EC170

EXTENSION

Common Grasses of Nebraska

Rangeland
Prairie
Pasture

(Including Grass-Like Plants)

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Introduction

All of the land comprising the State of Nebraska was purchased from France by the United States of America more than 200 years ago. At the time of the Louisiana Purchase (1803), prairie occupied over 46 million of the 49.5 million acres of what was to become Nebraska. It was not a single type of prairie. Shortgrass prairies grew in what was to become known as the Panhandle (Figure 1), and Tallgrass prairies were in the eastern one-third of the region. Between were Mixed Grass prairies in the loess hills south to the future Kansas border. The Sandhills prairie occupied over one-fourth of the future state in the north-central region all of the way to the future border with South Dakota. A smaller area of Sandsage prairie, containing many of the same species of grass as in the Sandhills, occurred in the southwest corner of the future state. The borders between these prairies did not exist as sharp lines but were broad zones (ecotones) where one type of prairie gradually blended into the other.

The climate, primarily the amount of precipitation, dictated that taller species of grass could grow in the east with higher rainfall. Drier regions in the west could support only short and mid-height grasses. Little runoff occurs from the coarse textured soils in the Sandhills, and these soils readily provide moisture to plants allowing taller grass species to grow in an area with average rainfall that should support only mixed grass vegetation.

Periodic drought in the region devastated the prairie vegetation and shifted the ecotones to the west until the rainfall increased. Trees on the prairie were limited because of drought. Frequent fires swept across the prairies reducing the expansion of woody plants. These fires could occur in any month of the year. They kept the grasses, grass-like plants, and forbs (herbaceous plants with broad leaves, e.g., wildflowers) healthy. Bison, pronghorn, bighorn sheep, deer, elk, and other grazing animals (herbaceous plant eaters) and browsing animals (woody plant eaters) lived on the prairies. The herbage they didn't eat was often consumed by fire.

As a consequence of settlement in the 1800s and early 1900s, many of the prairies were plowed and converted into cropland. Some have estimated that about 2% of Tallgrass prairie acres remain. Much of the land in the Mixed Grass and Shortgrass prairie regions were converted to cropland. A smaller amount of the land the Sandhills and sandsage prairies was cultivated and some of the marginal and highly erosive cropland has been returned to perennial grass cover. Today, most of the remaining unplowed land is managed for use by domestic grazing animals. These rangelands occur on nearly 15 million acres. Pasturelands are areas planted to single species or mixtures of native or introduced grasses receiving more intensive management (e.g., fertilizer and irrigation) and grazed by livestock. Haylands include both native vegetation and planted species that are harvested as hay and fed to animals. Pasturelands and haylands (including alfalfa) are grown on about 8.3 million acres in Nebraska. Rangelands, pasturelands, and haylands cover nearly 50% of the state.

Rangeland and pastureland grasses are the key components of the forage system supporting the beef cattle industry in the state. Knowledge of the important grasses and grass-like plants making up these renewable natural resources is important to those managing the land. The ability to identify grasses is an important skill for individuals interested in prairies and prairie management. This knowledge is essential to determine the condition or health of the vegetation, and to determine if management is moving the composition in a desired direction. Homeowners interested in including grasses in their landscape will benefit from the ability to identify the common grasses, as will individuals interested in nature or wildlife management.

The identification (vegetative and flowering), uses, and values of more than 125 grasses and grass-like plants are discussed in this manual. While several hundred species of grasses grow in Nebraska, the ones covered in this manual will account for more than 95% of the grass plants encountered in the state. Included are the most abundant and important grasses in Nebraska. Others are included because they are troublesome weeds or may become troublesome with improper management. Annual species used for temporary pasture, such as sudangrass, are not included.

Distribution and habitat for each species is presented. Ecological sites where these grasses occur in abundance are provided. An ecological site is the product of many environmental factors such as climate, soils, and topographic location. Each ecological site can support a plant community that differs from others in terms of kinds, proportions, and/or amounts of plants. A description of the 12 most

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common ecological sites in Nebraska may be found after the Glossary near the end of this manual.

Each plant has one valid scientific name. The scientific name consists of two main parts. The first part is the genus, and the second part is the specific epithet. The authority (name or names of the individuals credited with its classification) is added for completeness and accuracy. For example, the scientific name for little bluestem is:

Genus:	*Schizachyrium*
Specific epithet:	*scoparium*
Authority:	(Michx.) Nash

Therefore, the species name is *Schizachyrium scoparium* (Michx.) Nash.

The name for a given plant, however, may change if that plant is reclassified or if it is discovered that another valid name for it was published earlier. In general, the scientific names and authorities in this manual are current. When the name has recently changed, the former name, or synonym, has been included. Formerly, the scientific name for little bluestem was *Andropogon scoparius* Michx. Some species have more than one synonym.

The single, most frequently used common name in Nebraska has been included in this manual for each species. Common names may vary in different parts of the country and even in different parts of Nebraska. For example, the common name of the weedy grass *Bromus tectorum* L. is cheatgrass, but it has been called downy brome, cheat, cheatgrass brome, chess, and military grass.

Both native and introduced grasses are included. The origin of the species does not imply adaptation, forage value, use, or desirability on Nebraska grasslands. Most grasses native to Nebraska are good to excellent for grazing and/or haying. However, some native grasses are considered undesirable, and rangeland is 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. Naturalized plants are adapted to the local environment and can grow and reproduce under those conditions. Some have been selected, improved, and used for rangeland and pastureland seeding.

Plants are arranged in this manual by season of growth. Warm-season grasses start growth in late spring, continue growing throughout the summer, and stop growth in early fall. Cool-season grasses begin growth in early spring and flower in spring. Growth slows or even stops in the summer and renews in the cool months of the fall if adequate soil moisture is available. Both types of grasses are important to rangeland and pastureland managers. Some livestock producers use cool-season, introduced pasture grasses such as crested wheatgrass or smooth brome for early grazing. Later, they graze livestock on native rangeland where perennial, warm-season grasses dominate.

Within each season of growth, grasses in this manual are also arranged by the life span of the grasses. Perennial grasses live for more than one year while annual grasses do not. Annual grasses must flower and produce seed in one season. Seeds of many cool-season annual grasses germinate in the fall, and the plants over winter in the seedling stage before growing and flowering the following growing season. These grasses are classified as winter annuals.

The grass-like plants are positioned after the grasses. These plants commonly grow intermixed with grasses. While they may first appear to be similar to grasses, their flowering parts are much different than those of grasses.

Distribution Maps

The shaded area on the maps delineates where the taxa are most common in Nebraska and are meant to provide "at a glance" information on where the species are likely to occur. They are not meant to imply that the distributions will be uniform across these areas. In addition, these taxa may be found outside the areas designated on the maps.

Plant Groups

Prairie, rangeland, and pasture plants are divided into grasses, grass-like plants, forbs, woody plants, and succulents. These can be easily distinguished by certain characteristics.

Grasses have either hollow or solid stems with nodes. Leaves are two-ranked and have parallel veins. Nearly all of the grasses have ligules near the junction of the sheath and blade. Flowers (florets) are small, somewhat inconspicuous, and occur in spikelets.

Grass-like plants resemble grasses. Generally, they have solid stems without elongated internodes. Leaf veins are parallel, but the leaves are two-ranked or three-ranked and do not have ligules. Stems are often triangular, and the flowers are small and somewhat inconspicuous.

Forbs are herbaceous plants other than grasses and grass-like plants. They usually have solid stems and broad leaves with netted veins. Flowers are often large, colored, and showy. Occasionally, they are small and inconspicuous. Wildflowers fit into this category.

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Woody plants have secondary growth of their aerial stems. These stems remain alive throughout the year, although they are dormant part of the time. Leaves are often broad and net veined. Flowers may be showy or inconspicuous. Trees and shrubs fit into this category.

Succulents are plants with fleshy tissue that store water. The water is used by the plants during periods with insufficient soil moisture. Cacti are the most common succulents in Nebraska. The flowers are often showy, and the pads (stems) are armed with sharp spines. Leaves are small and may be present for only a short period each year.

Parts of a Grass Plant

The main characteristics of a grass plant are illustrated in Figure 2. The illustration includes close-up views of a spikelet and the junction of the leaf blade and sheath with associated parts. Please see the glossary for definitions of terms.

Inflorescence Characteristics

Reproductive or flowering parts of the grass plant comprise the inflorescence. The two most common types are the panicle and spike, but 12 inflorescence types have been described (Figures 3A, 3B, and 3C).

The spikelet is the basic unit of a grass inflorescence. A typical spikelet is composed of two glumes (lower-most bracts) and one to many florets (Figure 2). Each floret is made up of a lemma (outer bract) and palea (inner bract) which enclose the three stamens and a single pistil containing one ovary. Awns may be present on the glumes, lemma, and or palea. The caryopsis is the fruit or seed of grasses. Please refer to the illustrations and the glossary to help clarify the terms used in the descriptions.

Vegetative Characteristics

The grass culm is usually erect, but ascending and decumbent culms on some species are not unusual. The lower portion of the leaf is the sheath, and the upper portion is the blade (Figure 2). The area near the junction of the sheath and blade contains a ligule and may contain auricles, both of which may be important in helping to identify the grass. Ligule types, shapes, and margins are presented in an illustration (Figure 4). Perennial grasses may spread by rhizomes (below-ground stems) or stolons (decumbent above-ground stems that root at the nodes).

Parts of a Grass-Like Plant

Fruit and Floral Characteristics

The reproductive features of a grass-like plant are different than those of grasses. Those differences may be seen by viewing the illustration (Figure 5) and using the glossary for clarification of terms.

Vegetative Characteristics

Vegetative characteristics are not very helpful for identifying grass-like plants, except that the sedges and American bulrush have three-sided stems. The glossary will be helpful for clarifying the grass-like plant features.

