow brome was introduced from Europe, but was not frequently seeded in the United States until the cultivar 'Regar' was released by the Idaho Experiment Station and the USDA in 1966. In Nebraska this species is a component of irrigated mixtures or planted in areas where smooth brome is well adapted. Under dryland conditions, this would include only the eastern half of the state.

Uses and Values:

Meadow brome has many of the good qualities of both smooth brome and orchardgrass. It is adapted to the same environments as smooth brome both under irrigation and dryland conditions, but it is more winter hardy than orchardgrass. Meadow brome provides a good sea-

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sonal distribution of forage much like that of orchard-grass. This makes it a valuable component of irrigated pasture mixtures. Spring growth is among the earliest of the cool-season grasses common to Nebraska. It is a compatible grass with alfalfa, not being as aggressive as smooth brome in competing with alfalfa. Forage quality is excellent both for grazing and when cut as hay.

Meadow brome has excellent seedling vigor and stands are easy to establish. It is winter hardy and long-lived. Since it is a recent introduction, it may become a more important grass in Nebraska as time passes and more emphasis is placed on special use grasses in forage systems.



Smooth brome

Common Name: Smooth brome
Species: *Bromus inermis* Leyss.
Life Span: Perennial
Origin: Introduced
Season: Cool
Growth Form: Sod-forming grass

Inflorescence Characteristics:

type: panicle, compact to somewhat open (7-20 cm long), branches in clusters
spikelets: 5- to 13-flowered (1.5-3 cm long), rounded, pointed, 2-lobed at tip of rounded lemma

awns: lemmas awnless or with a short awn (1-2 mm)

glumes: papery, narrow, unequal (first glume 4-6 mm long and second glume 5-10 mm long)

other: becoming purplish or brownish

Vegetative Characteristics:

culm: upright (0.5-1 m tall)

sheath: closed, smooth to slightly rough, may have long hairs, prominently veined

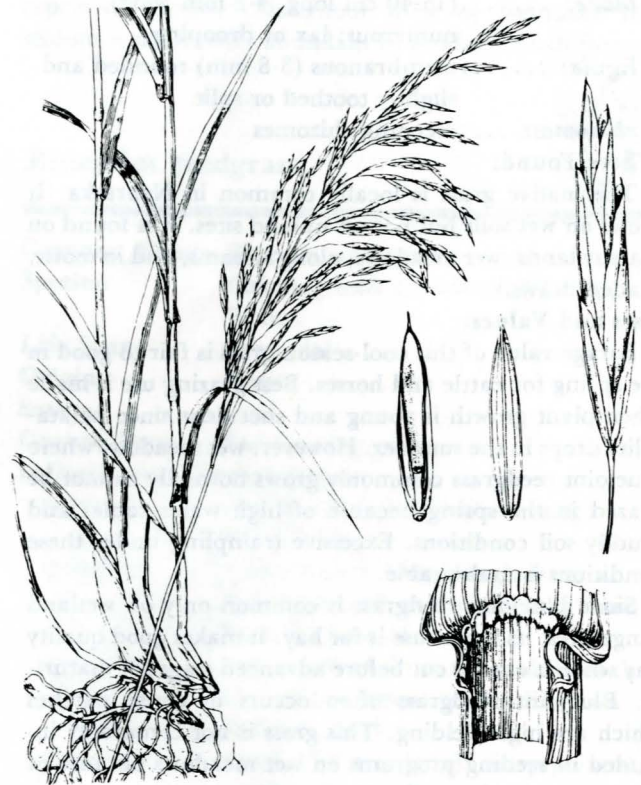
blade: mainly basal, flat (15-40 cm long and 4-15 mm wide), folded below, occasionally with hairs; margins with tiny barbs; with a conspicuous "W" on upper portion

ligule: membranous (less than 2.5 mm long), may be notched or with a tiny fringe

rhizomes: creeping rhizomes present

Where Found:

Smooth brome was introduced from eastern Europe in 1884. It is seeded as a cultivated pasture grass in Nebraska. This brome is common throughout the eastern part of the state, along roadsides and ditches, and under irrigation in western Nebraska.



Smooth brome

Uses and Values:

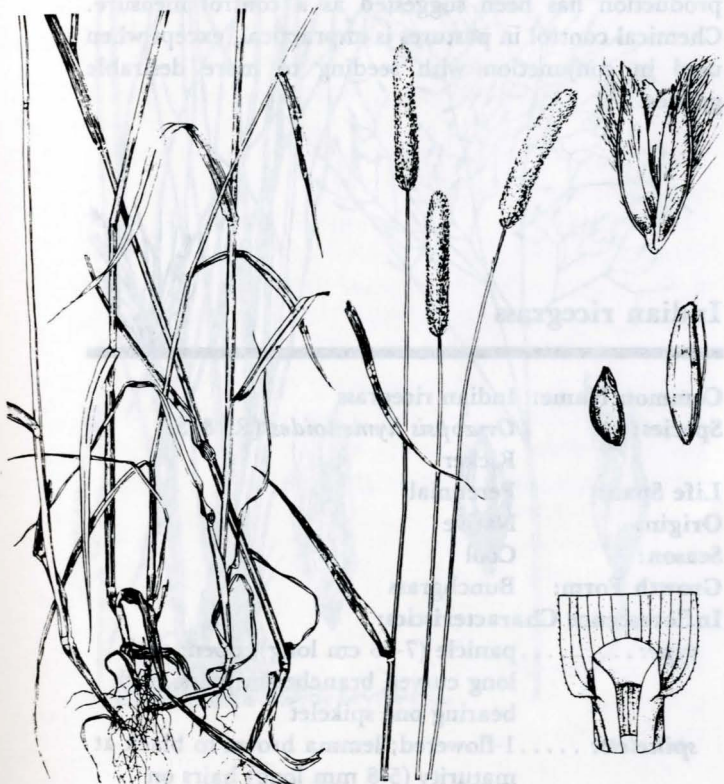
Smooth brome is a cool-season grass which produces abundant herbage in the spring and late summer for hay or pasture. Growth is normally sufficient to allow grazing by late April or early May. It is quite palatable for all classes of livestock. When mature, palatability and forage quality drop sharply.

Smooth brome is widely adapted for seeding in eastern and central Nebraska on clayey, silty, overflow, and subirrigated sites. It is adapted to sandy sites only when regularly fertilized with nitrogen. In western Nebraska its use is limited to the more favorable sites such as subirrigated and overflow sites. Under irrigation smooth brome is commonly seeded with other grasses and/or alfalfa. Because it does not withstand prolonged drought, it is not seeded on dry upland sites in western Nebraska. When seeded on adapted sites, smooth brome is tolerant to cold temperatures. Late summer seeding for establishment is preferred. Nitrogen fertilization is usually required to maintain high yield even when seeded with a legume. Smooth brome responds to intensive management practices such as irrigation, fertilization, and rotation grazing. Such practices reduce but do not prevent the normal summer slump in forage production. Heavy grazing is particularly damaging in very early spring and in the fall before growth stops.

Creeping foxtail



- Common Name:** Creeping foxtail
Species: *Alopecurus arundinaceus* Poir.
Life Span: Perennial
Origin: Introduced
Season: Cool
Growth Form: Sod-forming grass
Inflorescence Characteristics:
type: spike-like, cylindric (5-10 cm long)
spikelets: 1-flowered, oblong to long and narrow; may be densely hairy
awns: lemma may have a short awn
glumes: nearly equal, keeled, strong midnerve, densely hairy especially toward top
Vegetative Characteristics:
culm: straight, upright, stout (0.9-1.2 m tall)
sheath: split, margins overlapping, finely hairy, purple-tinged at base, collar broad and divided and sometimes strongly angled away from culm
blade: flat (5-10 cm long and 6-12 mm wide)
ligule: membranous (1.5-4 mm long), rounded or pointed
rhizomes: dense, vigorous rhizomes



Creeping foxtail

Where Found:

Creeping foxtail is native to Eurasia. The precise date of introduction into the United States is unknown, but residents of North Dakota indicate it may have arrived in the early 1900's. In its native habitat, it grows on wet, salty soil and flood plains along rivers and streams. Because of its adaptation to wet sites, cold environments, and tolerance to salty or alkaline soil conditions, it has been found to be a very good species for introduction into similar sites and areas in the United States. The most common variety is 'Garrison', leading to the commonly used name of Garrison creeping foxtail. Areas that frequently flood and subirrigated sites in the Sandhills are sites where this grass grows well. It is not commonly found throughout these areas because it has only recently become recognized as an important grass for Nebraska.

Uses and Values:

Under optimum soil moisture, fertility, and management, creeping foxtail produces high yields of excellent quality forage. It is best adapted to sites where soil moisture is continually available. It can tolerate extensive periods of flooding much like reed canarygrass. Creeping foxtail is adapted to a broad range of soils and is tolerant of both moderately acid and moderately alkaline soils.

Once established, this grass is very winter hardy. Under optimum conditions, it spreads quite rapidly and can vigorously compete with other plants. Pure stands are highly productive when well fertilized. It has been used in irrigated pasture mixtures because of its high forage quality, regrowth ability, and ability to spread rapidly into open areas within the stand.

The light fluffy seed of creeping foxtail requires that special equipment be used for both harvesting seed and planting. Seedlings are small and weak during the first four to six weeks after emergence, but grow rapidly thereafter, often producing rhizomes within two months. Once established, creeping foxtail is very competitive, forming a dense mat of roots near the soil surface.

Creeping foxtail is an unfortunate name in that it is often confused with several other common weedy species, especially foxtail barley (*Hordeum jubatum* L.). Both species are adapted to similar environments, but are totally different in appearance, yield, forage quality, and economic value. The annual weedy foxtails (*Setaria* spp.) should not be confused with this desirable forage grass.

Foxtail barley



- Common Name:** Foxtail barley
Species: *Hordeum jubatum* L.
Life Span: Perennial
Origin: Native
Season: Cool
Growth Form: Bunchgrass

(Continued)

(Continued)

Inflorescence Characteristics:

- type:** nodding spike (4-10 cm long, 4-6 cm wide, including awns); often purple, turning pale with age
- spikelets:** 1-flowered; 3 spikelets per node, 1 fertile (central), and 2 sterile (outer) on pedicels; the central floret narrow (6-8 mm long)
- awns:** lemma and glumes awned (1-6 cm long)
- glumes:** outer glumes of side spikelets narrow and bristle-like, glumes of center spikelet and inner glumes of side spikelets wider and flattening at the base; fringed with tiny, stiff hairs on margins
- other:** inflorescence breaks apart at maturity, may be enclosed in upper leaf sheath

Vegetative Characteristics:

- culm:** slender, tufted (20-70 cm tall)
- sheath:** shorter than the internodes, loose, round, without hairs
- blade:** flat (5-15 cm long and 2-5 mm wide), tapering to a fine point
- ligule:** membranous (up to 1 mm long), blunt, fringed with fine hairs
- auricle:** very short
- rhizomes:** none

Where Found:

This undesirable native grass occurs throughout Nebraska. It is particularly abundant on saline subirrigated sites but is also common on subirrigated, overflow, and wetland sites and in waste places, ditches, and along streams. On upland silty and clayey sites in western Nebraska, it occurs only in areas of extra water accumulation such as seeps and stockwater developments. It sometimes is a serious weed in warm-season pastures on uplands in eastern Nebraska. It is highly salt tolerant on wet soils and may assume complete dominance when other species are depleted.

Uses and Values:

This cool-season grass is usually rated as poor forage for both cattle and sheep but occasionally is lightly grazed by cattle before seedhead development. Seedheads are not only unpalatable but are mechanically injurious to livestock when grazed or eaten as a contaminant in hay. The awns frequently cause sores in the mouth and around the nose and eyes and contaminate sheep fleeces. Foxtail barley greatly lowers hay quality.

An abundance of foxtail in either native or cultivated meadows indicates improper management. Dense stands are usually associated with disturbance by overgrazing, close mowing, or repeated burning. Since foxtail barley is



Foxtail barley

a short-lived perennial and new seedlings come primarily from the current year's seed crop, mowing to prevent seed production has been suggested as a control measure. Chemical control in pastures is impractical, except when used in conjunction with seeding to more desirable grasses.



Indian ricegrass

Common Name: Indian ricegrass

Species: *Oryzopsis hymenoides* (R. & S.)
Ricker

Life Span: Perennial

Origin: Native

Season: Cool

Growth Form: Bunchgrass

Inflorescence Characteristics:

type: panicle (7-25 cm long), open; with long curved branches in pairs, each bearing one spikelet

spikelets: 1-flowered; lemma brown to black at maturity (5-8 mm long) hairs on lemma (2-4 mm long)

- awns:** lemma awned (3-6 mm), stout, straight, falling early
- glumes:** unequal (5-8 mm long), broad, thin, may be slightly hairy

Vegetative Characteristics:

- culm:** rigid, upright (30-70 cm tall), densely tufted bunchgrass
- sheath:** smooth or slightly rough, rounded on the back, shorter than the internodes, overlapping below; fringed with hairs on collar and on one margin
- blade:** long (5-30 cm long and 1-2 mm wide), slender and tightly rolled; midrib prominent below
- ligule:** membranous (3-7 mm long), pointed, may be deeply notched or split
- rhizomes:** none

Where Found:

This native grass is found in the Sandhills and on dry hills and canyons in western Nebraska. It is most common on choppy sands, sands, and sandy range sites but also occurs on silty, limy upland, thin loess, and shallow range sites in western and northern Nebraska. It is also found on moderately salty but rather well-drained soils.