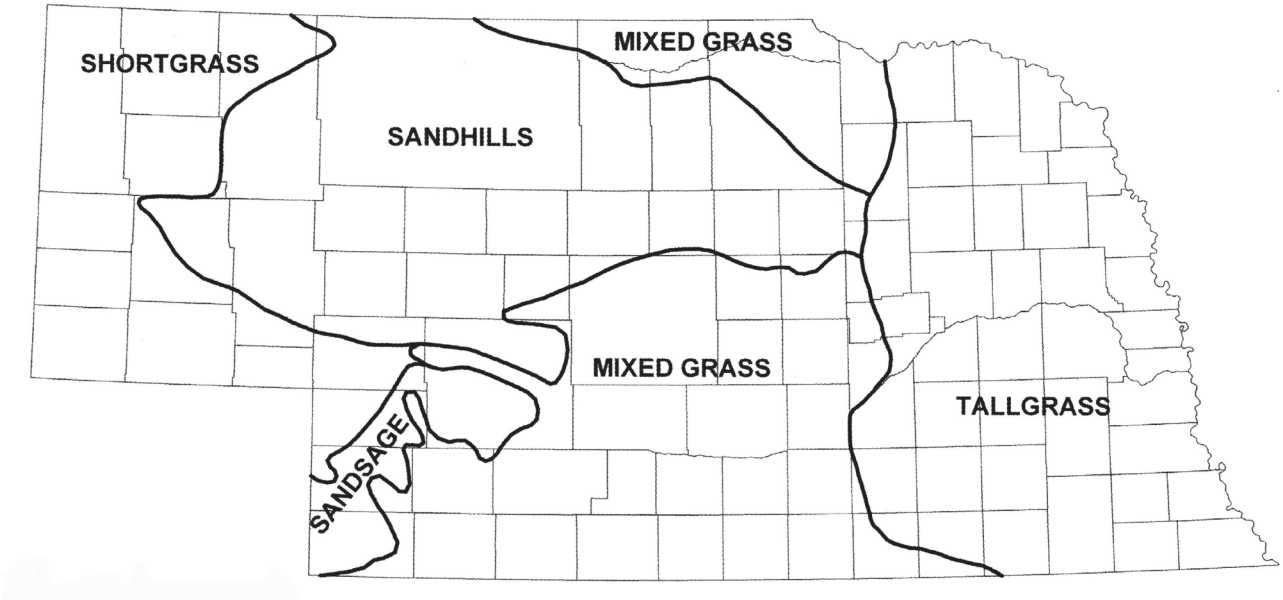

Figure 1. Nebraska prairies.

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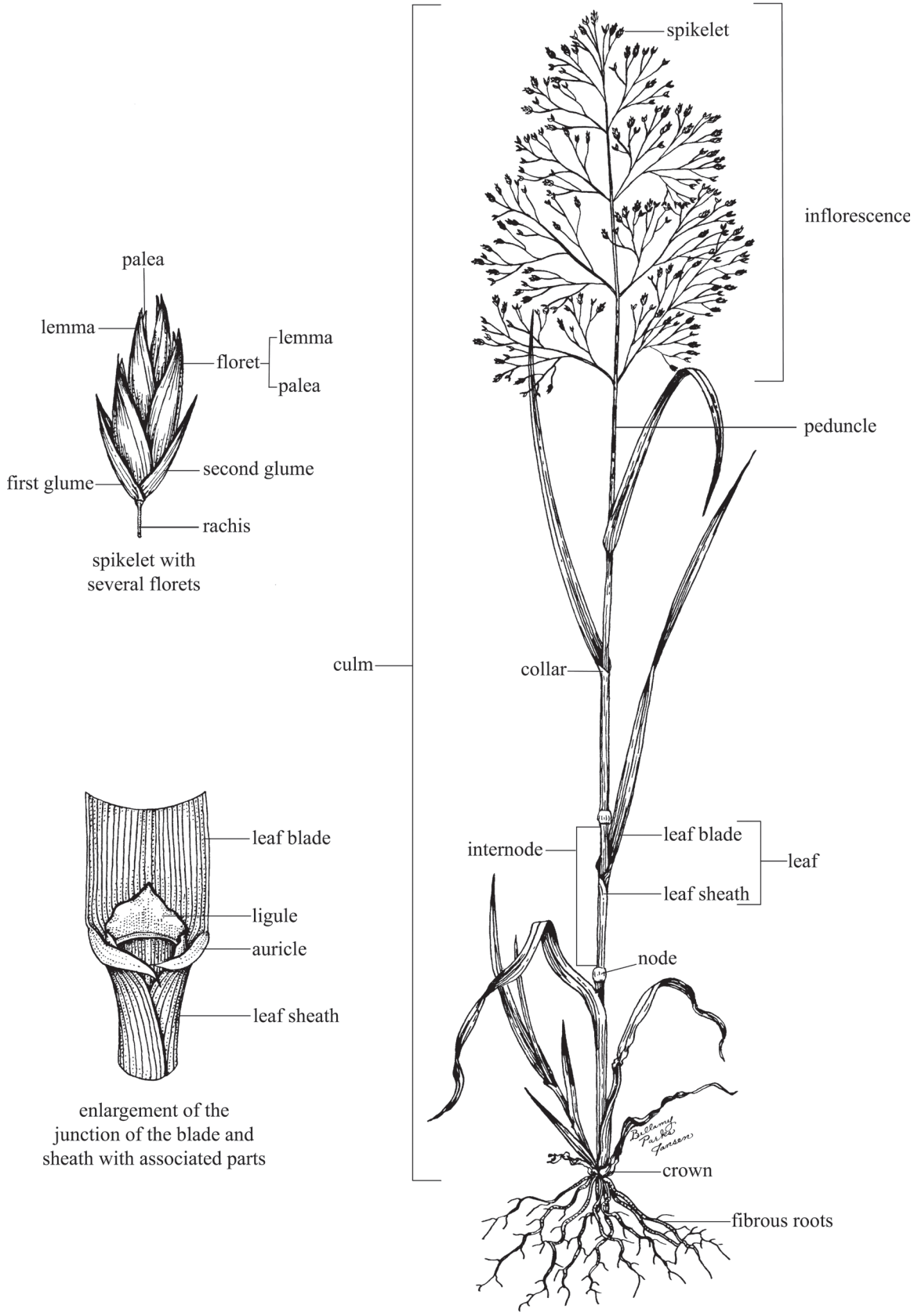

Figure 2. Grass plant including enlargements of a spikelet and junction of the blade and leaf with associated parts.

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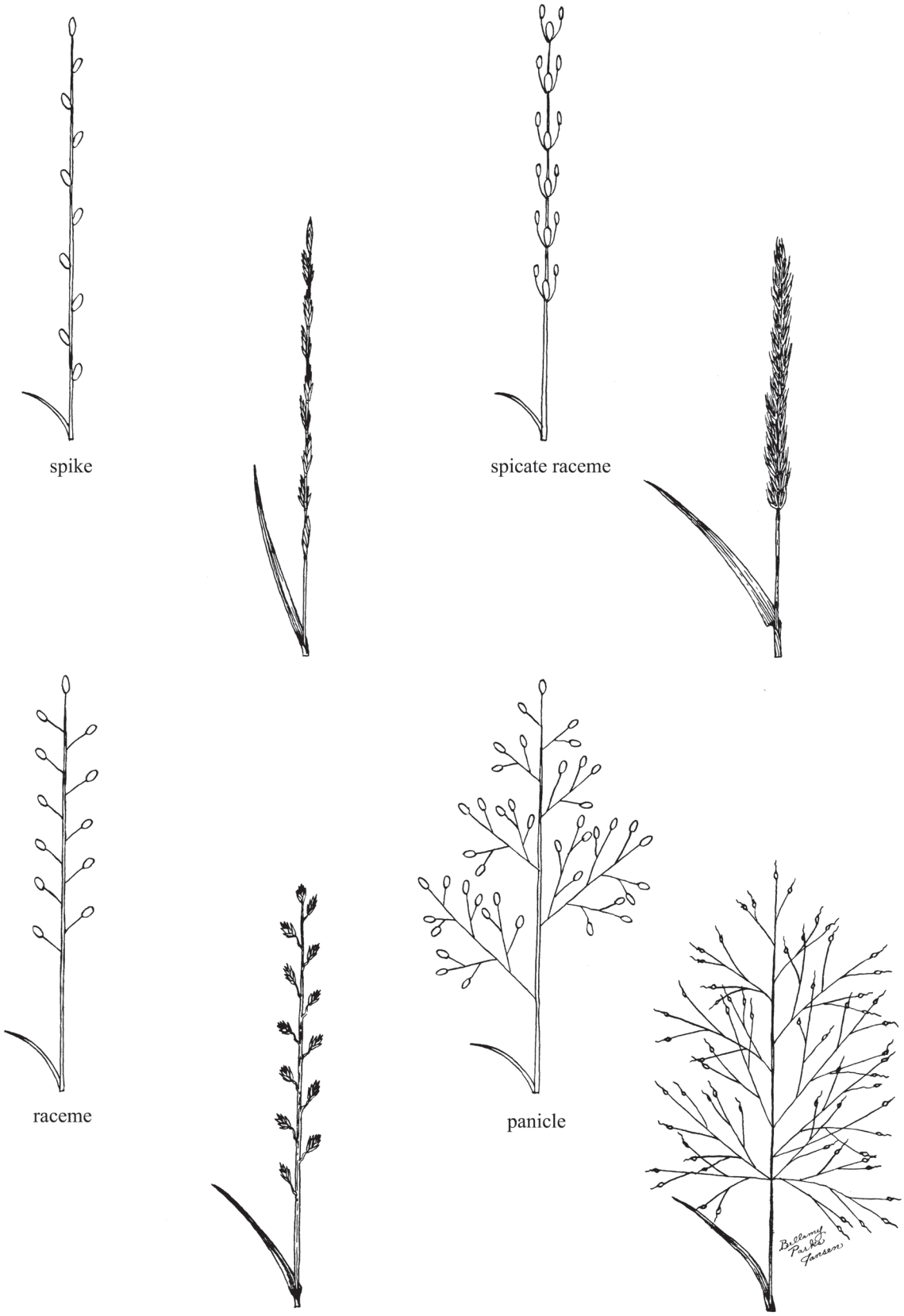

Figure 3A. Diagrammatic and actual representations of grass inflorescences.

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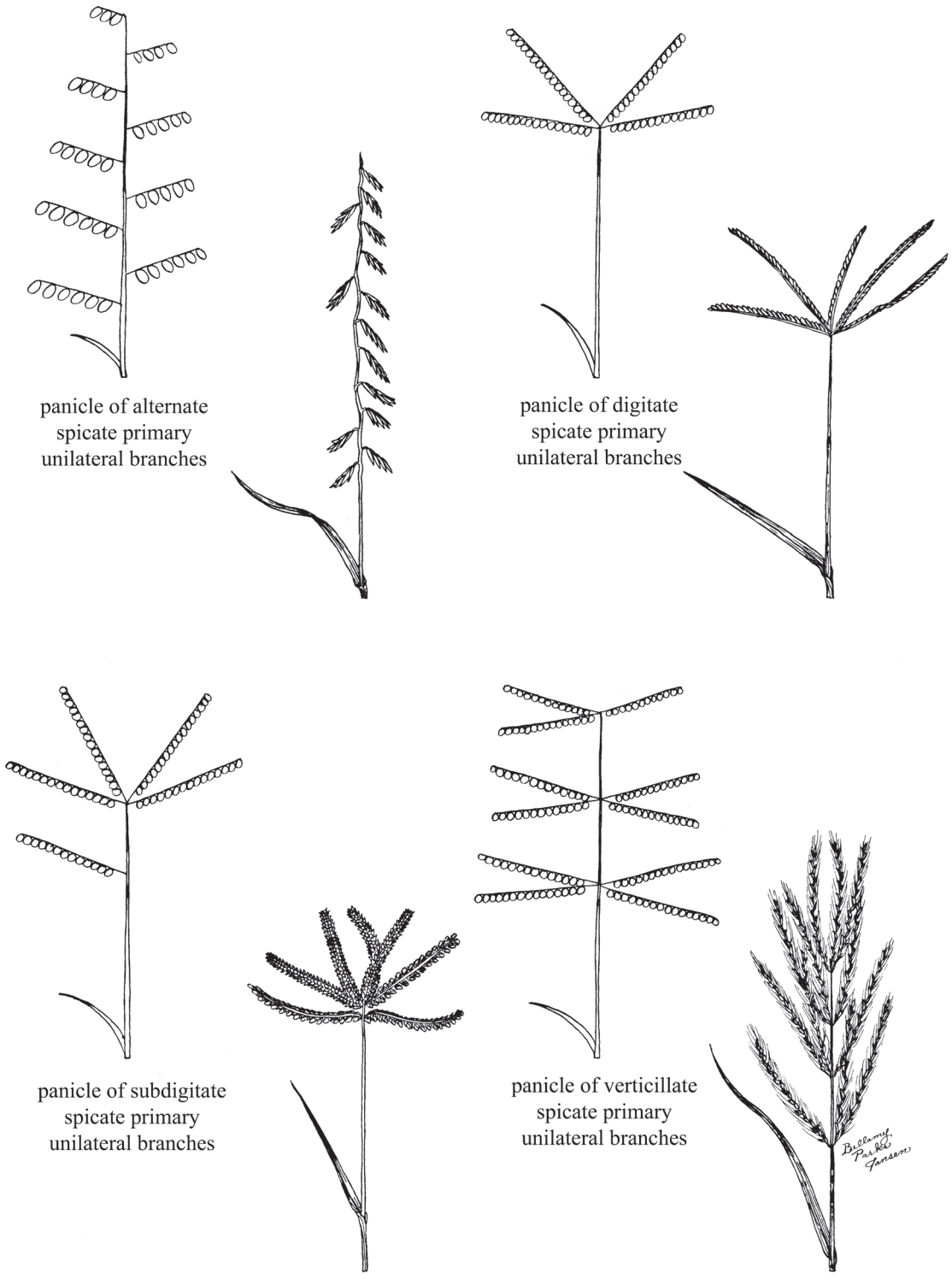

Figure 3B. Diagrammatic and actual representations of grass inflorescences.

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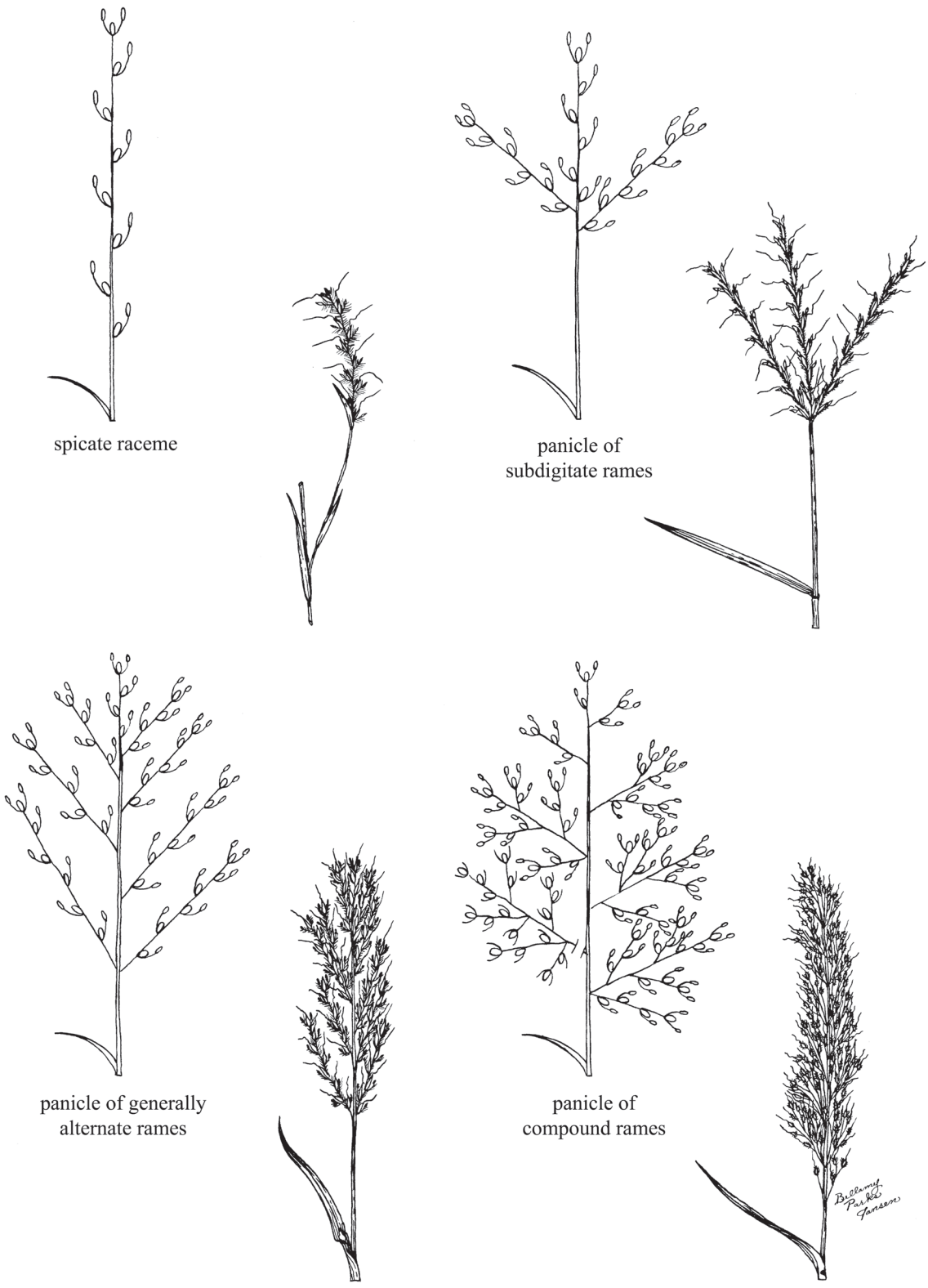

Figure 3C. Diagrammatic and actual representations of grass inflorescences.

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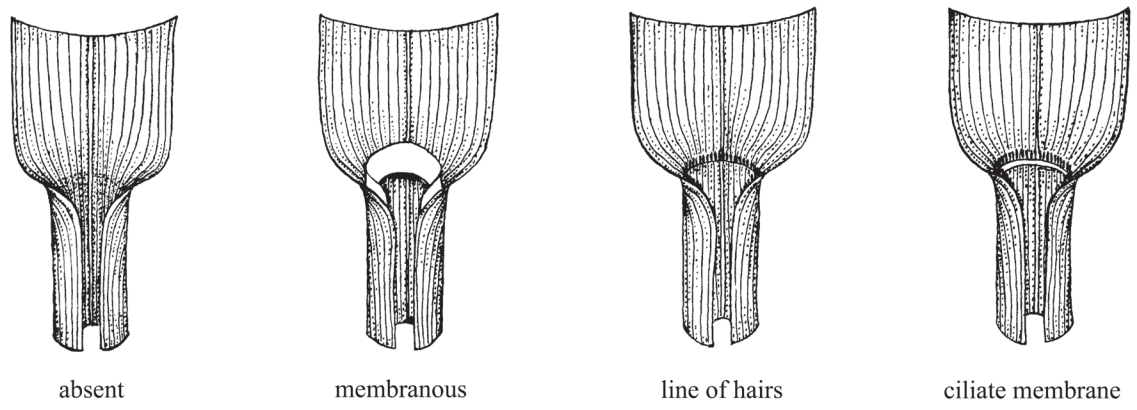

Figure 4. Ligule types, shapes, and margins.

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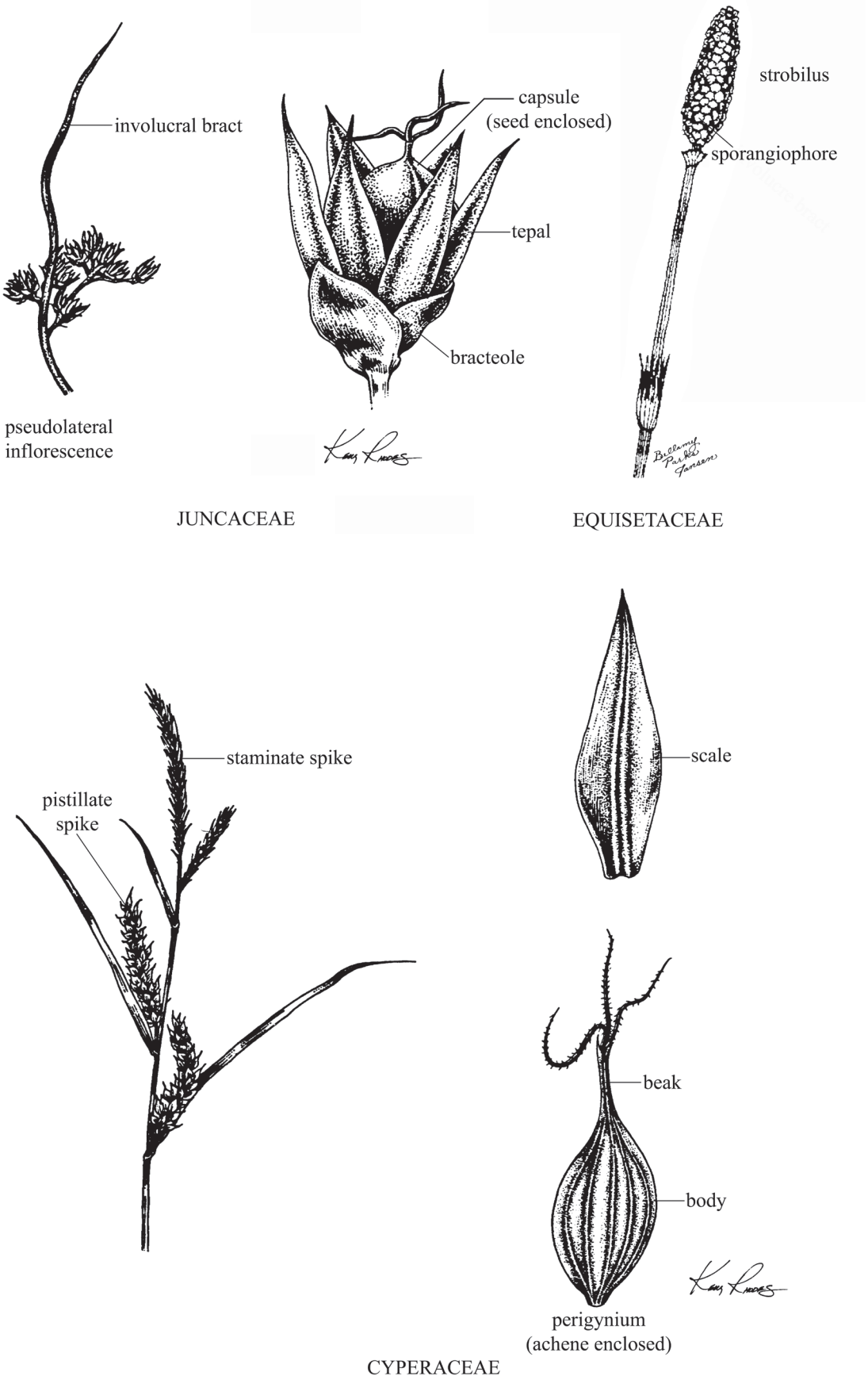