Uses and Values:

This cool-season grass produces abundant foliage during spring and early summer when it is readily eaten. It

has good forage value for sheep, cattle, and horses. It provides excellent winter grazing since it cures well and the lower stems remain somewhat green and succulent through the winter.

Heavy early spring grazing sharply reduces the vigor of Indian ricegrass and decreases the stand. It is more tolerant of grazing after about June 1 and responds well to spring deferment. When grazed in late summer or winter, it may act as an increaser. The old stubble gives some protection against close grazing. Where Indian ricegrass plants are locally abundant in western Nebraska, they add materially to the forage production.

Indian ricegrass is very drought resistant, somewhat tolerant of alkali, and adapted to soils of low fertility. Natural seed dormancy has restricted its use for range seeding, and commercial seed is seldom available.



Green needlegrass

- Common Name:** Green needlegrass
- Species:** *Stipa viridula* Trin.
- Life Span:** Perennial
- Origin:** Native
- Season:** Cool
- Growth Form:** Bunchgrass

Inflorescence Characteristics:

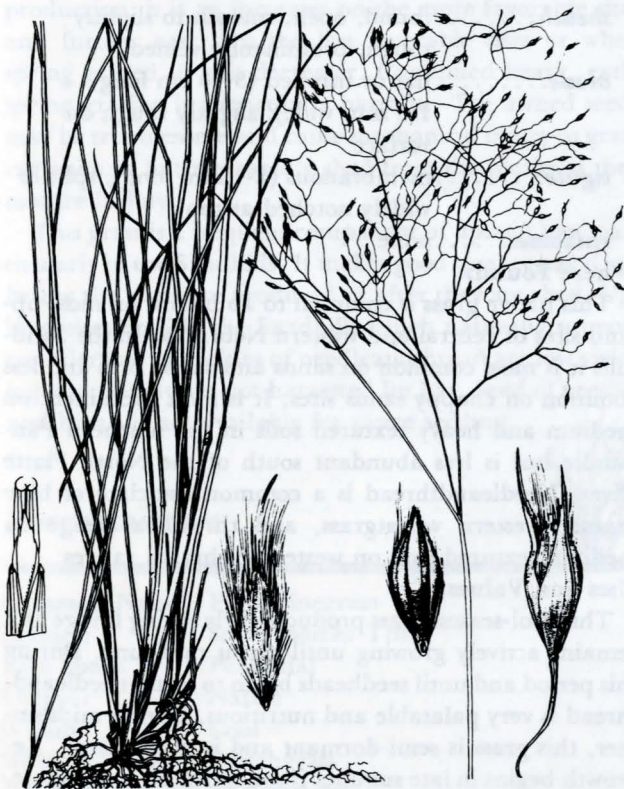
- type:** narrow panicle (10-20 cm long); branches in pairs
- spikelets:** 1-flowered, narrow, lemma (5-6 mm long) plump and brownish at maturity
- awns:** awned from lemma (2-3 mm long), awn twice-bent, spirally twisted below bend
- glumes:** slightly unequal, (7-10 mm long); narrow, with transparent pointed tip
- other:** greenish to tan at maturity

Vegetative Characteristics

- culm:** rising from a leafy base (0.6-1 m tall)
- sheath:** prominently veined, overlapping, outer one may have long hairs; collar is hairy, especially on margins
- blade:** (10-30 cm long, 3-5 mm wide) rolled when dry, rough on upper surface
- ligule:** firm, (4-5 mm long) collar-shaped
- rhizomes:** none

Where Found:

This native grass is most common in the Panhandle. It is not common in the Sandhills and south of the North Platte River. Green needlegrass often becomes locally abundant on clayey range sites and on overflow sites in western Nebraska, but otherwise it occurs as scattered plants. It commonly is a codominant with western wheatgrass.



Indian ricegrass

(Continued)



Green needlegrass

Uses and Values:

This cool-season grass starts growth early in the spring, remains green through the summer except in drought years, and usually makes regrowth in the fall. Forage value is good, and plants are grazed throughout the year. Green needlegrass is a decreaser and responds well to spring deferment. Awns are not troublesome as in other needlegrasses. On favorable sites, it may furnish a considerable quantity of good quality hay.

Because of its early spring growth, long green period, high cold tolerance, and good seedling vigor, green needlegrass is sometimes included as a cool-season component in native grass plantings on upland range. However, results have been variable and often less than satisfactory. In general, western wheatgrass has been more successful than green needlegrass in native grass seedings in central and western Nebraska. The major difficulty in establishing field stands of green needlegrass has been high seed dormancy, particularly in new seed.

Needleandthread

- Common Name:** Needleandthread
- Species:** *Stipa comata* Trin. & Rupr.
- Life Span:** Perennial
- Origin:** Native
- Season:** Cool
- Growth Form:** Bunchgrass
- Inflorescence Characteristics:**

- type:* panicle (10-20 cm long), narrow, loose; slender, rough branches with a few spikelets at the ends
- spikelets:* 1-flowered (lemma 1-1.5 cm long), pale to brown at maturity, base of spikelet covered with stiff hairs
- awns:* lemma awned (10-20 cm long), flexuous, twisted and with short hairs on lower half, terminal segment smooth to slightly rough
- glumes:* slightly unequal (1.5-3.5 cm long), narrowing to slender tips
- other:* lower part of inflorescence enclosed in a loose, inflated sheath

Vegetative Characteristics:

- culm:* straight (0.3-1.2 m tall), densely tufted; nodes sometimes with hairs, otherwise culm is without hairs
- sheath:* round, open, smooth to slightly rough, prominently veined
- blade:* flat or inrolled (5-40 cm long, 1-3 mm wide), slightly rough on surface
- ligule:* membranous (2-4 mm long), split or widely notched at top
- rhizomes:* none

Where Found:

This native grass is common to abundant on most upland sites of central and western Nebraska. In the Sandhills it is most common on sands and sandy sites and less common on choppy sands sites. It is most prominent on medium and heavy textured soils in the northern Panhandle but is less abundant south of the North Platte River. Needleandthread is a common associate of blue grama, western wheatgrass, and threadleaf sedge on medium textured soils on western Nebraska ranges.

Uses and Values:

This cool-season grass produces early spring forage and remains actively growing until about mid-June. During this period and until seedheads begin to form, needleandthread is very palatable and nutritious. During midsummer, this grass is semi-dormant and is grazed little. Regrowth begins in late summer if soil moisture is adequate, and it is again preferred by livestock. It cures well and is readily eaten during the winter even when dry and dormant.



Needleandthread

Needleandthread is an important range grass because of its widespread distribution and abundance in the range area of Nebraska. Because of its cold resistance, fair tolerance of drought and grazing, and ample seed production, it is an increaser on the more favorable sites and further east. On the less favorable sites or when spring grazed, it is a decreaser. Continued heavy, early spring grazing is particularly harmful. The awned seeds may be troublesome and cause mechanical injury to grazing animals but are rapidly shed from the plants as they mature in July.

This grass is a frequent component of upland hay, particularly in the Sandhills. It makes good quality hay if cut before the awns are produced or after they are shed. Upland sites outside the Sandhills which naturally support considerable quantities of needleandthread are low yielding and usually are not harvested for hay. Seed of needleandthread is not available for range seeding.



Porcupinegrass

Common Name: Porcupinegrass
Species: *Stipa spartea* Trin.
Life Span: Perennial
Origin: Native
Season: Cool
Growth Form: Bunchgrass

Inflorescence Characteristics:
type: lax, nodding panicle (10-30 cm long); branches few, slender, each with 1 or 2 spikelets

spikelets: 1-flowered, narrow, lemmas brown, narrow, rigid (1.5-2.5 cm long), with long hairs, awned (lemma nearly twice as long as needleandthread)
awns: twice-bent (12-20 cm long), spirally twisted on lower segment, top segment is straight and not twisted as in needleandthread
glumes: tapering to point, unequal (3-4 cm long)
Vegetative Characteristics:
culm: tufted (0.5-1.2 m tall)
sheath: mostly overlapping, prominently veined
blade: prominently veined (5-40 cm long, 3-5 mm wide), rolled when dry; rough on upper surface and margins; may have short stiff hairs on upper surface, smooth and shiny below
ligule: membranous, rather firm (4-5 mm long), blunt, often split
rhizomes: none



Porcupinegrass

Where Found:

This native grass is found primarily in northern and eastern Nebraska. It is less drought tolerant than needleandthread and is uncommon in southwestern and western Nebraska. On silty and clayey sites, it grows on hills, ridges, at heads of draws, and on lower slopes in association with little bluestem, prairie junegrass, and sideoats grama. It is also scattered on Sandhill uplands. Its range overlaps that of needleandthread in the Sandhills and on clayey sites along the northern boundary of Nebraska.

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Uses and Values:

Season of growth, palatability, and management are similar to needleandthread. This cool-season grass makes rapid growth in the spring and is best used for spring and fall grazing. Forage is somewhat coarser than needleandthread. Grazing response is largely determined by season of use. It normally is an increaser under summer grazing but a decreaser when grazed in fall, winter, or spring. Continuous, heavy spring grazing is very damaging to both porcupinegrass and needleandthread.

The awned seeds are very coarse and often cause serious mechanical injury to livestock. Porcupinegrass is largely avoided from the time seedheads emerge until the seeds are shed, but fall regrowth is readily grazed. Since it grows in scattered stands, herbage yield is rather low. When cut for hay, it is of good quality, but harvesting must be done early or be postponed until after the seeds are shed. It is not recommended for range seeding, and seed supplies are usually not available.



Orchardgrass

Common Name: Orchardgrass

Species: *Dactylis glomerata* L.

Life Span: Perennial

Origin: Introduced

Season: Cool

Growth Form: Bunchgrass

Inflorescence Characteristics:

type: panicle (3-20 cm long), wide; with spikelets grouped together in dense, one-sided clusters at the end of panicle branches; lower panicle branches long, upper very short

spikelets: 2- to 5-flowered (5-9 mm long), in compact tight clusters; lemmas keeled, the keel with tiny stiff hairs, margins transparent, short awned

awns: glumes and lemmas sharp-pointed to awn-tipped (up to 1 mm long)

glumes: unequal, keeled with hairs on the center nerve

Vegetative Characteristics:

culm: commonly in clumps (0.5-1.2 m tall), smooth

sheath: flattened, keeled, mostly closed, may be rough to touch

blade: long, folded, flat, or V-shaped, (10-40 cm long and up to 11 mm wide), smooth to rough on both surfaces, no hairs; midrib prominent and with tiny teeth

ligule: membranous (2-8 mm long), with split or jagged top

rhizomes: rarely with short rhizomes, but it has the appearance of a bunchgrass



Orchardgrass

Where Found:

Orchardgrass was introduced into the United States from Eurasia in the mid-1700's. Its distribution in central and western Nebraska is limited to irrigated pastures, subirrigated meadows, along ditch banks, and on moist soils. It may occur in pasture mixtures in eastern Nebraska.

Uses and Values:

Orchardgrass starts growth early in the spring, and new, immature growth is highly palatable to livestock. However, it grows and matures rapidly. As it matures, palatability and nutritive value decline. To keep orchardgrass green throughout the summer and to prevent large, unpalatable clumps from forming, it should be grazed or hayed while actively growing. Periodic grazing in a rotation pasture program is the most effective way of maintaining a continuous yield of palatable forage.

This grass is valuable as an irrigated or subirrigated hay or pasture grass. It is shade tolerant, moderately heat and cold resistant, and establishes a stand rapidly. It is sometimes injured if it starts to grow during a warm period in February and then is subjected to a period of extreme cold weather. It does not tolerate prolonged drought and is only slightly salt tolerant. Orchardgrass should be included in nonirrigated pasture mixes only in eastern Nebraska where soil moisture conditions are favorable. This grass produces best on fertile soils and responds well to nitrogen fertilization.

Orchardgrass recovers from grazing or mowing more rapidly than smooth brome and continues growth during midsummer when smooth brome becomes somewhat dormant. Its rapid recovery from defoliation and ability to grow in midsummer result in a more uniform yield for the season. This uniform yield makes it an excellent grass to seed with alfalfa.



Scribner panicum

Common Name: Scribner panicum
Species: *Dicanthelium oligosanthes* (Schult.)
 Gould var. *scribnerianum* (Nash)
 Gould

Life Span: Perennial

Origin: Native

Season: Cool

Growth Form: Bunchgrass

Inflorescence Characteristics:

type: open panicle (4-8 cm long), may be partially enclosed by upper leaf sheaths

spikelets: broad, oval-shaped (2.5-4 mm long, usually 1-2 mm wide); second and sterile lemma present, equal in length to the second glume

awns: none

glumes: first glume 1/3 as long as spikelet, second glume nearly as long as spikelet

Vegetative Characteristics:

culm: in loose, dense clumps (15-50 cm) may be with short soft hairs

sheath: longer than internodes, loose; usually hairy, not with more hairs than on the blades

blade: flat (5-10 cm long, 6-12 mm wide), hairless or slightly hairy above, may be rough and hairy beneath

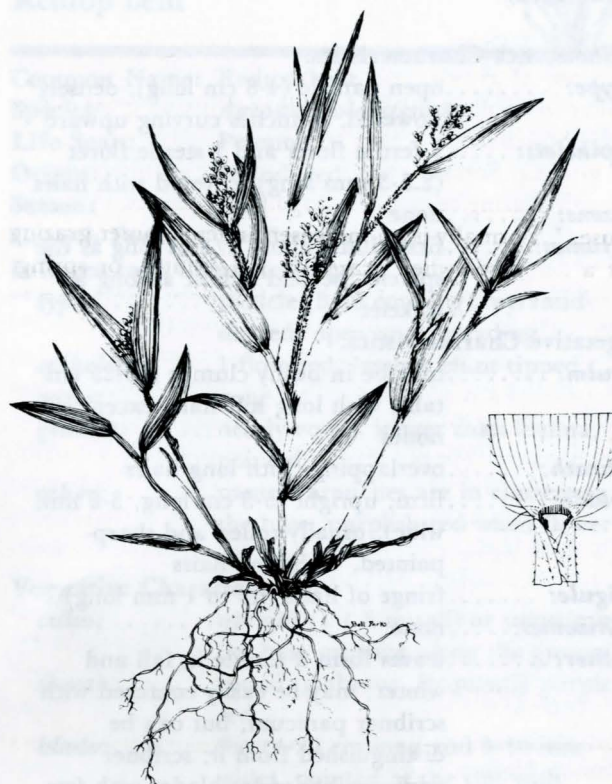
ligule: fringe of hairs (about 1 mm long)

rhizomes: none

other: forms a rosette in fall and winter; may be easily confused with wilcox panicum, but it can be distinguished from it; wilcox panicum has narrower blades with many long hairs on upper blades and sheaths

Where Found:

This native grass is widely distributed and common throughout Nebraska. It is found on all range sites except wetland. It grows between the bunches of taller grasses and does best where other vegetation is not too dense. It is a common component of "go-back" fields in the Sandhills and overgrazed sandy range sites.