Figure 5. Inflorescences and flowers of grass-like plants.

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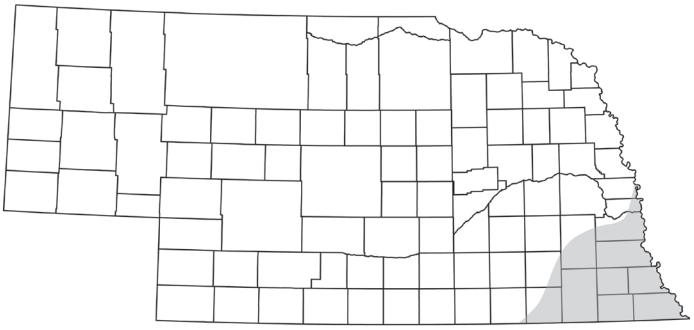
Warm-Season Perennial Grasses

Bermudagrass
Blowoutgrass
Big bluestem
Little bluestem
Sand bluestem
Silver bluestem
Yellow bluestem
Buffalograss
Alkali sacaton
Prairie dropseed
Sand dropseed
Tall dropseed
Eastern gamagrass
Blue grama
Hairy grama
Sideoats grama
Indiangrass
Inland saltgrass
Johnsongrass
Purple lovegrass
Sand lovegrass
Marsh muhly
Plains muhly
Sandhill muhly
Scratchgrass
Phragmites
Prairie cordgrass
Prairie sandreed
Purple threeawn
Purpletop
Sand paspalum
Switchgrass
Tumblegrass
Windmillgrass

Bermudagrass



COMMON NAME:	Bermudagrass
Species:	*Cynodon dactylon* (L.) Pers.
Life Span:	Perennial
Origin:	Introduced
Season:	Warm
Growth Form:	Sod-forming
Flowering:	June to October

Vegetative Characteristics

culms:	creeping, weak, only the flowering culms erect (to 50 cm tall), flattened
sheaths:	round, glabrous except for tufts of hair on either side of the collar and either side of the ligule
ligules:	ciliate membranes (to 0.5 mm long), truncate
blades:	flat or folded (to 15 cm long, to 4 mm wide), distichous, glabrous or rarely hairy on the upper side
rhizomes:	extensive, creeping, forming mats
other:	stoloniferous, stolons flat

Inflorescence Characteristics

type:	panicles of 3–7 digitate or subdigitate spicate primary unilateral branches; branches (to 6 cm long) ascending to spreading, spikelet-bearing to the base; spikelets numerous in 2 rows on each branch, overlapping
spikelets:	1-flowered (to 3 mm long); glumes nearly equal (to 2.1 mm long), pointed, 1-veined; lemmas flattened
awns:	none

Distribution and Habitat

Bermudagrass was introduced from Africa and planted in the southern states for forage. It is not common in Nebraska and grows only in the southeastern part of the state. It may be found in lawns, pastures, roadsides, and waste areas. It can become a weed.

Uses and Values

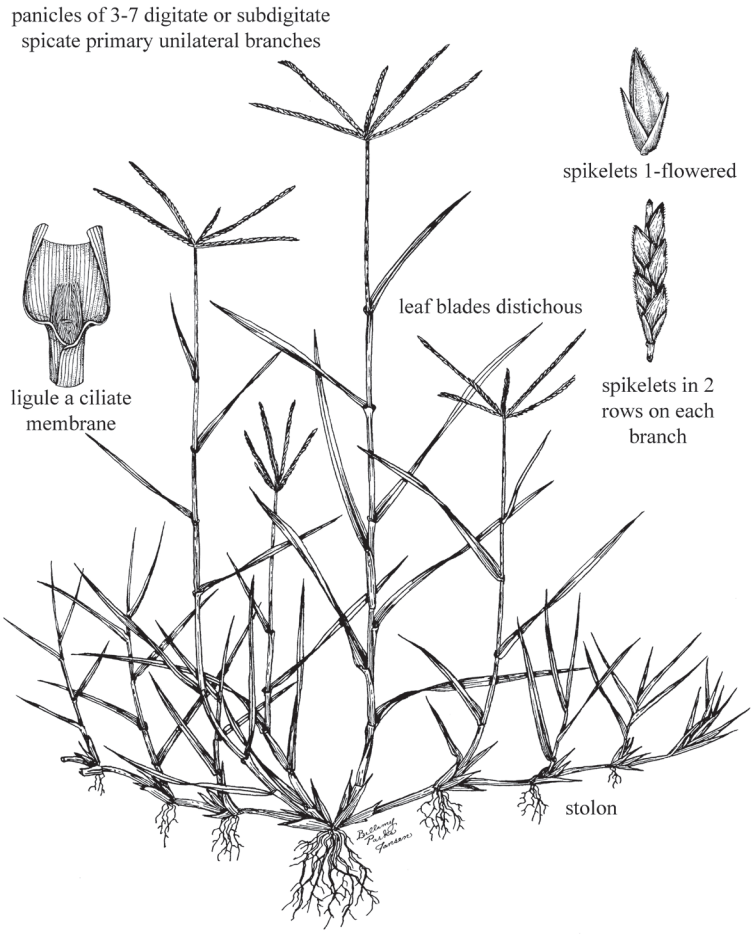
Forage. It provides good forage for cattle in the spring and early summer. Its palatability rapidly decreases as it approaches maturity. In the southern states, it may be cut for hay, but hay quality is only fair.

Establishment. Bermudagrass is not recommended for planting in Nebraska for pasture. It is sensitive to cold temperatures and is easily killed during winter.

Restoration. Bermudagrass is an introduced species and should not be used in prairie restorations.

Wildlife. Bermudagrass produces fair forage for big game animals in the spring and summer. Birds and small mammals eat the seed.

Ornamental. In areas in which it is adapted, it is planted extensively for turf. Its rhizomes and stolons spread quickly forming a dense turf.



Bermudagrass

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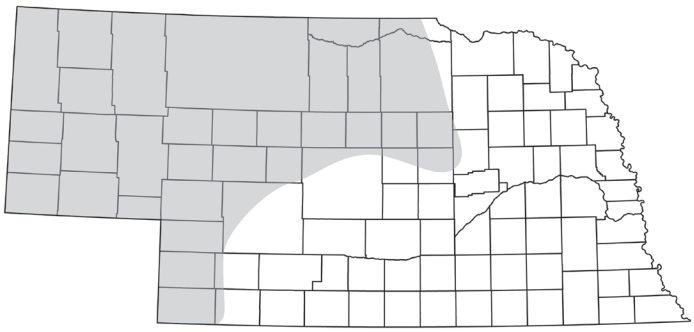
Blowoutgrass



COMMON NAME:	Blowoutgrass
Species:	*Redfieldia flexuosa* (Thurb. *ex* A. Gray) Vasey
Life Span:	Perennial
Origin:	Native
Season:	Warm
Growth Form:	Sod-forming
Flowering:	July to September

Vegetative Characteristics

culms: erect (to 1.3 m tall), coarse, tough, glabrous, bases usually buried in the sand

sheaths: nearly round, shorter than the internodes, smooth, open, glabrous or may have short hairs on raised veins; collar slightly expanded

ligules: ciliate membranes (to 2 mm long), truncate to rounded

blades: rolled at maturity (to 75 cm long, to 8 mm wide), tapering to a point, flexuous, glabrous; evenly spaced furrows on both surfaces

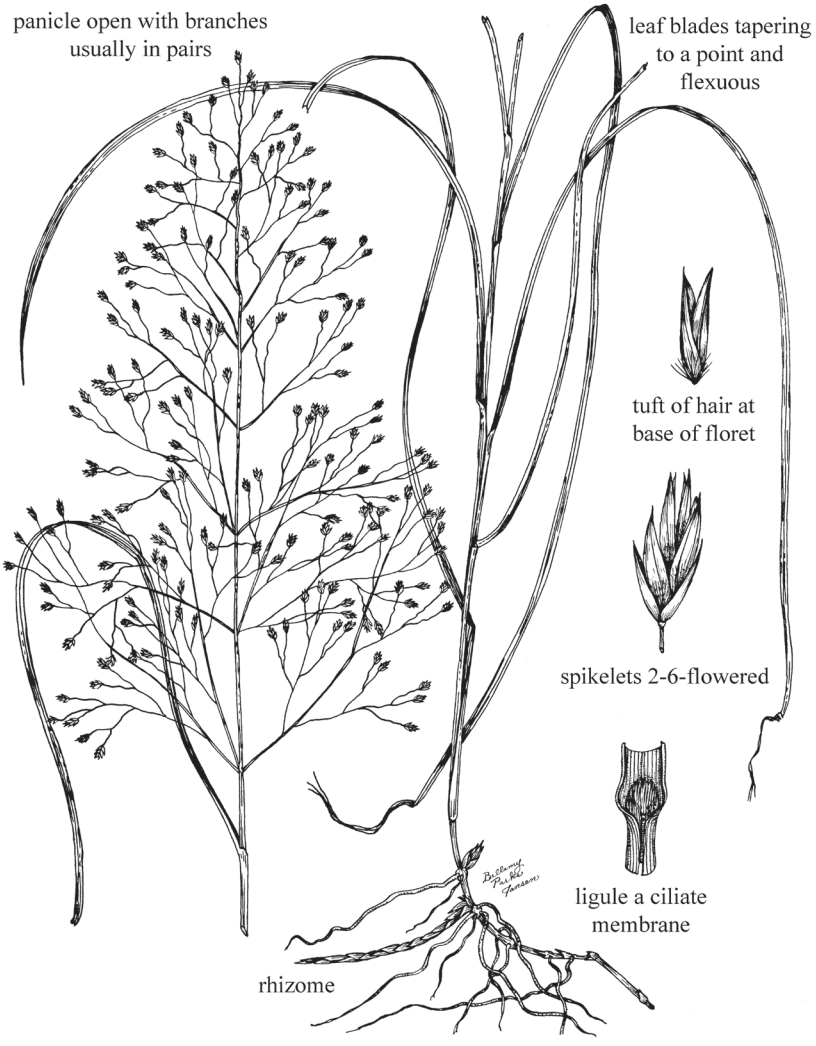
rhizomes: long, slender, straw-colored, branching, sharply pointed; with fibrous roots at some of the nodes