Scribner panicum

Uses and Values:

This cool-season grass starts growth in the fall, remains dormant but somewhat green through the winter, grows rapidly in the spring, and starts heading in early June. Forage value is rated as fair. During the fall and spring, it is quite palatable and selected by grazing livestock. By late spring it begins to dry, and grazing shifts to other grasses.

Because of low growth, short period of good palatability, and ability to reseed rapidly, scribner panicum is able to increase under heavy grazing. This grass never yields a large volume of herbage, but has some value for providing range cattle with green forage in early spring.



Wilcox panicum

Common Name: Wilcox panicum
Species: *Dicanthelium oligosanthes* (Schult.)
 Gould var. *wilcoxianum* (Vasey)
 Gould and Clark

Life Span: Perennial

Origin: Native

Season: Cool

Growth Form: Bunchgrass

(Continued)

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Inflorescence Characteristics:

- type:** open panicle (4-8 cm long), densely flowered, branches curving upward
- spikelets:** 1 fertile floret and 1 sterile floret (2.5-3 mm long), covered with hairs
- awns:** none
- glumes:** first glume about 1/3 as long as the spikelet, second almost as long as spikelet

Vegetative Characteristics:

- culm:** may be in bushy clumps (10-25 cm tall), with long soft hairs except on nodes
- sheath:** overlapping, with long hairs
- blade:** firm, upright (5-8 cm long, 3-6 mm wide), usually rolled and sharp-pointed, with long hairs
- ligule:** fringe of hairs (up to 1 mm long)
- rhizomes:** none
- other:** leaves form a rosette in fall and winter; may be easily confused with scribner panicum, but can be distinguished from it; scribner panicum has wider blades with few to no hairs especially on upper surface



Wilcox panicum

Where Found:

Wilcox panicum is scattered throughout the state, but less common than scribner panicum. It is found on the prairies and plains but is most common on sands and choppy sands range sites.

Uses and Values:

Growth is similar to scribner panicum. Growth begins in the fall and remains dormant, but somewhat green through the winter. In the spring, greenup and growth is very rapid, producing seed by early to mid June. It begins to dry and is of little grazing value shortly after. Wilcox panicum never contributes much to the total production of a site but exists more as scattered plants of small stature.



Prairie junegrass

- Common Name:** Prairie junegrass
- Species:** *Koeleria pyramidata* (Lam.) Beauv.
- Life Span:** Perennial
- Origin:** Native
- Season:** Cool
- Growth Form:** Bunchgrass

Inflorescence Characteristics:

- type:** panicle (3-18 cm long and 1-3 cm wide), contracted and spike-like, often lobed toward the base
- spikelets:** 2- to 5-flowered; lemma narrow (4-6 mm long), tapering at both ends, sharp-pointed, shiny
- awns:** lemma may have a short awn from the tip
- glumes:** almost equal, unlike in shape; first 1-nerved, narrow; second 3-nerved and broader above the middle, shiny and translucent, shorter than first floret (3-4 mm long)

Vegetative Characteristics:

- culm:** upright, straight (20-60 cm tall), tufted, with a few fine hairs just below the inflorescence
- sheath:** distinctly veined, hairs pointing backward, collar with long hairs on the margin
- blade:** flat or rolled (3-15 cm long and 1-3 mm wide), veins distinct, blunt tip; may have hairs on the back
- ligule:** membranous (up to 1 mm long), blunt
- rhizomes:** none
- other:** leave mostly basal, grows in small bunches

Where Found:

This native grass is widely distributed on Nebraska uplands and occurs on all range sites except wetland. It grows on a wide variety of soil textures from clay to sand



Redtop bent

- Common Name:** Redtop bent
Species: *Agrostis stolonifera* L.
Life Span: Perennial
Origin: Introduced
Season: Cool
Growth Form: Sod-forming
Inflorescence Characteristics:
type: panicle (5-30 cm long), pyramid-shaped, open and spreading
spikelets: 1-flowered, lemma blunt-tipped
awns: none
glumes: nearly equal, longer than lemma, pointed
other: panicle branches are in clusters at the base, purplish-red when flowering
Vegetative Characteristics:
culm: upright (1-1.5 m tall) or sometimes the base growing along the ground
sheath: round, glabrous, frequently purple to red
blade: flat (4-20 cm long and 5-10 mm wide), pointed at the tip; with distinct veins above; margins finely barbed
ligule: membranous (3-5 mm long), round or bluntly pointed, may be split
rhizomes: creeping rhizomes produce a coarse, open turf



Prairie junegrass

but is less successful in competing with tall grasses in moist bottoms and draws. It is commonly associated with little bluestem, the needlegrasses, and blue grama but is less drought hardy than blue grama.

Uses and Values:

This cool-season grass grows early in the spring. It is quite palatable to all classes of livestock in the spring and again in the fall after curing. It is less palatable during seed production and until curing is completed. The seed-heads are usually ignored by grazing animals.

Although spring and fall are the best seasons of use, prairie junegrass sharply decreases if grazed each year in the spring. Prairie junegrass is a low forage producer since it occurs in scattered stands and has short, basal leaves, but it is a desirable grass. Prairie junegrass is seldom included in grass mixtures for range seeding. It produces satisfactory hay, but areas where prairie junegrass is common often have low yields.

Note: Prairie wedgescale [*Sphenopholis obtusata* (Michx.) Scribn.] somewhat resembles prairie junegrass in being a non-rhizomatous midgrass with narrow, rather dense panicles which are spike-like to somewhat open. However, it differs from prairie junegrass in having smooth leaves and dissimilar glumes (the first glume is narrow and the second broadened near the tip) which fall to the ground with the spikelet. Prairie wedgescale is a cool-season grass, has good forage value, and is a decreaser. It prefers moist soil and is most common on silty sites in eastern Nebraska and on subirrigated and overflow sites.



Redtop bent

(Continued)

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Where Found:

Redtop bent was introduced from Europe by early colonists as a pasture and hay grass. In Nebraska it has been seeded on wet, poorly drained soils where it is well adapted and spreads rapidly. Today, it is common on wet pastures and hay meadows in the Elkhorn, Platte, and Loup River valleys and in the Sandhills.

Uses and Values:

Redtop bent is adapted for seeding on wetland and subirrigated range sites. It produces well on low, poorly drained meadows subject to frequent flooding where few other grasses will persist. It will grow on very acid soil and poor, clayey soil of low fertility. It is moderately salt tolerant. Redtop bent can withstand considerable drought, heavy trampling and close grazing, and is cold resistant.

Redtop bent will grow on soils with a higher water table than timothy but is earlier maturing and less palatable than timothy. Redtop bent makes acceptable hay on wetland if cut in the early flowering stage, but it will quickly become stemmy and unpalatable if cutting is delayed. With periodic close grazing under a rotation grazing program, redtop bent can be made to produce palatable, green forage throughout the growing season.

On wet hay meadows with a reduced grass stand, interseeding redtop bent often greatly increases yields. However, where a good stand of native grasses is present, introduction of redtop bent will not always increase hay yield and may reduce quality unless cut at an equivalent growth stage.



Reed canarygrass

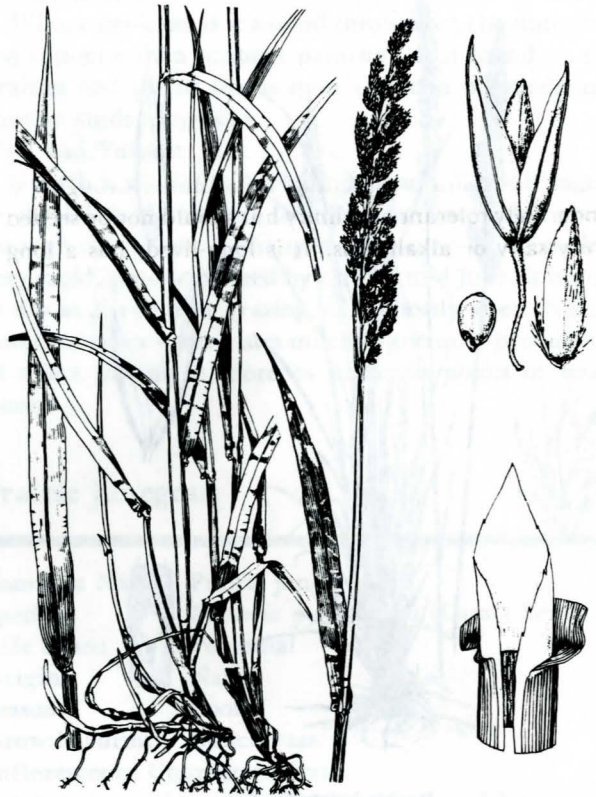
Common Name: Reed canarygrass
Species: *Phalaris arundinacea* L.
Life Span: Perennial
Origin: Native
Season: Cool
Growth Form: Sod-forming grass

Inflorescence Characteristics:

type: compact, narrow, sometimes interrupted panicle (7-18 cm long); spikelets in crowded clusters
spikelets: 3-flowered, the first 2 florets sterile and the third perfect (4-6 mm long); pale, may be hairy on nerve
awns: none
glumes: unequal (4-6 mm long), sharp-pointed, narrow; flattened with minute teeth on the edge
other: seeds are shiny, tan

Vegetative Characteristics:

culm: upright (0.5-1.5 m tall), coarse, hairless



Reed canarygrass

sheath: longer than the internodes or the upper shorter, usually smooth
blade: flat (10-25 cm long, 6-16 mm wide) or slightly keeled, with a prominent midrib below
ligule: thin (2-6 mm long), rounded, may be split
rhizomes: large creeping rhizomes enable the plant to grow in large bunches or a continuous sod

Where Found:

This grass is native to parts of Nebraska but is believed to be more widely distributed now than formerly, due to seeding in wet subirrigated and overflow sites. It prefers moist, cool sites and is found throughout the state on wet meadows and river banks and along drainage ditches.

Uses and Values:

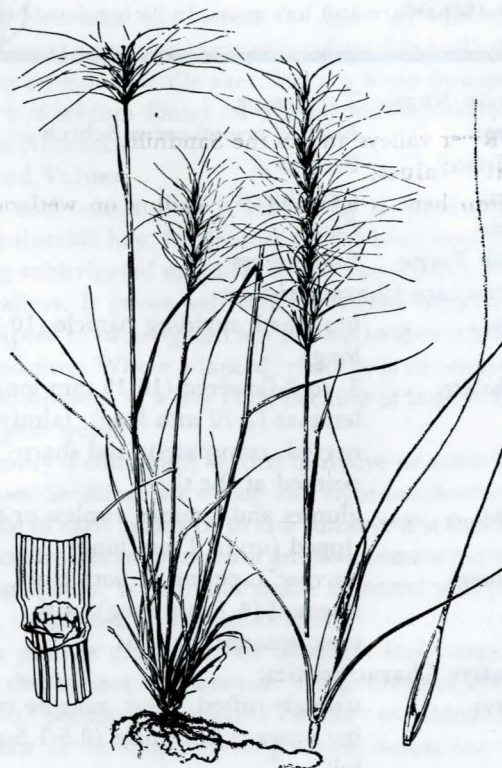
This cool-season grass makes rapid growth very early in the spring. It grows rapidly until seed maturity in early summer and remains green through the summer. When actively growing, the forage value of reed canarygrass is good. For best quality pasture, it should not be allowed to go to maturity but should be grazed whenever it reaches a height of 12 to 15 inches (30 to 38 cm).

Reed canarygrass is known for its high yield of moderately palatable forage or hay on wetland range sites. Best quality hay is produced by mowing when the first heads of reed canarygrass begin to appear. Hay quality may be improved by early spring grazing to delay maturity dates,

thus reducing the coarseness of growth. Established, dense reed canarygrass sod will support equipment when haying operations were formerly impossible.

Reed canarygrass is very well adapted for seeding on wetland range sites and on wetter portions of subirrigated sites, such as in Sandhill meadows. It is not injured by deep ponded water for a period of several weeks at a time and can withstand considerable midsummer drought. It is moderately tolerant of salinity but should not be seeded on very salty or alkali soils. It is long-lived, has a long growing season, and recovers quickly from grazing or mowing. It is also useful for erosion control on moist or wet soils. Reed canarygrass seed gives best germination when planted the same year in which it was harvested since seed viability drops rather quickly.

Reed canarygrass can also be established by spreading sod pieces or freshly cut, well-jointed culm segments with a manure spreader on moist soil and covering with a light disking or trampling into the mud. Where seedbed preparation is impossible because of wet soils or it is desirable to establish in undisturbed sod, this method is often superior to seeding. When worked into mud or moist soil, pieces of root or mature plant cuts with a joint establish readily. On very wet soils, plant cuts have been superior to sod pieces, although this is an expensive method.



Squirreltail

Squirreltail



- Common Name:** Squirreltail
Species: *Sitanion hystrix* (Nutt.) J. G. Smith
Life Span: Perennial
Origin: Native
Season: Cool
Growth Form: Bunchgrass
Inflorescence Characteristics:
type: spike (2-10 cm long), cylindric, stiff and straight; awns spreading at maturity, green or tinged with purple; 2 spikelets per node
spikelets: 2- to 6-flowered; lemma rounded (8-10 mm long); may be slightly hairy
awns: lemmas awned (5-15 mm long); glumes awned (2-10 cm long), widely spreading
glumes: very narrow, the nerves extending into long, rough awns
other: partially enclosed by an inflated sheath, turning pale
Vegetative Characteristics:
culm: straight and simple to spreading (10-50 cm tall), densely tufted

- sheath:* usually overlapping, open, translucent margins; may be slightly hairy, collar not hairy
blade: flat to inrolled (5-20 cm long and 1-5 mm wide), tapering to a fine point, prominently veined, rather stiff and pointing upward
ligule: membranous (less than 1 mm long)
auricles: short (up to 1 mm long)
rhizomes: none

Where Found:

This native grass is found on dry upland sites in central and western Nebraska. It is most common in southwest Nebraska. Squirreltail occurs as scattered plants primarily associated with blue grama but may be locally prominent on small, disturbed areas.

Uses and Values:

This cool-season grass produces fair forage for cattle and sheep during the spring and early summer. During midsummer it becomes unpalatable because of troublesome awns and rather harsh forage. Mature awns may injure livestock. After seedheads have broken and fallen, it may be eaten to some extent in late summer and fall. This increaser rarely becomes sufficiently abundant to produce much forage under Nebraska conditions.

Tall fescue



- Common Name:** Tall fescue
Species: *Festuca arundinacea* Schreb.
Life Span: Perennial
Origin: Introduced
Season: Cool
Growth Form: Bunchgrass
Inflorescence Characteristics:
type: branched, nodding panicle (10-30 cm long)
spikelets: 5- to 7-flowered (10-15 mm long);
lemmas (7-10 mm long), faintly
nerved, transparent and sharp-
pointed at the tip
awns: glumes and lemmas awnless or awn-
tipped (up to 2 mm long)
glumes: narrow, tapering at both ends,
unequal (4-7 mm long), with
membranous margins

Vegetative Characteristics:

- culm:* strongly tufted, stout, may be curv-
ing upward from base (0.5-1.5 m
tall)
sheath: smooth or slightly rough, auricles
present
blade: stiff, flat or slightly rolled (3-12 mm
wide), rough on upper surface
ligule: membranous (less than 0.5 mm
long), collar-shaped, jagged or
toothed
auricle: prominent, short, often with short
fringe
rhizomes: occasionally with short rhizomes, but
it has the appearance of a
bunchgrass

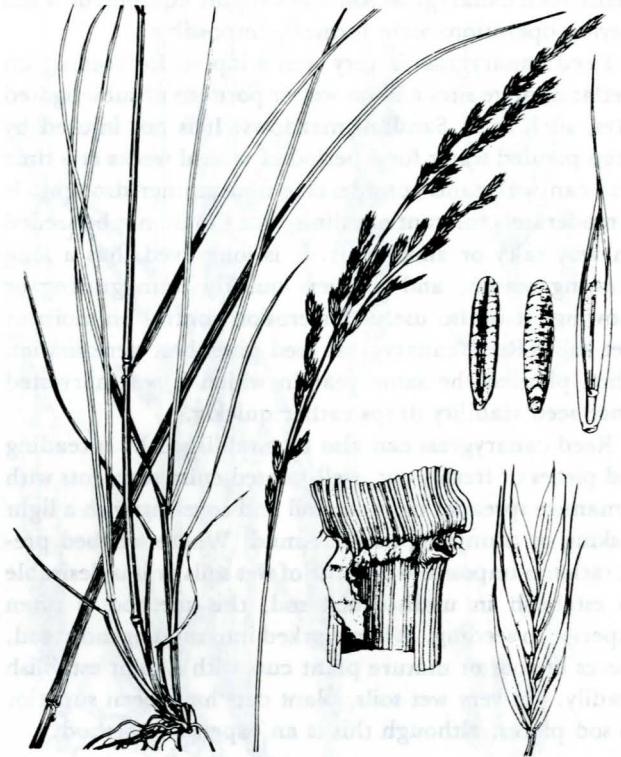
Where Found:

Tall fescue was introduced from Europe, and has found its greatest use in South Central U.S. and the Pacific Northwest. In Nebraska its use has been limited to the southeastern portion of the state.

Uses and Values:

This cool-season grass is adapted to moist, deep soils, tolerates moderate soil salinity, but is not tolerant of extended drought. It is not adapted in Nebraska except in the higher rainfall areas of the eastern part of the state or under irrigation. Where moisture is continuous for growth, it has out-produced tall wheatgrass. Tall fescue is ready for grazing in the spring somewhat later than tall wheatgrass, is more resistant to grazing, but is much less salt tolerant.

Tall fescue is only fair in palatability for livestock and normally should not be seeded in mixtures because of differential selectivity by the grazing animal causing the



Tall fescue

more palatable grasses to be overused. Cattle and sheep make fair to good use of this grass when seeded in pure stands. It becomes coarse and low in palatability if left ungrazed or lightly grazed and allowed to mature. Nitrogen fertilization not only stimulates growth but also makes the herbage more palatable. Its coarse, basal leaves make it generally better suited for pasture than hay. In some areas, cattle grazing tall fescue have developed a lameness commonly called "fescue foot." Poor animal performance is common when grazing tall fescue. Recent research has attributed this to a fungus that lives within the plant and produces a toxin that is absorbed by the animals digestive system.

Note: Tall fescue is similar to meadow fescue (*Festuca elatior* L.), which it has largely replaced as a forage producer. Tall fescue is distinguished from meadow fescue by more robust growth, broader leaves, the deep green of upper leaf surface, and by a few short hairs on the margin of the collar. Both tall and meadow fescue are common in lawn mixtures but are much less desirable than the bluegrasses or buffalograss for this purpose because of coarser texture.

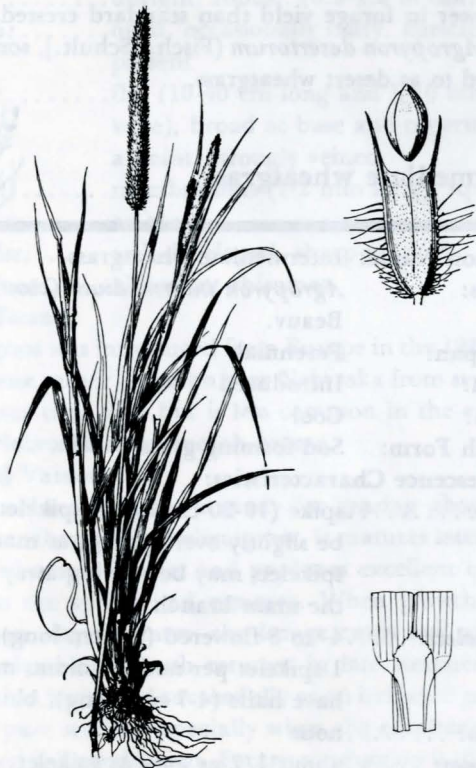
Timothy



- Common Name:** Timothy
Species: *Phleum pratense* L.
Life Span: Perennial
Origin: Introduced

Season: Cool
Growth Form: Bunchgrass
Inflorescence Characteristics:
type: panicle (3-20 cm long), contracted, dense, spike-like
spikelets: 1-flowered, flattened, small; lemma about 1/2 as long as the glumes, awns and midnerves forming a distinct "U" with paper-like glume margins
awns: glumes awned from tips (less than 1 mm long), less than 1/2 the length of glumes, awn with fine teeth
glumes: equal (2-3 mm long), with long, stiff, outward-pointing hairs
other: inflorescence is several times longer than wide

Vegetative Characteristics:
culm: upright (0.5-1.2 m tall), tufted, forming large clumps
sheath: round, clasping and closed around nodes, distinctly veined, often turning purple
blade: flat (5-30 cm long and 5-8 mm wide), tapering to a sharp point, distinctly veined, margins with tiny barbs
ligule: membranous (2-3 mm long) blunt or pointed, entire
rhizomes: none
other: swollen or bulb-like base



Timothy

Where Found:
 Timothy was introduced from Eurasia by early colonists. It has been seeded primarily for hay in meadows in eastern Nebraska and across the state on subirrigated sites. Timothy commonly escapes cultivation and is found growing on moist, fertile sites. Since it is not drought tolerant, it is seldom found on upland soils in central and western Nebraska.

Uses and Values:
 This cool-season grass is famed for its production of leafy, palatable hay. In Nebraska it has been used for improving subirrigated meadows in the Sandhills and in the river valleys. It grows well with red clover because both are adapted to subirrigated but not wetland or saline subirrigated sites. Where adapted, timothy is recommended over redtop bent as a hay grass because of later maturity and higher quality.

Timothy is commonly seeded in native or subirrigated meadows. Seedlings are strong and vigorous. Seeding can be made in early spring or in late summer if soil moisture is favorable. Timothy requires ample moisture during the growing season, is cold and shade tolerant, and prefers fertile, rather heavy, nonsaline soils.

As a pasture grass timothy produces leafy, nutritious forage throughout the summer. It has occasionally been used in permanent pasture mixes in northeastern Nebraska or in subirrigated pastures across the state. However, it is not tolerant of grazing and has generally been replaced in pasture mixtures by smooth brome and orchardgrass.

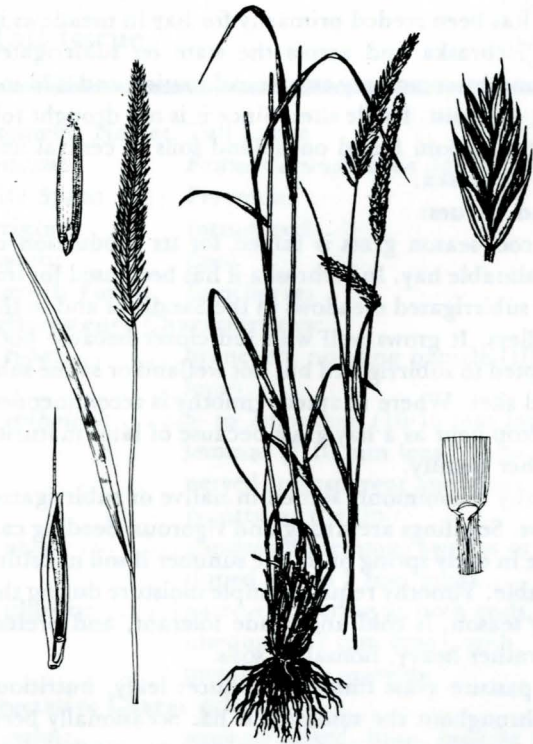


Crested wheatgrass

Common Name: Crested wheatgrass
Species: *Agropyron cristatum* (L.) Gaertn.
Life Span: Perennial
Origin: Introduced
Season: Cool
Growth Form: Bunchgrass
Inflorescence Characteristics:
type: spike (2-9 cm long), main branch pubescent and occasionally wavy; spikelets closely overlapping, several times longer than the internodes, pointing up and outward from main branch
spikelets: 5- to 8-flowered (0.5-1.5 cm long), flattened and placed sideways on the main branch, may be hairy
awns: glumes and lemmas tapering to awns (2-5 mm long)
glumes: firm, somewhat keeled and twisted, often hairy

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Crested wheatgrass

Vegetative Characteristics:

- culm:** upright (0.2-1 m tall), tufted, occasionally curving upward at base
- sheath:** margins overlapping, usually without hairs; auricles present
- blade:** flat (5-20 cm long and 2-10 mm wide), nerves raised above, smooth below, margins with fine small teeth
- ligule:** membranous (0.5-1.5 mm long), rounded, margins with short fringe
- auricles:** slender (1 mm long)
- rhizomes:** none

Where Found:

This grass is native to eastern Europe and Asia. It was introduced into the U.S. in 1898, but was not commonly seeded until the 1930's when it was used to stabilize old fields in the more arid environments. It is common in many counties in northern and western Nebraska, where it has been seeded for pasture, hay production, and on roadsides.

Uses and Values:

Because of its rapid, early spring growth, this cool-season grass is valuable for providing early pasture. It commonly produces a 4-6 inch (10-15 cm) leaf growth by April 15 and is then ready for grazing. This is about ten days to two weeks before intermediate wheatgrass, tall wheatgrass, western wheatgrass, and smooth brome are ready for grazing. It is highly palatable and nutritious in the spring when green and succulent. After flowering,

however, the grass becomes coarse and the palatability and nutritional value decrease. Since it matures early, it is less desirable than other wheatgrasses for late spring and early summer grazing. Under ideal soil moisture conditions, it yields less forage than intermediate wheatgrass or smooth brome.

Livestock make best use of crested wheatgrass from about April 15 to June 15. Early green forage is a critical need on many Nebraska ranges. Crested wheatgrass may also provide valuable fall grazing if late summer moisture is adequate to bring regrowth.