Inflorescence Characteristics

type: panicles (to 50 cm long, to 25 cm wide), open and branching, often one-third to one-half as long as the whole plant, ovate to oblong; panicle branches fine and hair-like, usually branched in pairs, lower branches in whorls

spikelets: 2–6-flowered (to 8 mm long), V-shaped, widely spreading at maturity; glumes slightly unequal (to 4.5 mm long), narrow, tapering, thin; first glume 1-veined; second glume 3-veined; lemma translucent, 3-veined; tuft of hair (to 1.5 mm long) at base of floret

awns: none



Blowoutgrass

Distribution and Habitat

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

Uses and Values

Forage. Blowoutgrass is much less important as a forage grass than as a soil stabilizer. The forage quality of this warm-season grass is fair for cattle and horses in the summer, but it is not readily grazed when other forage grasses are present. It remains green in the fall after many other grasses are mature and dry and then may be eaten by livestock. It cures well and furnishes limited forage in winter.

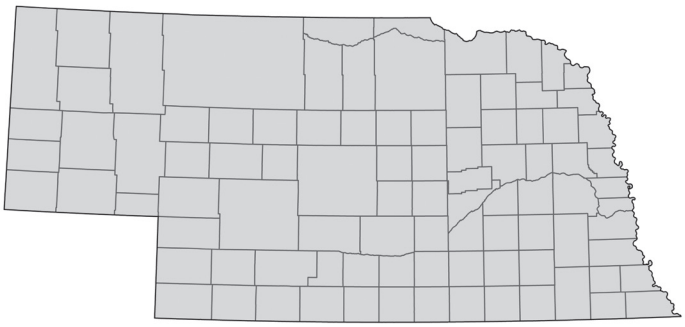
Establishment. Blowoutgrass is an early pioneer in active blowouts, and it greatest value is the reduction of wind erosion. Commercial seed is seldom available. Hand-stripping is the usual method of seed collection because using mechanical equipment in this habitat is difficult. Once established, blowoutgrass spreads rapidly by rhizomes. Rhizomes are produced at different depths, enabling plants to tolerate sharp shifts in the soil surface. New plants are generated from rhizomes, even if they are deeply buried by sand. Vegetative plants can be planted into small eroding areas. As the blowout begins to stabilize, grasses such as sand bluestem, prairie sandreed, sand lovegrass, and sandhill muhly are able to establish causing blowoutgrass to decline.

Restoration. Large Sandhills Prairie restorations seldom include blowouts, therefore, blowoutgrass rarely is used. However, it can be important for small areas with moving sand.

Wildlife. Small mammals and songbirds eat the seeds, and the foliage is grazed by deer and pronghorn.

Ornamental. Blowoutgrass is not used as an ornamental.

Big bluestem



COMMON NAME:	Big bluestem
Species:	*Andropogon gerardii* Vitman
Life Span:	Perennial
Origin:	Native
Season:	Warm
Growth Form:	Sod-forming
Flowering:	July to October

Vegetative Characteristics

culms:	erect (to 3 m tall), robust, erect or ascending, may be branched toward top, glabrous
sheaths:	often flattened, purplish at base, lower sheaths often with long and soft hairs; margins transparent
ligules:	ciliate membranes (to 5 mm long), truncate
blades:	flat or folded (to 50 cm long, to 10 mm wide), keeled; midrib prominent on the underside; lower blades often with long hairs; margins with fine teeth
rhizomes:	short

Inflorescence Characteristics

type:	panicles of 2 to 7 (commonly 3) subdigitate rames (to 15 cm long), terminal and axillary, rames usually fewer than 10 per culm
spikelets:	2-flowered, paired spikelets of nearly equal length; lower spikelets sessile and fertile (7–12 mm long); glumes of sessile spikelet nearly equal in length (to 12 mm long); first glume concave, 2-keeled; second glume 1-keeled; pedicelled spikelet sterile, slightly grooved; glumes of pedicelled spikelet not grooved

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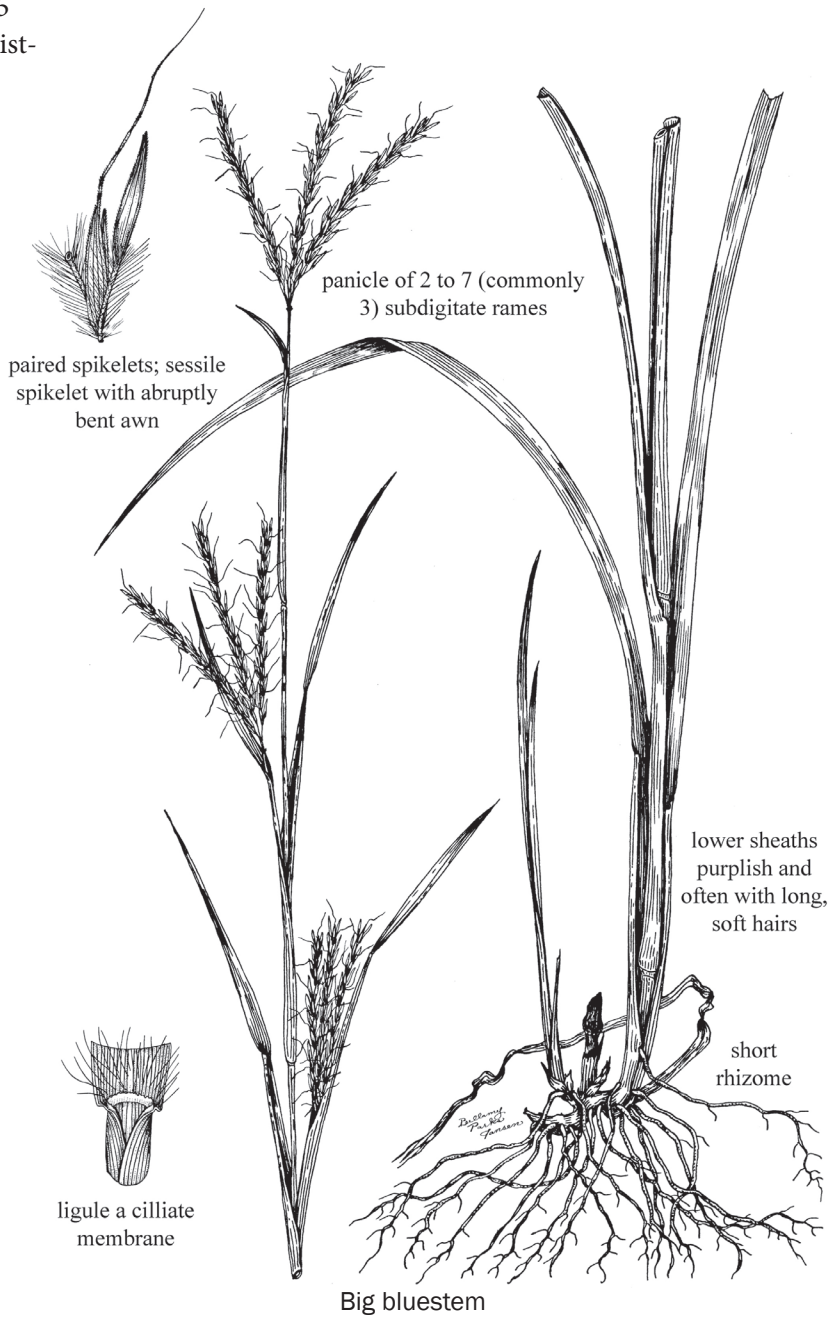
awns: lemmas of sessile spikelets awned (to 25 mm long), abruptly bent and tightly twisted below; pedicelled spikelets awnless

other: often purplish, sometimes yellowish



Big bluestem

Distribution and Habitat

Big bluestem is most abundant on moist, deep, rather well-drained soils of valleys and ravines and grows in conjunction with little bluestem, switchgrass, and indiangrass. It is often the predominant grass on overflow and subirrigated ecological sites throughout the state. In eastern Nebraska, it grows on upland sites. However, since it requires relatively large amounts of water, it is usually replaced by blue grama, needleandthread, and sideoats grama on upland sites in central and western Nebraska. Small amounts of big bluestem may be found on sharp breaks and moist slopes throughout the state. Rapid growth, reproduction by rhizomes, and a tall stature are responsible for its prominence on adapted sites. Big bluestem is a highly desirable grass where adapted because of high production of palatable forage and hay. It is the principal component of prairie hay in the Tallgrass Prairie and is largely responsible for the widespread fame of Nebraska prairie hay.

Uses and Values

Forage. This warm-season grass grows rapidly from mid-spring to early fall and produces flowering stalks in late summer and early fall. It is highly palatable and nutritious and may be the most palatable native grass in Nebraska. It is usually eaten in preference to other grasses in the summer, and it remains palatable after maturity. Big bluestem withstands grazing, but it will be replaced by less desirable grasses if continually closely grazed during the growing season. Under proper grazing, an abundance of foliage is produced from new shoots at the stem bases and from rhizomes.