Crested wheatgrass is recommended for seeding in pure stands on silty and clayey sites in the western one-third of Nebraska. It is less adapted on very heavy clay soils than medium textured soils and should not be planted on loose, sandy soils. Crested wheatgrass withstands drought and cold, has moderate salt tolerance, and establishes a stand rather rapidly. It recovers well from intense grazing, competes with weeds, and volunteers from shattered seed. Under proper management, including adequate nitrogen fertilization, crested wheatgrass stands can be maintained indefinitely in western Nebraska.

In western Nebraska, crested wheatgrass may be used for both spring grazing and for hay. When used for hay, it is important that it be cut just prior to flowering or in the late boot stage.

Note: The crested wheatgrass complex is considered by some to include several species and by others as varieties within a single species. Fairway crested wheatgrass, also called fairway wheatgrass, [*Agropyron cristatum* (L.) Gaertn.] is somewhat smaller, leafier, finer stemmed, and lower in forage yield than standard crested wheatgrass [*Agropyron desertorum* (Fisch.) Schult.], sometimes referred to as desert wheatgrass.

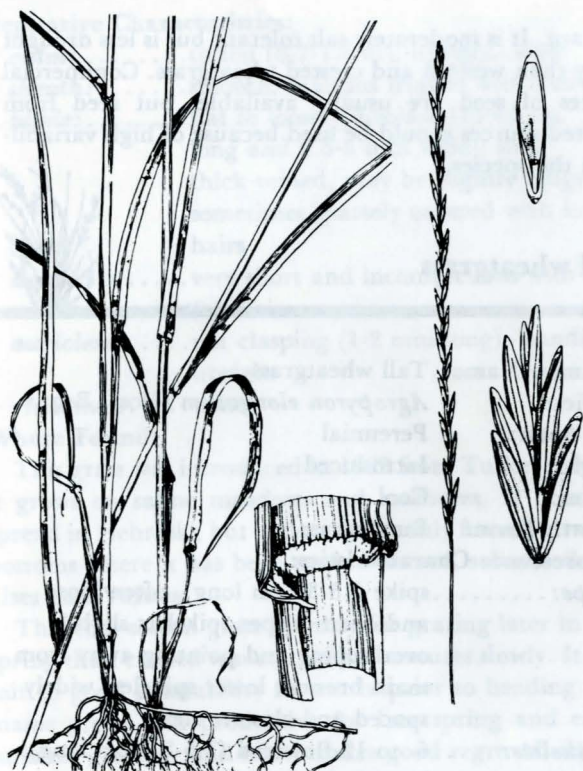
Intermediate wheatgrass



- Common Name:** Intermediate wheatgrass
- Species:** *Agropyron intermedium* (Host) Beauv.
- Life Span:** Perennial
- Origin:** Introduced
- Season:** Cool
- Growth Form:** Sod-forming grass

Inflorescence Characteristics:

- type:** spike (10-20 cm long); spikelets may be slightly overlapping, at maturity spikelets may be curving away from the main branch
- spikelets:** 4- to 8-flowered (1-2 cm long), 1 spikelet per node; lemmas may have hairs (4-7 mm long), blunt
- awns:** none
- glumes:** about 1/2 as long as spikelet, may be with long dense hairs, distinct nerves, blunt or notched at the tip with rounded lobes



Intermediate wheatgrass

Vegetative Characteristics:

- culm:** upright, robust, (0.9-1.2 m tall)
- sheath:** open, occasionally hairy, auricles present
- blade:** flat (10-40 cm long and 5-10 mm wide), broad at base and tapering to a point, strongly veined
- ligule:** membranous (1-2 mm long), square or blunt
- auricles:** well-developed, sharp-pointed
- rhizomes:** abundant rhizomes

Where Found:

This grass was introduced from Europe in the 1930's. It has become rather common over Nebraska from seedings made since that time but is less common in the eastern half of Nebraska than smooth brome.

Uses and Values:

This cool-season grass is ready for grazing about two weeks later than crested wheatgrass. It matures later than many cool-season grasses and produces excellent quality forage in the spring and summer. When growth stops during hot, dry summers, the forage cures well and remains palatable. Growth resumes in late summer with rains. It has been used successfully as an irrigated pasture grass in pure stands, especially when the emphasis is on spring and fall production. Forage production is difficult to maintain during the hot part of the summer, even with adequate water and fertilizer.

Intermediate wheatgrass is recommended for seeding on fertile soils throughout most of Nebraska, especially on moderately saline or alkaline soils. In eastern Nebraska its adaptation is similar to smooth brome. In western Nebraska it is adapted to all upland sites, except the most arid uplands west of North Platte and south of the North Platte River. On such unfavorable sites, intermediate wheatgrass may quickly establish only to be eliminated in drought years. It is more drought tolerant than smooth brome but less drought tolerant than Russian wildrye and crested wheatgrass. It produces well on overflow sites but will not withstand wet, highly saline or alkaline soils. Because of its greater drought tolerance, intermediate wheatgrass also responds well in situations where supplemental water is available only in the spring or fall.

Intermediate wheatgrass is also adapted for hay production on overflow and sandy sites, particularly in western Nebraska. Hay yields have been satisfactory on fertile upland sites in the northern counties. Hay cut in the early flowering stage is of good quality.



Slender wheatgrass

- Common Name:** Slender wheatgrass
- Species:** *Agropyron trachycaulum* (Link)
Malte
- Life Span:** Perennial
- Origin:** Native
- Season:** Cool
- Growth Form:** Bunchgrass
- Inflorescence Characteristics:**
 - type:** spike (10-25 cm long), slender, compact, spikelets closely overlapping (usually 1/2)
 - spikelets:** 4- to 7-flowered (1-2 cm long); may be short hairs on rachilla and margins of lemma; solitary at each node
 - awns:** lemma may be awned, length varies (1-4 mm long or 5-30 mm long); glumes may taper to short awns
 - glumes:** broad, (6-12 mm long), nearly encloses the florets, strongly nerved, nerves dark green, margins transparent and slightly rough
- Vegetative Characteristics:**
 - culm:** upright, straight (0.5-1 m tall), tufted, dark nodes, green or slightly blue-green, without hairs
 - sheath:** round, may have fine hairs
 - blade:** slender with pointed tips (5-25 cm long and 2-7 mm wide), usually flat; not hairy, margins with a narrow white band, slightly barbed

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Slender wheatgrass

ligule:membranous (less than 1 mm long), rounded, lobed

auricles:if present, short; may be only one

rhizomes:rhizomes rarely occur, and the plant has the appearance of a bunchgrass

Where Found:

Slender wheatgrass is rather common on upland sites in western Nebraska, particularly in the northwestern corner of the state. It grows abundantly on subirrigated range sites over the western two-thirds of the state. It seldom grows in dense or pure stands but is found mostly as scattered plants.

Uses and Values:

Slender wheatgrass is rated as good forage for cattle and fair to good for sheep. This native, cool-season grass remains green and nutritious through most of the summer. It has moderate forage yield where plants are abundant and often makes up a significant part of the yield of hay from subirrigated meadows.

Slender wheatgrass is adapted for seeding in western Nebraska on silty and clayey sites and possibly on sandy and subirrigated sites. However, it is much less commonly included in range seeding than western wheatgrass, partly because of low to moderate forage yields. Seed production is ample, seedlings are vigorous, and plants are cold

resistant. It is moderately salt tolerant but is less drought hardy than western and crested wheatgrass. Commercial sources of seed are usually available, but seed from adapted sources should be used because of high variability in the species.



Tall wheatgrass

Common Name: Tall wheatgrass

Species: *Agropyron elongatum* (Host) Beauv.

Life Span: Perennial

Origin: Introduced

Season: Cool

Growth Form: Bunchgrass

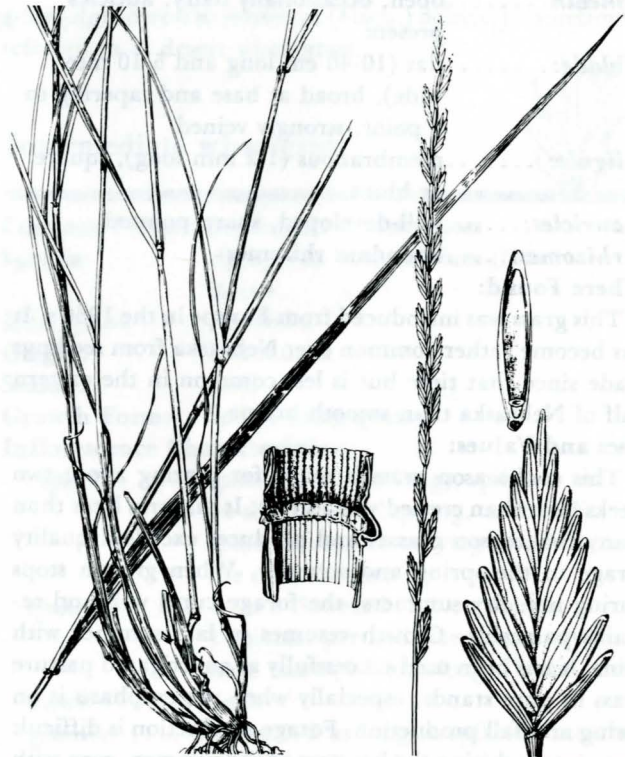
Inflorescence Characteristics:

type:spike (15-30 cm long), often loose and open; upper spikelets slightly overlapping and pointing away from main branch, lower spikelets widely spaced and close to stem

spikelets:6- to 12-flowered (1.5-2.5 cm long); lemmas large (8.5-11 mm long), obtuse to rounded, with thickened midnerve

awns:lemmas occasionally long-awned

glumes:oblong, unequal (first glume 6-9 mm, second 7-10 mm long)



Tall wheatgrass

Vegetative Characteristics:

- culm:** tufted (0.7-1.5 m), upright, stout
- sheath:** smooth, margins fringed with hairs
- blade:** flat to loosely involute (15-40 cm long and 2.5-5 mm wide), stiff, thick-veined, may be slightly rough, sometimes sparsely covered with long hairs
- ligule:** very short and inconspicuous with a few hairs
- auricles:** not clasping (1-2 mm long), standing upright
- rhizomes:** none

Where Found:

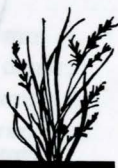
This grass was introduced in 1909 from Turkey, where it grows on saline meadows and seashores. It is widespread in Nebraska but is most commonly found in valley bottoms where it has been seeded on wet, saline soils.

Uses and Values:

This cool-season grass is ready for grazing later in the spring than crested wheatgrass but matures slowly. It has fair to good palatability for cattle prior to heading, remains green and productive for late spring and early summer grazing, and often makes good regrowth in the fall. Because of its coarseness, sheep make uneven and patchy use of tall wheatgrass. For best results even with cattle, tall wheatgrass should be planted in pure stands and grazed in a rotation system to prevent undue selective and patchy grazing.

Tall wheatgrass is highly tolerant of saline and alkaline soils with high water tables. For this reason it is recommended for seeding on saline subirrigated sites where high pH and poor drainage are present. Although it also produces well on normal subirrigated sites, tall wheatgrass does not thrive on dry, alkaline sites. It has no advantage over intermediate wheatgrass and smooth brome on the more favorable upland sites of central and eastern Nebraska and is less adapted to the dry upland soils of western Nebraska than crested wheatgrass and Russian wildrye.

Tall wheatgrass is very productive once established on favorable sites. It is a good source of energy throughout the growing season but produces adequate quantities of protein and phosphorus for lactating animals only when the grass is young.



Western wheatgrass

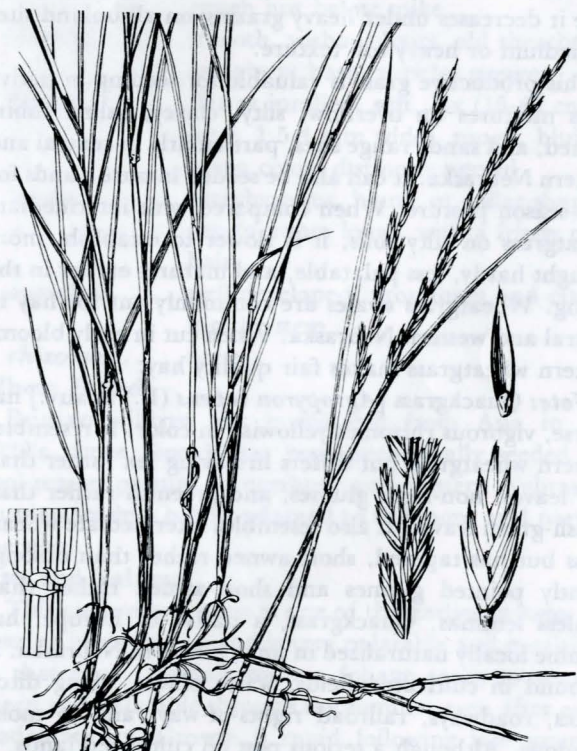
- Common Name:** Western wheatgrass
- Species:** *Agropyron smithii* Rydb.
- Life Span:** Perennial
- Origin:** Native
- Season:** Cool
- Growth Form:** Sod-forming grass

Inflorescence Characteristics:

- type:** spike (6-20 cm long), often dense, spikelets closely overlapping (about 1/2 of each spikelet overlaps)
- spikelets:** 5- to 12-flowered (1.5-2.5 cm long), compressed, occasionally in pairs on rachis; glumes and lemmas awnless but sharp-pointed and rigid; occasionally densely hairy
- awns:** none, may find sharp awn-like tips
- glumes:** unequal, asymmetrical, narrow and rigid, faintly nerved

Vegetative Characteristics:

- culm:** straight and stiff (30-90 cm tall) single or in small clusters, may have sterile shoots from the base
- sheath:** hairless, may be rough, with or without auricles (1-2 mm long) shorter than the internodes
- blade:** rigid, tapering to a sharp point (10-25 cm long and 2-6 mm wide), often rolled in drying, strongly veined
- ligule:** membranous (1 mm long), blunt, collar-shaped, may be fringed
- auricles:** clasp the stems, clawlike, sometimes purplish at base
- rhizomes:** slender creeping rhizomes
- other:** whole plant may appear blue-green and have a waxy coating



Western wheatgrass (Continued)

(Continued)

Where Found:

Western wheatgrass is the most common and widely distributed cool-season grass in Nebraska. It thrives on loam to heavy clay soils, withstands a claypan, and tolerates salty soil. It is often found in pure stands on overflow sites and lower slopes of silty sites. It grows intermixed with blue grama, needleandthread, and threadleaf sedge on silty and clayey sites but is scattered and low-growing on arid uplands. It ranges from abundant to common on saline subirrigated, subirrigated, limy upland, shallow, and thin loess and is occasionally found even on sands range sites. Western wheatgrass may spread by rhizomes and replace associated grasses damaged by trampling, drought, or covered by wind or water eroded soil.

Uses and Values:

This cool-season grass grows rapidly in late April and May but is about two weeks later than threadleaf sedge, sandberg bluegrass, and crested wheatgrass. Palatability varies from fair to good while it is green and growing, but it becomes coarse and stemmy by early summer and is then seldom grazed in mixed stands until regrowth starts again in the fall. Fall regrowth of this grass cures well, retains much of its nutritional value, and is considered good winter range forage for sheep and cattle. The early spring and late fall growth of all cool-season grasses such as western wheatgrass is very important in shortening the carotene, phosphorus, and protein gap on winter grass range. Western wheatgrass is an increaser on all range sites in the 20-24 inch (50-60 cm) and higher precipitation zones. In the 15-19 inch (38-48 cm) precipitation zone it decreases under heavy grazing on all upland sites of medium or heavy soil texture.

This productive grass is valuable for seeding in native grass mixtures on overflow, silty, clayey, saline subirrigated, and sandy range sites, particularly in central and western Nebraska. It can also be seeded in pure stands for cool-season pasture. When compared with intermediate wheatgrass on silty soils, it is slower to establish, more drought hardy, less palatable, and matures earlier in the spring. Wheatgrass swales are commonly cut for hay in central and western Nebraska. When cut in early bloom, western wheatgrass makes fair quality hay.

Note: Quackgrass [*Agropyron repens* (L.) Beauv.] has coarse, vigorous rhizomes yellowish in color. It resembles western wheatgrass but differs in having lax rather than stiff leaves, non-rigid glumes, and greenish rather than bluish-green leaves. It also resembles intermediate wheatgrass but has tapered, short-awned rather than oblong, bluntly pointed glumes and short-awned rather than awnless lemmas. Quackgrass, a native of Europe, has become locally naturalized in some places in Nebraska. It is found in cultivated fields, waste places, along ditch banks, roadways, railroad rights-of-way, and in moist meadows. Although a serious pest on cultivated lands, it provides palatable and nutritious forage in the spring. Quackgrass is not recommended for seeding because of its ability to rapidly invade moist, cultivated ground.

Canada wildrye



Common Name: Canada wildrye

Species: *Elymus canadensis* L.

Life Span: Perennial

Origin: Native

Season: Cool

Growth Form: Bunchgrass

Inflorescence Characteristics:

type: spike (8-25 cm long), upright or nodding, thick, bristly; 2-4 spikelets per node, slightly spreading

spikelets: 2- to 6-flowered (12-15 mm long, excluding awn); lemmas broad at base (8-14 mm long), surfaces may be rough or have long stiff hairs

awns: lemma awned (1.5-3 cm long), curving outward at maturity; glumes awned (2-3 cm long)

glumes: about equal, (10-20 mm long), broad at base and tapering to an awn

Vegetative Characteristics:

culm: curving upward at base (1.0-1.5 m tall), tufted, coarse, leafy

sheath: smooth, rarely hairy

blade: tapering to a fine point (5-40 cm long and 7-20 mm wide), flat or



Canada wildrye

(Continued)

folded, upper surface rough, margin finely toothed, midrib prominent below

ligule: membranous (up to 1 mm long), blunt, may be fringed

auricles: well developed (1-2 mm long), clasping, pointed

rhizomes: none

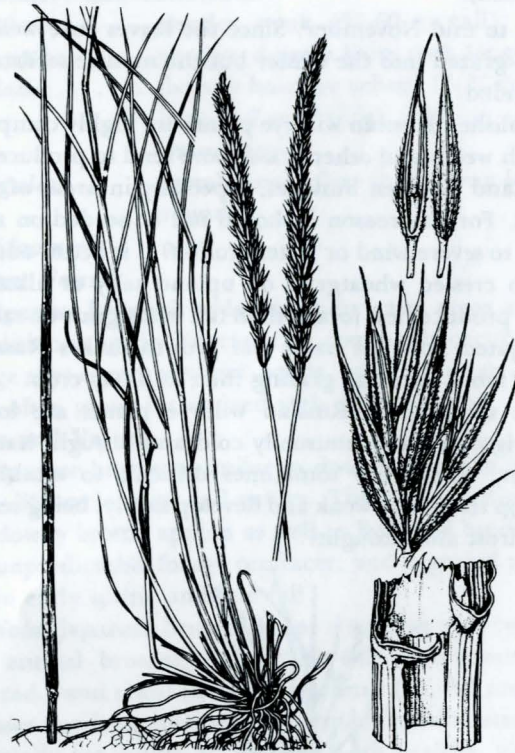
Where Found:

This native grass is scattered throughout Nebraska but is less common in western Nebraska. It grows primarily where moisture is abundant, such as on overflow and sub-irrigated sites. On upland sites it is found primarily on gopher mounds, badger holes, road ditches, and denuded places where favorable local moisture concentrations prevail.

Uses and Values:

This cool-season grass is a satisfactory but not outstanding range grass. It is moderately palatable in the spring when green and growing, but palatability and nutritive value drop sharply as the plant matures in early summer. It does not cure well. It is commonly rated as a decreaser since it does not tolerate continuous grazing. However, its seeding habits and seedling vigor allow it to establish quickly on locally disturbed sites. Since it normally makes up only a small part of native vegetation, it is of minor importance on Nebraska ranges.

Seed of Canada wildrye is sometimes available for including in grass mixtures. It has good tolerance of soil salinity. However, its general forage production characteristics offer little to recommend it for widespread use in range seeding. When cut before seedheads appear, it provides hay of fair to good quality.



Russian wildrye

Russian wildrye



Common Name: Russian wildrye

Species: *Elymus junceus* Fish.

Life Span: Perennial

Origin: Introduced

Season: Cool

Growth Form: Bunchgrass

Inflorescence Characteristics:

type: spike (7-11 cm long and 4-9 mm wide), straight and upright, dense; spikelets 2 or 3 per node, strongly overlapping; inflorescence branch breaking apart at maturity

spikelets: 1- to 4-flowered (8-10 mm long), lemmas finely hairy (6.5-8.5 mm long), often smooth and shiny at base

awns: lemma tipped with a short awn (0.5-2 mm long)

glumes: unequal (4-6.5 mm long), needle-like

Vegetative Characteristics:

culm: densely tufted (40-70 cm tall), fibrous at base from old sheaths; leaves mainly basal; culm may be rough just below spike

sheath: smooth, without hairs, old sheaths remain at base, auricles present

blade: flat or inrolled, soft, lax (15-40 cm long, 1.5-4 mm wide), rough, bluish-green color, distinctly nerved

ligule: membranous, blunt- or collar-shaped (up to 1 mm long), with a fringe of hair

auricles: well developed, prominent and clasping the stem

rhizomes: none

Where Found:

Russian wildrye was introduced from Asia in the 1920's. Since then it has been occasionally seeded for cool-season pasture in northern and western Nebraska. Russian wildrye is best adapted to the more arid part of the state.

Uses and Values:

This cool-season grass is one of the earliest grasses for grazing in the spring and is very palatable and nutritious at that time. Russian wildrye foliage tends to remain green and palatable through the summer even after early seed maturity. Growth is rapid following late summer and fall rains. High protein content and palatability make Russian wildrye highly prized for grazing from late

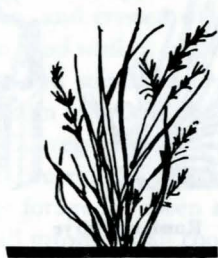
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August to mid-November. Since the leaves cure well, it may be grazed into the winter but the mature seedstalks are avoided.

Established Russian wildrye plants are highly competitive with weeds and other grasses and tend to produce an open stand between bunches, especially in areas of low rainfall. For this reason it should not be seeded on sites subject to severe wind or water erosion. It is better adapted than crested wheatgrass on upland salty or alkaline soils. It produces less forage than tall wheatgrass on saline subirrigated sites. Its basal leaf growth makes Russian wildrye more suited to grazing than as a hay crop.

Once established, Russian wildrye plants are long-lived, vigorous, and unusually cold and drought hardy. However, stands are sometimes difficult to establish. Seedlings tend to be weak and develop slowly, being sensitive to frost and drought.



COOL-SEASON ANNUAL GRASSES

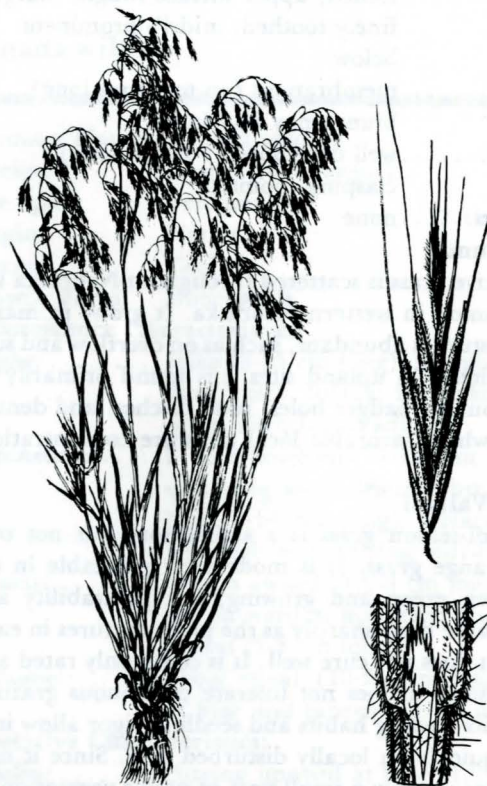


Downy brome

Common Name: Downy brome
Species: *Bromus tectorum* L.
Life Span: Annual
Origin: Introduced
Season: Cool
Growth Form: Not applicable

Inflorescence Characteristics:

- type:** open panicle (5-15 cm long), much-branched; branches and pedicels slender, flexuous, drooping
- spikelets:** 5- to 8-flowered (1.2-2 cm long excluding awns); lemmas (0.9-1.2 cm long) with thin membranous margins and ending in long, slender teeth (2-3 mm long); lemmas with soft "downy" hairs
- awns:** lemma awned (1.2-1.8 cm long)
- glumes:** unequal (first glume 4-6 mm long, second glume 8-10 mm long), with broad transparent margins, and long, soft hairs
- other:** typically brownish-red to purple at maturity



Downy brome

Vegetative Characteristics:

- culm:** upright, weak (10-60 cm tall), may be branched from the base
- sheath:** rough, flattened toward collar, softly hairy
- blade:** with long soft hairs (5-12 cm long and 3-7 mm wide)
- ligule:** membranous (1-3 mm long), rounded to collar-shaped, may be toothed
- rhizomes:** none

Where Found:

Downy brome is a weedy species introduced unintentionally from Europe. It is widely distributed in Nebraska and is particularly common on silty, limy upland, and clayey sites of western Nebraska. Since this plant readily invades sites where the natural vegetation has been weakened by fire, improper grazing, drought, or previous cultivation, it is often an indicator of low range condition. Downy brome does not compete strongly with established perennial grasses and occurs only in small amounts on good condition range. However, once it becomes a dominant component of the vegetation, it is very difficult to control and does retard improvement in range condition. Its growth fluctuates greatly from year to year and is favored by a moist, warm fall, winter, and spring, which is then followed by a dry summer.

Uses and Values:

It is normally a winter annual, germinating in the fall and maturing the following spring. However, it may germinate in the spring if weather conditions are not favorable in the fall. Downy brome remains green and palatable only for three to five weeks in the early spring and again in the fall if moisture favors a new crop of seedlings. As it matures in the spring, it rapidly becomes unpalatable and low in nutritive content and digestibility. The awned seeds may cause sores in the mouths and eyes of grazing animals and cause damage to sheep fleeces. Animals fed hay contaminated with mature downy brome may also be damaged. Dry downy brome burns readily and is a fire hazard.



Japanese brome

Japanese brome

- Common Name:** Japanese brome
Species: *Bromus japonicus* Thunb.
Life Span: Annual
Origin: Introduced
Season: Cool
Growth Form: Not applicable
Inflorescence Characteristics:
type: open panicle (8-20 cm long) with slender, flexuous branches
spikelets: 6- to 11-flowered (15-25 mm long); lemmas broad (7-9 mm long), hairless, and split or lobed near the tip
awns: lemma of upper florets awned (8-13 mm long), awns become twisted and bent at maturity
glumes: broad, awnless, unequal (first glume 4-6 mm, second glume 6-8 mm long)

Vegetative Characteristics:

- culm:* slender, weak, (30-60 cm tall)
sheath: shaggy, densely hairy with long hairs
blade: densely hairy or velvety (7-20 cm long, 1-7 mm wide), midvein prominent
ligule: membranous (less than 2 mm long), rounded
rhizomes: none

Where Found:

Japanese brome is widespread on waste areas and low condition range in Nebraska. It commonly occurs on all range sites except wetland, sands, and choppy sands sites and often grows intermixed with downy brome.