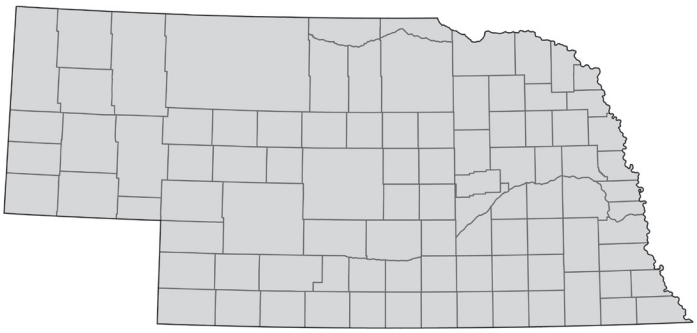
Establishment. Big bluestem is highly recommended for rangeland seeding on subirrigated and overflow ecological sites throughout most of the state and on silty and clayey sites in the eastern one-half of Nebraska. Numerous cultivars are available. It is adapted for warm-season irrigated pasture throughout the state in mixed or pure stands.

Restoration. It is a primary species in Tallgrass Prairie restorations, and small amounts of big bluestem seed should be added to Mixed Grass Prairie restorations where soil moisture is favorable.

Wildlife. Big bluestem plants are eaten by big game and small mammals. The seeds are important food for upland game birds, songbirds, and small mammals.

Ornamental. Big bluestem is used as a drought tolerant ornamental and is valued for its reddish-purple fall color. Because of its growth form, it is used as a background plant or screen. It will tolerate heavy clay soils.

Little bluestem



COMMON NAME:	Little bluestem
Species:	*Schizachyrium scoparium* (Michx.) Nash [= *Andropogon scoparius* Michx.]
Life Span:	Perennial
Origin:	Native
Season:	Warm
Growth Form:	Bunchgrass
Flowering:	July to October

Vegetative Characteristics

culms:	erect or ascending (to 1.5 m tall), tufted, branching above; bases compressed and flat, leafy; bluish-green and turning reddish-brown to purple when mature
sheaths:	flattened, laterally compressed, keeled, smooth, without hair to rarely pubescent
ligules:	ciliate membrane (to 3 mm long), truncate
blades:	flat or folded (to 50 cm long, to 8 mm wide), sometimes rolled backward toward the lower side, sharply pointed, may have long hairs, rough on upper surface and margins
rhizomes:	rarely with short rhizomes

Inflorescence Characteristics

type:	spicate racemes (to 8 cm long, to 10 mm wide), terminal and axillary, several per culm, jointed, breaking apart into spikelet pairs with the rachis joints; peduncle included in the sheath
spikelets:	paired; sessile spikelets perfect (to 10 mm long); pedicelled spikelets sterile (to 7 mm long); glumes thickened (2.5–4 mm long), rounded on the back, firm; rachis and pedicels densely hairy
awns:	lemmas of sessile spikelet awned (to 20 mm long); awns bent and twisted; lemmas of pedicelled spikelet awnless or with a short awn
other:	racemes in a zig-zag pattern at maturity

Distribution and Habitat

Little bluestem is widely distributed in the state, and it is the official state grass of Nebraska. It is found in all Nebraska counties and on all ecological sites except saline subirrigated and wetland. It is a major species on stabilized sandy and sands sites and on the north slopes of choppy sands sites. Outside the Sandhills, it is most abundant on rocky hillsides, steep slopes, ridge tops, and rolling terrain. Little bluestem is often the most prominent grass on limy upland, shallow, and thin loess ecological sites. It is abundant on silty sites in eastern Nebraska and is common on many other sites. It is not abundant but 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

Forage. When moisture is adequate, little bluestem grows rapidly and uniformly from mid-June to early August. It has fair to good forage value for all classes of livestock when the leaves are tender and succulent. It is readily grazed after regrowth has exceeded the basal culms and sheaths remaining from the previous year. Inflorescences begin to appear by midsummer and exceed the foliage. Although livestock tend to avoid the inflorescences, they continue to select the basal leaves until plants reach maturity. Palatability of little bluestem is only fair, at best, for fall and winter grazing. Full use during the growing season helps to extend the period of palatable, nutritious forage production. Continuous close grazing at this time, however, will damage and may kill little bluestem. Season of grazing is important as it tends to decrease under late spring and summer grazing and increase under winter use. Little bluestem is severely reduced by prolonged drought, particularly on upland clayey and silty ecological sites, and

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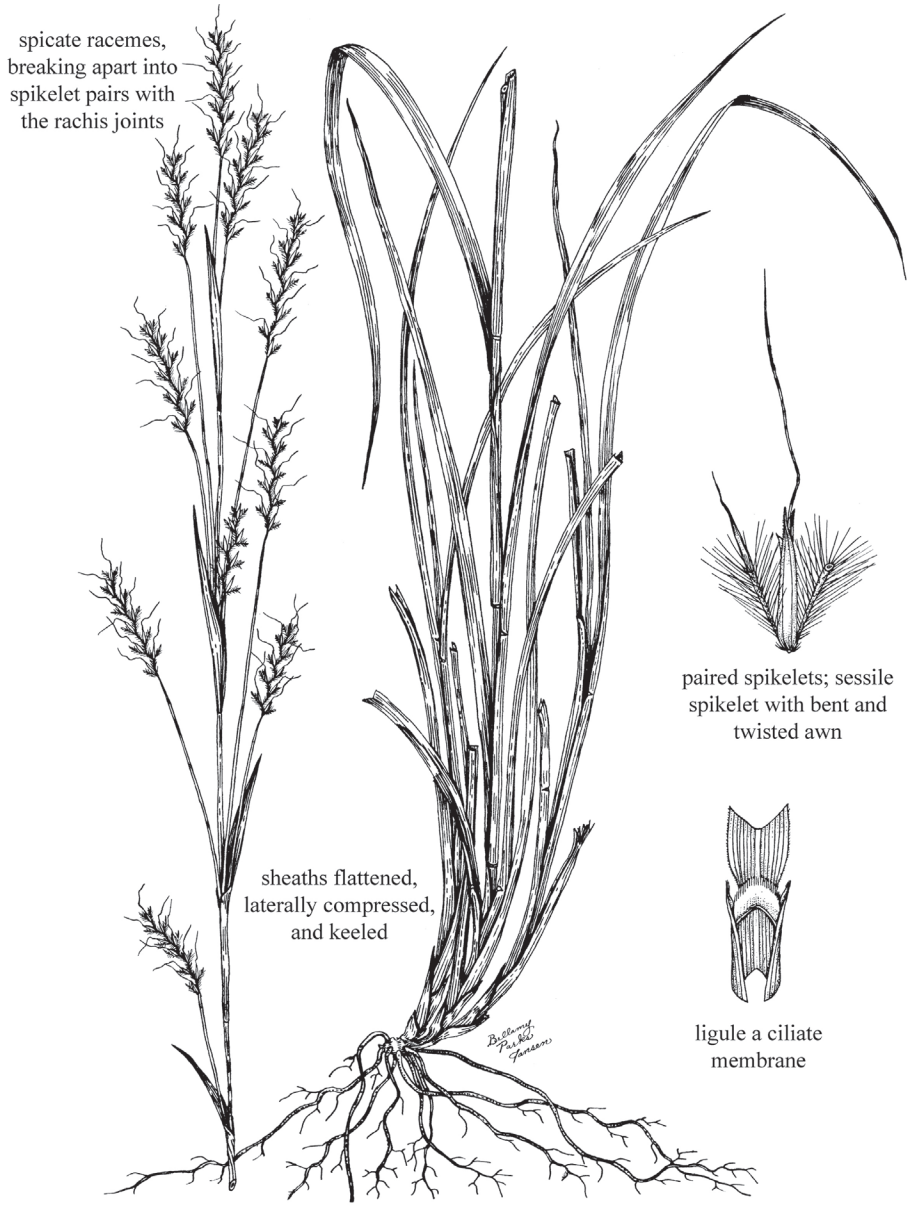
is replaced by more hardy grasses such as the gramas. On adapted sites, it is a high forage producer. It is an important component of upland prairie hay and makes good quality hay if cut early.

Establishment. Little bluestem is widely used for rangeland seeding in Nebraska, and several cultivars are available. It is recommended for use in warm-season mixtures on sandy soil and overflow ecological sites throughout the state and on silty and clayey sites in the higher precipitation zones. It is less adapted for seeding on clayey and silty sites in the western part of the state. Even if successfully established in the lower precipitation zones, little bluestem often produces no more forage than blue grama and tends to be replaced by blue grama even under moderate grazing.

Restoration. Little bluestem is a primary species in prairie restorations throughout Nebraska. It should be one of the main components of seed mixtures in the Mixed Grass and Sandhill Prairies and smaller amounts should be included in mixtures used for restoration of Shortgrass Prairies in the west and Tallgrass Prairies in the east.

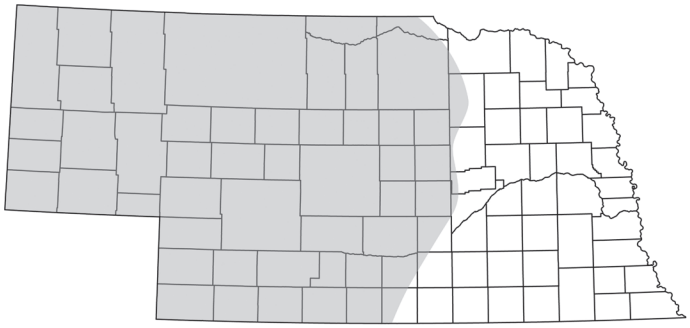
Wildlife. Little bluestem provides food and cover for wildlife. It is grazed by big game and provides nesting cover for prairie chickens and sharp-tailed grouse as well as other prairie bird species.

Ornamental. Little bluestem has a beautiful, airy inflorescence and is used in borders and in cut flower arrangements. It has a green to bluish-green color in the summer and is reddish in the fall. Cultivars differ in color expression. Little bluestem does better than its exotic counterparts under conditions of low rainfall in cultivated gardens throughout Nebraska.