Uses and Values:

Japanese brome is similar to downy brome in its ecology, life cycle, uses and values. The previous discussion on downy brome applies as well to Japanese brome. It is an unpredictable forage producer, and is grazed primarily in early spring and late fall.

Note: Japanese brome is known to cross with two similar annual bromes, hairy chess (*Bromus commutatus* Schrad.) and cheat (*Bromus secalinus* L.). All are weedy grasses requiring similar management considerations and normally are unable to compete with healthy, vigorous, perennial grasses.



Little barley

- Common Name:** Little barley
Species: *Hordeum pusillum* Nutt.
Life Span: Annual
Origin: Native
Season: Cool
Growth Form: Not applicable
Inflorescence Characteristics:
type: spike-like raceme (2-8 cm long excluding awns), narrow, upright, dense; 3 spikelets per node, the center one fertile, the 2 lateral spikelets sterile and on pedicels
spikelets: 1-flowered, lemmas of lateral spikelets 1/2 to 1/3 as long as the lemma of the central spikelet
awns: lemma of central spikelet awned (2-7 mm long), lemmas of lateral spikelets short-awned, outer glumes of lateral spikelets awn-like, other glumes awned (7-15 mm long)
glumes: narrow at the base, wider above, rough to the touch
Vegetative Characteristics:
culm: tufted (10-40 cm tall), usually bent upward from a base growing along the ground; nodes dark

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Little barley

- sheath:** round, smooth or with a few hairs
- blade:** flat or folded, short (1-12 cm long and 2-5 mm wide), margins weakly barbed, may be slightly hairy
- ligule:** membranous (less than 1 mm long), blunt, may be fringed
- auricles:** small auricles may or may not be present
- rhizomes:** none

Where Found:

This native grass is widespread in Nebraska and common on dry or alkaline soils, particularly in disturbed areas where competition from perennial plants is low. On "go-back" land or range damaged by drought or overgrazing, stands of little barley may be very dense during years with favorable winter and spring moisture.

Uses and Values:

Some temporary grazing may be provided by this cool-season grass in late fall and early spring. However, forage production is low and highly unpredictable. Plants produce seed and become dry and very unpalatable by early to mid-June.

Little barley is an invader on poor condition range and cultivated pastures of poor stand, vigor, and fertility. Practices that will maintain range and pasture in a vigorous, productive condition will effectively control little barley.



Sixweeks fescue

- Common Name:** Sixweeks fescue
- Species:** *Vulpia octoflora* (Walt.) Rydb.
- Life Span:** Annual
- Origin:** Native
- Season:** Cool
- Growth Form:** Not applicable
- Inflorescence Characteristics:**
 - type:** narrow, compact panicle (1-20 cm long), branches short
 - spikelets:** 5- to 17-flowered, (4-10 mm long excluding awns), dense, one-sided on the rachis, translucent; rachilla visible between florets; lemmas (3.5-5 mm), round and slender
 - awns:** glumes with awn-tip or short awn, lemmas awned (3-7 mm long)
 - glumes:** unequal, membranous (first glume 2-3 mm long), keeled, sharp-pointed
- Vegetative Characteristics:**
 - culm:** upright, occasionally growing along the ground, weak (10-60 cm tall), solitary or in small clumps



Sixweeks fescue

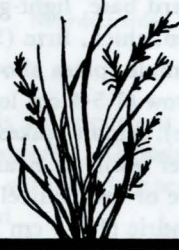
sheath: keeled and ridged, sparsely hairy
blade: rolled (2-10 cm long and 0.5-2 mm wide), sparsely hairy, margins may have few short hairs
ligule: membranous (up to 1 mm long), blunt and collar-shaped
rhizomes: none

Where Found:

Sixweeks fescue is a weedy, winter annual widespread on Nebraska pastures, ranges, and waste places. It is found on practically all range sites where bare space between perennial grass clumps allow it to grow. It is particularly common on upland sites in the Sandhills.

Uses and Values:

This grass is unpalatable and nearly worthless for forage since it pulls up so easily livestock have difficulty grazing it, hence the sometimes used common name "pullout grass". Cattle tend to avoid grazing in areas infested with this grass. Although an abundance of sixweeks fescue is favored by heavy grazing and poor range condition, its prevalence in certain years appears due primarily to climatic conditions. If the fall weather is warm and moist, seeds of sixweeks fescue germinate and the seedlings quickly emerge. Then, in late winter or early spring, growth is very rapid and plants quickly mature taking on a tan color in contrast to the green color of the associated grasses.



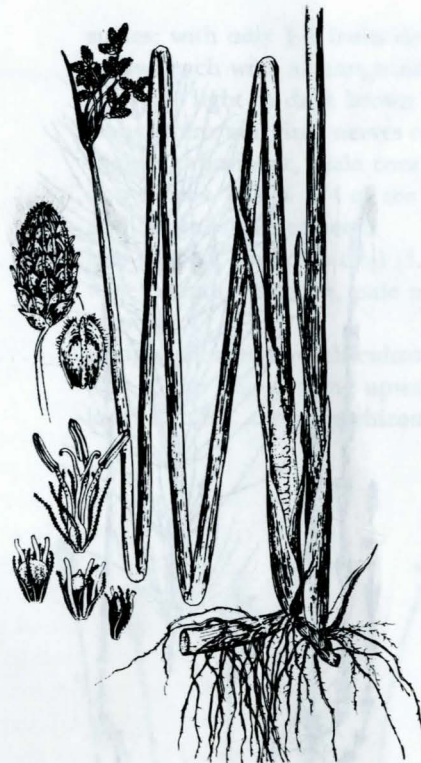
GRASS-LIKE PLANTS

American bulrush



Common Name: American bulrush
Species: *Scirpus americanus* Pers.
Life Span: Perennial
Origin: Native
Season: Cool
Growth Form: Grass-like plant
Distinguishing Characteristics:

inflorescence: .2-15 spikelets in a compact globe-like clusters; spikelets (5-20 mm long, 4 mm wide), with one bract below each (1-6 cm long), this bract appears to be a continuation of the triangular stem; scales (4 mm long) with a pointed tip, yellowish, to



American bulrush

reddish-brown, thin and transparent; seed is 3 mm long, oval, and with 4 bristles from the base reaching almost to tip of seed

culms: culms (10-100 cm tall) may be lax and bowing or curving upward from horizontal stems, loosely clustered, often 1 cm or thicker toward base; 3-angled (triangular)

leaves: few, usually 3 or more, basal, narrow, keeled (as much as 1 cm wide)

other: with creeping, horizontal rootstalks

Where Found:

American bulrush can be found in all parts of Nebraska. It is common in marshes, wet meadows and other wet, low places. It commonly grows in alkali conditions, but this is not considered an essential factor for its survival.

Uses and Values:

In drier years when normally wet sites can be hayed, American bulrush can make up a significant part of harvested hay from these sites. Forage quality is considered to be quite low. Coarse hay, containing species such as American bulrush is often fed on Sandhills trails, blow-outs, and other areas subject to wind erosion, allowing the cattle to consume the more palatable species and leaving the coarse material for mulch and ground cover.



Field horsetail

Field horsetail

Common Name: Field horsetail
Species: *Equisetum arvense* L.
Life Span: Perennial
Origin: Native
Season: Cool
Growth Form: Grass-like plant
Distinguishing Characteristics:

stems:upright, (up to 60 cm tall and 1 cm thick), simple or rarely branching, rough, hollow, jointed stems; easily pulled apart at the joints

leaves:if present, a whorl of small scale-like appendages, turning brown at maturity; sheaths broad and conspicuous, cylindrical, usually grayish with black bands above and below

fruit:each stem produces one spore-bearing cone at the end of stem; cone (1-3 cm long) is crowded with spores

rhizomes:with creeping, slender rhizomes

Where Found:

Field horsetail is scattered throughout the state. It grows in areas where the subsoil is moist, in Sandhill areas, and along stream and lake beds.



Uses and Values:

Field horsetail is not an important or desirable forage plant. In hay, excessive quantities (more than one-fifth of the total amount) have been known to cause scours, paralysis, and occasionally death of horses and cattle. Management practices to encourage the vigor of associated species should be used as a means of reducing the proportion of field horsetail in hay. These improved management practices may include fertilization, proper cutting schedule, and/or seeding of adapted species.



Nebraska sedge

Common Name: Nebraska sedge
Species: *Carex nebraskensis* Dewey
Life Span: Perennial
Origin: Native
Season: Cool
Growth Form: Grass-like plant
Distinguishing Characteristics:

leaves:8-15 per culm, flat or channeled toward base, light-green to bluish-green, thick, firm (3-12 mm wide)

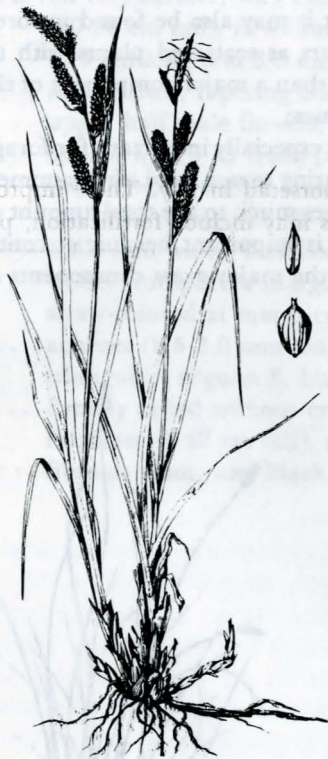
flowers:1-2 male spikes above, long and narrow (1.5-4 cm long, 3-6 mm wide); female spikes 2-5, upright, the upper sessile or nearly so, the lower more or less pedicelled, oblong to cylindrical (1.5-6 cm long, 5-9 mm wide), 30-150 closely overlapping florets, lowest bract leaf-like may be longer than spike, upper small; each flower with a narrow and tapering scale; scale smaller than floret, reddish- or brownish-black with hyaline margins

fruit:lens-shaped or flattened round-oblong (3-3.5 mm long and 2 mm wide), strongly ribbed, straw-colored, red-dotted, tapering to a point or stipule

other:tufted from long, stout, horizontal rhizomes; culms 25-120 cm tall, coarse, sharply triangular, brownish-to red-tinged at the base, old leaves persisting

Where Found:

This sedge is common in wet areas, meadows and ditches. It is found in some alkaline situations. Distribution ranges throughout the state, but it is most common in the western one-half. Nebraska sedge is common on subirrigated and wetland range sites in the Sandhills region.



Nebraska sedge

Uses and Values:

Nebraska sedge is an important forage plant both for grazing and as a hay crop. Although not as palatable as some species, it is a valuable late season sedge and is then often heavily grazed.

Needleleaf sedge

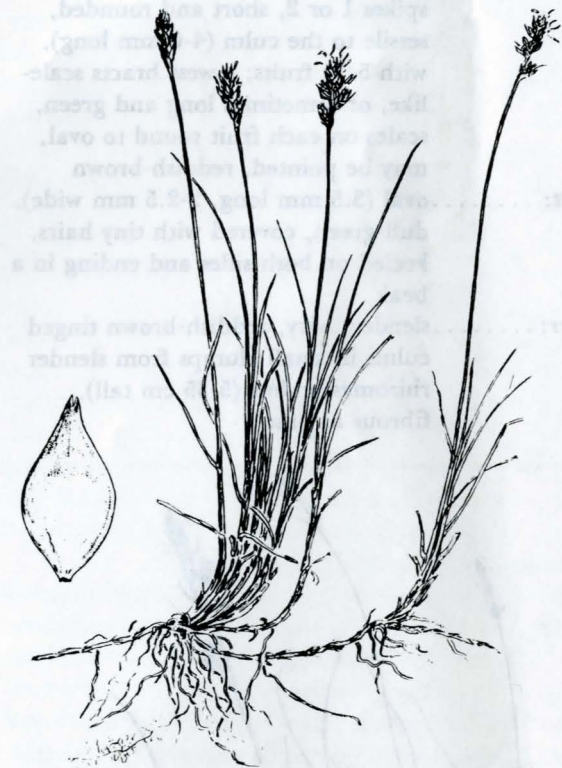


- Common Name:** Needleleaf sedge
- Species:** *Carex eleocharis* Bailey
- Life Span:** Perennial
- Origin:** Native
- Season:** Cool
- Growth Form:** Grass-like plant

Distinguishing Characteristics:

leaves: mainly basal, firm, slender, flat and wider at base (1-1.5 mm wide at base), tapering and rolled above; the ligule wider than long

flowers: several small, slender, sessile and closely overlapped spikes forming a single narrow head (5-20 mm long, 5-10 mm wide), each spike with a bract below; male flowers conspicuous above; female flowers scarcely distinguishable in the dense



Needleleaf sedge

spikes; with only 1-8 fruits developing below, each with a short wide scale; the scale light to dark brown with transparent margins, nerves only slightly prominent, scale contracted into a beak 1/3 to 1/4 of the length and rough with tiny teeth

- fruit:* lens-shaped, round to oval (1.5-2 mm wide), stigmas slender, pale reddish-brown
- other:* upright slender smooth culms (2.5-15 cm tall) curving upward from long, slender, creeping rhizomes

Where Found:

Needleleaf sedge is found in open, dry to moderately moist places throughout Nebraska. It is found in mixed stands with other grasses and sedges.

Uses and Values:

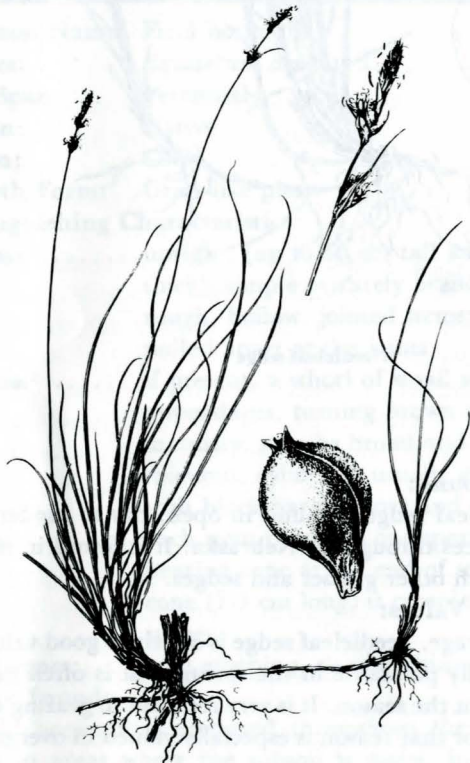
As a forage, needleleaf sedge is of fair to good value. It is especially palatable in the spring, but is often grazed throughout the season. It is very resistant to grazing damage and for that reason is especially valued in overgrazed areas.

Sun sedge



Common Name: Sun sedge
Species: *Carex heliophila* Mackenz.
Life Span: Perennial
Origin: Native
Season: Cool
Growth Form: Grass-like plant
Distinguishing Characteristics:

- leaves:** 5-10 to a culm, thin, rather stiff, dull green, (1-2.5 mm wide), lower sheaths becoming fibrous
- flowers:** male spike at the tip of culm (8-20 mm long) appearing pedicelled above the female spikes; female spikes 1 or 2, short and rounded, sessile to the culm (4-6 mm long), with 5-15 fruits; lowest bracts scale-like, or sometimes long and green, scales on each fruit round to oval, may be pointed, reddish-brown
- fruit:** oval (3.5 mm long, 2-2.5 mm wide), dull-green, covered with tiny hairs, keeled on both sides and ending in a beak
- other:** slender, wiry, reddish-brown tinged culms in small clumps from slender rhizomes; culms (5-35 cm tall), fibrous at base



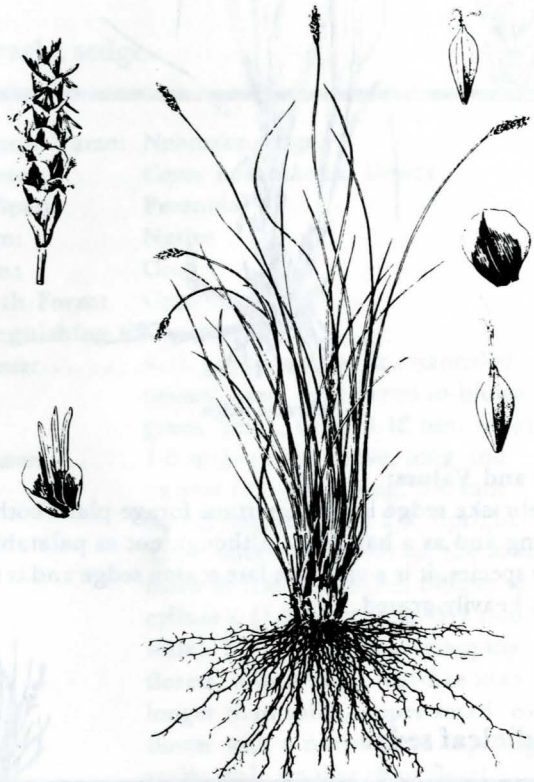
Sun sedge

Where Found:

Sun sedge is found on upland ranges throughout Nebraska, but it may also be found in forested areas. It generally occurs as scattered plants with the associated grasses rather than a major component of the vegetation.

Uses and Values:

Sun sedge is especially important for forage in the early part of the grazing season, and after summer rains. It seldom contributes much to the total amount of forage produced, but it is important because it contributes green forage before the major grass components start growth.



Threadleaf sedge

Threadleaf sedge



Common Name: Threadleaf sedge
Species: *Carex filifolia* Nutt.
Life Span: Perennial
Origin: Native
Season: Cool
Growth Form: Grass-like plant
Distinguishing Characteristics:

- leaves:** grass-like; leaves mostly basal, rolled, stiff and wiry with parallel veins (3-20 cm long, less than 1 mm wide), smooth to slightly rough on margins; old sheaths remain at base as brown layers, ligule wider than long

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- flowers:** on very slender, wiry culms (10-30 cm tall), in solitary spikes (1-3 cm long and 3-5 mm wide), long and narrow, tapering both ends; upper half male flowers, lower half female with 5-15 fruits (achenes) each covered with a scale; the scale round to triangular, (3-4 mm long, 2-2.5 mm wide), 2-ribbed with bright white, transparent margins; turning straw-colored at maturity
- fruit:** achenes (2.5-3.0 mm long), triangular, stigmas 3, black
- other:** densely tufted without creeping rhizomes (8-30 cm tall), roots are fibrous, stout, and black

Where Found:

Found on dry soils of open prairies and rolling hills. It may be found in almost pure stands, but usually it is mixed with a variety of other grasses. It is most common in the Nebraska Panhandle.

Uses and Values:

Generally considered good to excellent forage for livestock and wildlife. Threadleaf sedge, sometimes called "blackroot" by ranchers, provides extremely valuable early spring forage. Palatability remains relatively high throughout the growing season. It can withstand considerable drought and relatively heavy grazing. It grows too low to contribute much to yield when hayed.

GLOSSARY

- Alternately** - placed singly at intervals, as leaves on the stem
- Annual** - within 1 year, applied to plants which do not live more than one year
- Appendage** - a structure attached to a larger structure, a projection or limb
- Ascending** - growing or curving upward
- Asymmetrical** - not symmetrical, an unbalanced spatial arrangement of parts
- Auricle** - an ear; applied to earlike projections at the base of blades
- Awn** - a slender bristle at the end or on the back or edge of a floral part
- Axil** - angle between an organ and its axis
- Axis** - the central body, part or line along which parts are arranged
- Barbed** - furnished with retrorse projections
- Basal** - located at or near the base
- Beak** - a hard point or projection
- Bearded** - furnished with long, stiff hairs
- Blade** - the part of the leaf above the sheath
- Bract** - reduced leaf
- Branch** - a lateral stem
- Bristle** - a stiff, slender appendage
- Bristly** - bearing stiff hairs or bristles
- Bulb-like** - shaped like or bearing a bulb
- Bulbous** - swollen at the base like a bulb or corm
- Bunchgrass** - a grass without stolons or rhizomes
- Capillary** - fine and slender, hair-like
- Channeled** - deeply grooved
- Ciliate** - fringed with hairs on the edges
- Cluster** - a number of structures growing or fastened together
- Collar** - the area on the outer side of a leaf at the junction of the blade and the sheath
- Conspicuous** - clearly visible, easy to be seen
- Contracted** - said of an inflorescence that is narrow or dense
- Cool-Season** - growth begins in early spring, stops in the summer, and may regrow in the cool months of the fall
- Creeping** - spreading just under the surface of the soil
- Culm** - the jointed stem of a grass
- Cylindric** - shaped like a cylinder
- Decreaser** - range plants that decrease under heavy grazing
- Decumbent** - curved upward from a horizontal or inclined base
- Digitate** - several members arising from the summit of a support
- Distichous** - conspicuously 2-ranked
- Divergent** - widely spreading
- Erect** - upright
- Expanded** - growing larger or wider in size
- Fertile** - capable of producing fruit
- Fibrous** - containing or consisting primarily of fibers
- Flexuous** - bent or curving alternately in opposite directions
- Floret** - lemma and palea with included flower
- Foliage** - leaves or leaf-like material
- Geniculate** - bent abruptly
- Glabrous** - without hairs
- Glumes** - the pair of bracts at the base of a spikelet
- Go-back** - cultivated and abandoned land, reseeded or not
- Herbage** - the leaves, stems, and other succulent parts of plants
- Imperfect** - lacking certain parts normally present
- Increaser** - range plants which increase in number as the decreaser plants are weakened and die
- Inflated** - puffed up
- Inflorescence** - the flowering part of a plant
- Inrolled** - with the edges rolled inward, the upper surface within
- Internode** - the part of a stem between 2 successive nodes
- Interrupted** - broken in continuity or regularity
- Introduced** - species which have been brought into North America
- Invader** - undesirable range plants which invade and take over a range after the decreasers and increasers are largely gone
- Involute** - rolled inward from the edges, the upper surface within
- Joint** - the region between 2 parts

- Keel** - the sharp fold at the back of a compressed sheath, blade, glume, or lemma
- Keeled** - ending in a boat-shaped tip or keel
- Knotty** - with a hardened mass at the base or nodes
- Lateral** - on the side of a structure, away from the central axis
- Lemma** - the bract of a spikelet above the pair of glumes
- Ligule** - the appendage or ring of hairs on the inside of a leaf at the junction of the sheath and blade
- Lobe** - the projecting part of an organ with divisions less than 1/2 the distance to the base, usually rounded or blunt
- Marginal** - pertaining to or located on the border or edge
- Maturity** - the state of being fully grown or developed
- Membranous** - thin, like a membrane
- Native** - species which originated in North America
- Naturalized** - to become as if native, after introduction to North America
- Nerve** - the vascular veins of the blades, glumes, and lemmas
- Nodding** - inclined somewhat from the vertical
- Node** - a joint or a region on a stem at which a leaf or leaves are attached
- Notched** - with a hollow or V-shaped cut in a surface
- Oblong** - elongated, with sides nearly parallel and corners rounded
- Oval** - broadly elliptic
- Ovary** - the enlarged basal portion of the flower which develops into a fruit
- Overlapping** - covering and projecting beyond
- Palatable** - desirable for grazing by livestock or wildlife
- Panicle** - inflorescence with a main axis and subdivided branches
- Parallel** - with a uniform distance between parts throughout an area
- Pedicel** - the stalk of a spikelet
- Pendulous** - suspended or hanging
- Perennial** - lasting more than 2 years
- Perfect** - applied to flowers having both stamens and pistils
- Persisting** - enduring, remaining in place
- Pistil** - female reproductive structure of the flower
- Pistillate** - applied to flowers bearing pistils only
- Primary branch** - branch arising directly from the main inflorescence axis
- Prominent** - clearly visible
- Prostrate** - trailing along the ground
- Pubescent** - covered with hairs
- Raceme** - an inflorescence in which the spikelets are pedicelled on a rachis
- Rachilla** - a small rachis, applied especially to the axis of a spikelet
- Rachis** - the axis of a spike or raceme
- Ranked** - coming from the axis in a single row
- Reduced** - smaller or less-developed
- Regrowth** - initial growth in the spring or new growth following grazing or mowing
- Rhizome** - an underground stem
- Rhizomatous** - having rhizomes
- Ribbed** - with prominent veins or ridges
- Rigid** - stiff, inflexible
- Rootstalk** - an underground stem
- Rosette** - a basal, usually crowded, whorl of leaves
- Rough** - having an uneven surface, not smooth
- Scale** - reduced leaves
- Sessile** - without a pedicel or stalk
- Sod-forming** - a grass with stolons or rhizomes
- Solitary** - existing singularly or alone
- Spike** - an unbranched inflorescence in which the spikelets are sessile on a rachis
- Spikelet** - the unit of inflorescence in grasses consisting of 2 glumes and 1 or more florets
- Stamen** - male reproductive structure of the flower
- Staminate** - applied to flowers bearing stamens only
- Sterile** - without pistils
- Stipules** - appendages, usually leaf-like, occurring in pairs, 1 on either side of the petiole base
- Stolon** - an above ground modified reproductive stem
- Stoloniferous** - bearing stolons
- Stout** - rigid, bulky, strong
- Tapering** - becoming smaller or thinner toward one end
- Terminal** - borne at or belonging to the extremity or summit
- Throat** - collar region, where the grass blade joins the sheath
- Tiller** - a sprout or branch which grows from the base of a plant
- Toothed** - with small pointed projections on the margin
- Translucent** - only partially transparent
- Transparent** - capable of being seen through
- Truncate** - ending abruptly
- Tuft** - cluster
- Vegetative** - pertaining to stem and leaf development
- Warm-season** - growth begins in late spring, continues through summer, and stops in early fall
- Whorl** - a cluster of several parts around the axis
- Winged** - with a thin projection or border

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THE SEVEN P's OF RANGELAND*

Rangeland is one of Nebraska's most important and valuable natural resources—not only because of its sheer magnitude but also because rangeland:

- produces forage for livestock which is the major forage component supporting the beef cattle and sheep industry.
- provides a varied habitat for many species of wildlife.
- protects our soil from wind and water erosion.
- preserves a “germplasm bank” for many plant species that may become important for as yet unknown uses.
- purifies and enhances our environment by cleansing the air, filtering runoff to streams, increasing the intake of precipitation, and aiding the recharge of groundwater.
- perseveres in the face of adversity and renews itself when provided the opportunity by those who use and sometimes abuse it.
- pleases those who have learned to appreciate the beauty and aesthetic qualities of rangeland.

*from Range Judging Handbook for Nebraska (EC 84-109)