Little bluestem

Sand bluestem



COMMON NAME:	Sand bluestem
Species:	*Andropogon hallii* Hack. [= *Andropogon gerardii* var. *paucipilus* (Nash) Fernald]
Life Span:	Perennial
Origin:	Native
Season:	Warm
Growth Form:	Sod-forming
Flowering:	July to October

Vegetative Characteristics

culms:	erect (to 2.5 m tall), erect or ascending, stout, glabrous, waxy (glaucous), may be bluish in color
sheaths:	flattened slightly, glabrous; veins prominent; sometimes with auricles on upper sheaths
ligules:	ciliate membranes (to 4.5 mm long), truncate, with a few long hairs attached behind at the collar
blades:	flat or folded to loosely rolled (to 45 cm long, to 10 mm wide), not strongly keeled, upper surface strongly ridged, rough to the touch; leaf margins rough; midrib prominent
rhizomes:	well-developed, long, and creeping

Inflorescence Characteristics

type:	panicles of 2–7 subdigitate rames (to 15 cm long), few (1–7) per culm arising from the end of each main branch, densely hairy (hairs to 4.5 mm long); pubescence golden-yellow or white to reddish-brown color; base may be included in the sheath
spikelets:	paired spikelets; lower spikelets sessile and fertile (7–12 mm long); pedicelled spikelets sterile, slightly larger; pedicels with long yellow hair, not grooved; glumes of sessile spikelet nearly equal (to 12 mm long); first glume slightly longer, often ciliate or with minute teeth on the veins, concave, 2-keeled; second glume slightly 1-keeled
awns:	lemmas of sessile spikelets usually awned (less than 5 mm long)
other:	inflorescences with fewer, shorter awns and with more hair than big bluestem

Distribution and Habitat

Sand bluestem is common on sandy soils throughout Nebraska and is usually abundant on the upper reaches of dunes in the Sandhills. Prairie sandreed is the only grass that exceeds the percentage composition and herbage production of sand bluestem on choppy sands and sands ecological sites in excellent condition. Although less abundant on sandy sites and shallow sites of sandy texture, it is still common and a major contributor to forage production in those locations. Sand bluestem is occasionally found on moderately coarse soils on thin silty ecological sites.

Uses and Values

Forage. Sand bluestem has a long growing season similar to that of big bluestem. It is highly palatable to all classes of livestock and has good forage value throughout the year. Sand bluestem is normally one of the first grasses to be grazed except in early spring or late in the fall when associated cool-season grasses are making rapid growth. Because of its rhizomatous growth habit, sand bluestem withstands considerable grazing. Continued heavy grazing will, however, cause it to lose vigor, develop a low growth habit, and gradually be replaced by less desirable grasses. Because of its high yield of palatable forage, sand bluestem is one of the most desirable grasses on Sandhills rangeland 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.

Establishment. Sand bluestem is recommended for rangeland seeding throughout Nebraska on sandy, sands, and choppy sands ecological sites. It typically grows in large patches, and its extensive rhizome system makes it important for stabilizing sand, especially in blowouts.

Restoration. It is one of the primary grasses used in Sandhills Prairie restorations.

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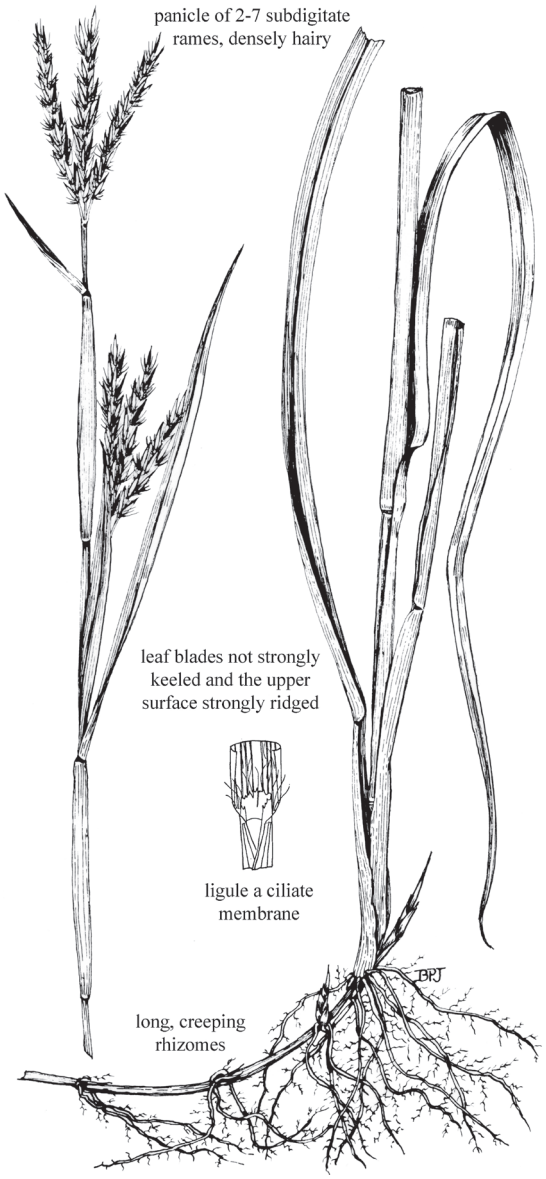
Wildlife. Sand bluestem plants are eaten by big game and small mammals. The seeds are important food for upland game birds and songbirds.

Ornamental. Sand bluestem has not been used extensively as an ornamental. It has a softer look than big bluestem and could be used as a background plant or screen. Unlike big bluestem, it does not tolerate heavy clay soils.

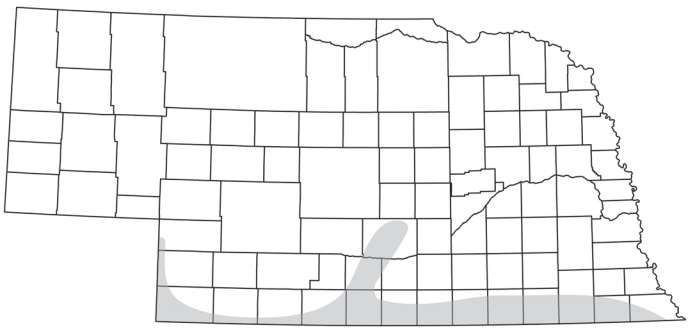
Other

Sand bluestem is sometimes 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 intergrade between the two types. Sand bluestem is, however, ecologically restricted to the more sandy sites and does have a range of adaptation to sandy sites that is distinct from big bluestem.



Sand bluestem

Silver bluestem



COMMON NAME:	Silver bluestem
Species:	*Bothriochloa laguroides* (DC.) Herter.
Life Span:	Perennial
Origin:	Native
Season:	Warm
Growth Form:	Bunchgrass
Flowering:	July to September

Vegetative Characteristics

culms:	erect to decumbent (to 1.3 m tall), branching above the base, nodes with short appressed hairs
sheaths:	rounded, keeled near the collar, glabrous, glaucous; collar with a few long hairs on margin; hairs may extend up the leaf margins
ligules:	membranous (1–4 mm long), obtuse to acute, erose to entire
blades:	flat or folded (to 25 cm long, to 9 mm wide), glaucous, midvein prominent, margins white, often brownish toward the margin
rhizomes:	none

Inflorescence Characteristics

type:	panicle of 12 or more rames (to 15 cm long), open, terminal and axillary; rames rebranching; branches erect to ascending (2–4 cm long); silvery-white
glumes:	glumes unequal 2.5–4.5 mm long, without glandular pit; first 2-keeled; second 1-keeled, 3-veined

spikelets:	paired; lower spikelet sessile and perfect (3–4 mm long); pedicellate spikelet neuter (1.5–3 mm long), narrow
awns:	lemma of sessile spikelet with a delicate awn (8–25 mm long), geniculate; pedicellate spikelet awnless

Distribution and Habitat

Silver bluestem grows on all types of soils and is found in southern Nebraska. It does not grow well on moist sites. It is thought to have been one of the most common grasses in the central Great Plains before the last Ice Age. With predicted temperature increases, it may spread farther northward into Nebraska.

Uses and Values

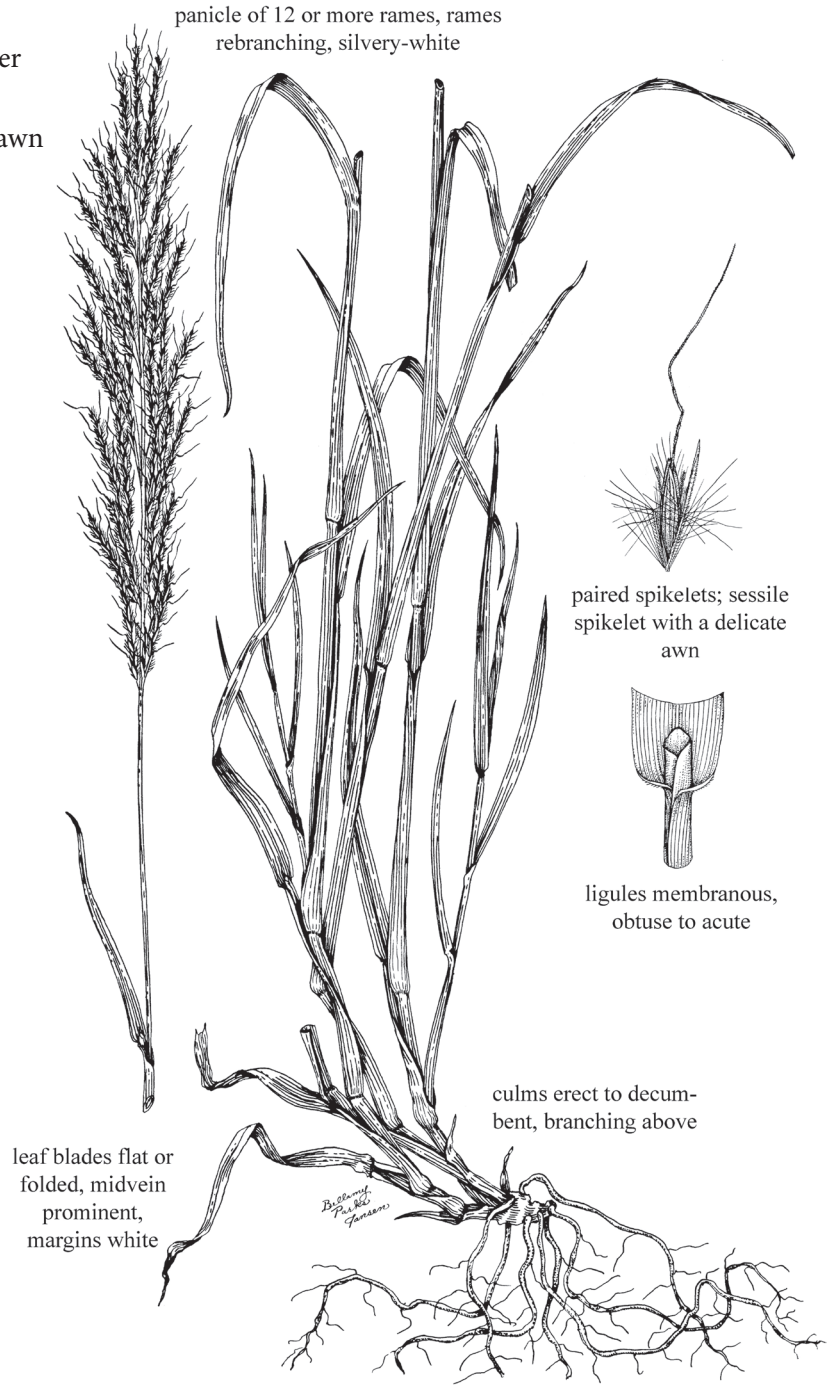
Forage. Silver bluestem produces fair forage for all classes of livestock. It is only lightly grazed after reaching maturity.

Establishment. It is not recommended for rangeland seedings in Nebraska.

Restoration. It should not be used for restoration.

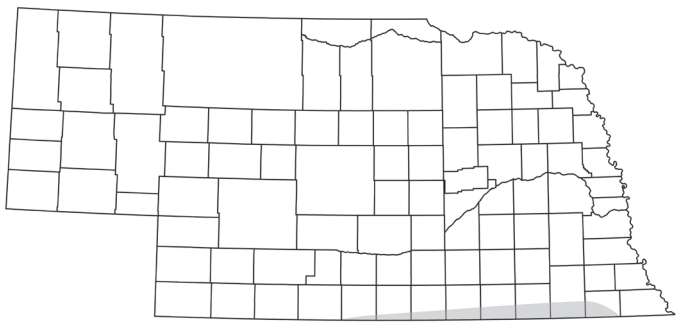
Wildlife. Silver bluestem produces fair forage for grazing big game.

Ornamental. It has not been evaluated for ornamental plantings.



Silver bluestem

Yellow bluestem



COMMON NAME:	Yellow bluestem (King Ranch bluestem)
Species:	*Bothriochloa ischaemum* (L.) Keng
Life Span:	Perennial
Origin:	Introduced
Season:	Warm
Growth Form:	Sod-forming or bunchgrass
Flowering:	July to October

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Vegetative Characteristics

culms:	erect or ascending (to 0.8 m tall), branching above the base, nodes with short pubescence or glabrous
sheaths:	rounded, glabrous or with long scattered hairs at the bases
ligules:	membranous (to 1.5 mm long), truncate
blades:	flat or folded (to 20 cm long, to 4.5 mm wide), brownish toward the margins; midvein prominent
rhizomes:	rhizomatous or stoloniferous

Inflorescence Characteristics

type:	panicles of 2–8 rames (to 10 cm long), open, fan-shaped, rames not re-branching; central axis to 2 cm long
spikelets:	paired spikelets of nearly equal length (to 4.5 mm long) or pedicelled spikelet slightly longer but narrower; lower spikelets sessile and fertile; pedicelled spikelets staminate; glumes of sessile spikelets nearly equal in length (to 4.5 mm long), without glandular pit
awns:	lemma of sessile spikelet awned (to 17 mm long), abruptly bent and twisted below; pedicelled spikelet awnless

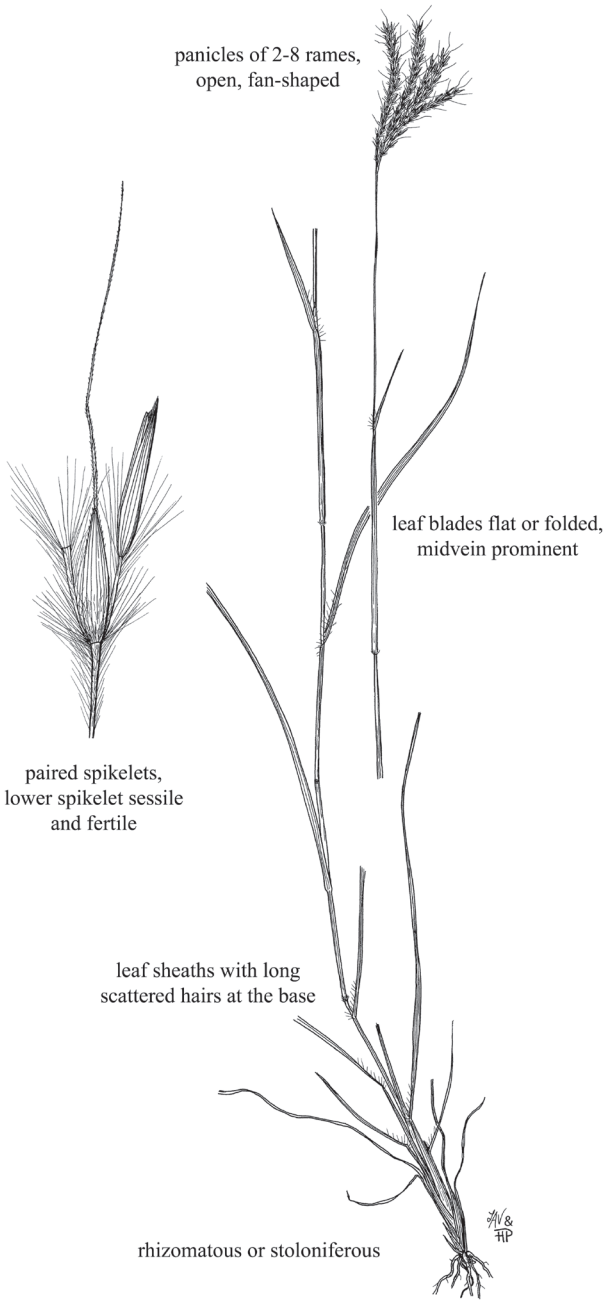
Distribution and Habitat

Yellow bluestem is most abundant in calcareous well-drained soils of prairies, pastures, and waste ground in southern Nebraska. It was introduced from Eurasia into states to the south for pasture and soil stabilization. It is included here because it is an aggressive invasive species that has spread rapidly in Tallgrass Prairies in Oklahoma and Kansas. There is concern that it could spread in prairies in Nebraska. It thrives under many management techniques, such as prescribed burning, used to maintain and improve Tallgrass Prairies. If found, it should be the target of a focused control program.

Uses and Values

Forage. When planted in pure stands and fertilized, this warm-season grass grows rapidly and is relatively palatable and nutritious to livestock. However, it is largely avoided if it is growing with other prairie species.

Establishment. Yellow bluestem is a pernicious weed and is not recommended for rangeland seedings in Nebraska.



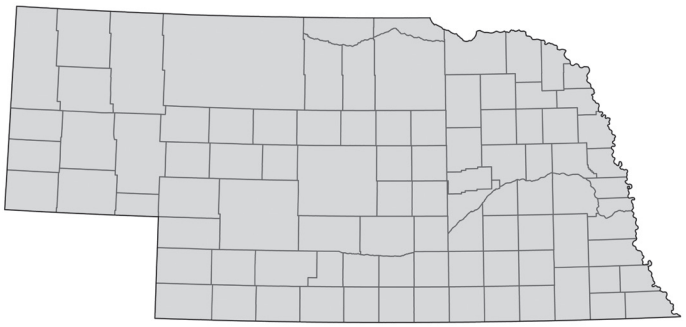
Yellow bluestem

Restoration. It should not be used for restoration.
Wildlife. Yellow bluestem is nearly worthless to wildlife.
Ornamental. It should not be used in ornamental plantings.

Other

Australian bluestem, or Caucasian bluestem [*Bothriochloa bladhii* (Retz.) S.T. Blake] is another introduced species of bluestem that has the ability to rapidly spread in prairies. It has been found in southeastern and northeastern Nebraska. It differs from yellow bluestem by not having rhizomes or stolons and having pedicellate spikelets that are narrower and shorter than the sessile spikelets. Its inflorescence is often grayish or purplish in color. Its uses and values are similar to those of yellow bluestem.

Buffalograss



COMMON NAME:	Buffalograss
Species:	*Buchloe dactyloides* (Nutt.) Engelm.
Life Span:	Perennial
Origin:	Native
Season:	Warm
Growth Form:	Sod-forming
Flowering:	May to July

Vegetative Characteristics

culms: culms of staminate plants erect (to 25 cm tall), nodes glabrous; culms of pistillate plants much shorter

sheaths: rounded on the back, glabrous except for a few marginal hairs near the collar; partially enclose inflorescences in pistillate plants

ligules: ciliate membranes (less than 1 mm long), truncate to obtuse, often flanked by longer hairs

blades: flat (to 17 cm long, to 2.5 mm wide), curly, sparsely hairy on one or both surfaces, grayish-green, curling upon drying

other: stoloniferous; stolons wiry, low-growing

Inflorescence Characteristics

type: staminate and pistillate inflorescences produced on separate plants (dioecious); staminate inflorescences are panicles of 1–4 spicate primary unilateral branches (to 14 mm long), branches alternate; 6–12 spikelets in 2 rows on each branch, comb-like; pistillate plants have bur-like clusters (up to 1 cm in diameter) of spikelets, falling as a unit

spikelets: staminate spikelets 2-flowered (to 5.5 mm long); staminate spikelet glumes unequal (first to 3 mm long, second to 4.5 mm long), 1–2-veined; lemmas longer than the glumes; pistillate spikelets 1-flowered, 3–7 in each bur-like cluster; pistillate spikelet glumes unequal, first glume highly reduced

awns: second glume of pistillate spikelets awn-tipped (1–2 mm long)

other: staminate inflorescences exceed leaves, pistillate inflorescences (bur-like clusters) usually at mid-culm and within the leaves

Distribution and Habitat

Buffalograss is found in all parts of the state, but it is most abundant in southern and western Nebraska. It is one of the primary grasses in Shortgrass Prairies where it is chiefly associated with blue grama and western wheatgrass. It is best adapted to swales and depressions on soils with heavy to medium texture and on bottomlands if competition from tall grasses is reduced. Buffalograss sod occupies hill tops of heavily grazed rangeland throughout the loess hills. It is not adapted to sandy soils and is uncommon in the Sandhills. This is the species that bound the soil together creating the sod used to make many of the sod homes in Nebraska in the 1800s.

Uses and Values

Forage. Buffalograss is somewhat less palatable than blue grama and is grazed primarily in late summer and fall. It makes rapid growth in late spring and summer. Buffalograss cures well but is often too short for dependable winter grazing. In general, it is of minor importance for grazing in Nebraska, except in the heavily used areas of the loess hills where it may be the most abundant species. Vegetation of shortgrass rangeland in western Nebraska commonly referred to as "buffalograss" normally contain blue grama and threadleaf sedge with only small amounts of buffalograss. Buffalograss cannot survive dry periods as well as blue grama, but it recovers rapidly following drought. It withstands heavy grazing better than blue grama and increases under heavy grazing or mowing. Buffalograss increases in Tallgrass Prairies when the taller grasses are stressed by drought or heavy grazing.

Establishment. Seeding mixtures with buffalograss have been planted on silty and clayey ecological sites in western Nebraska. Buffalograss can be readily established

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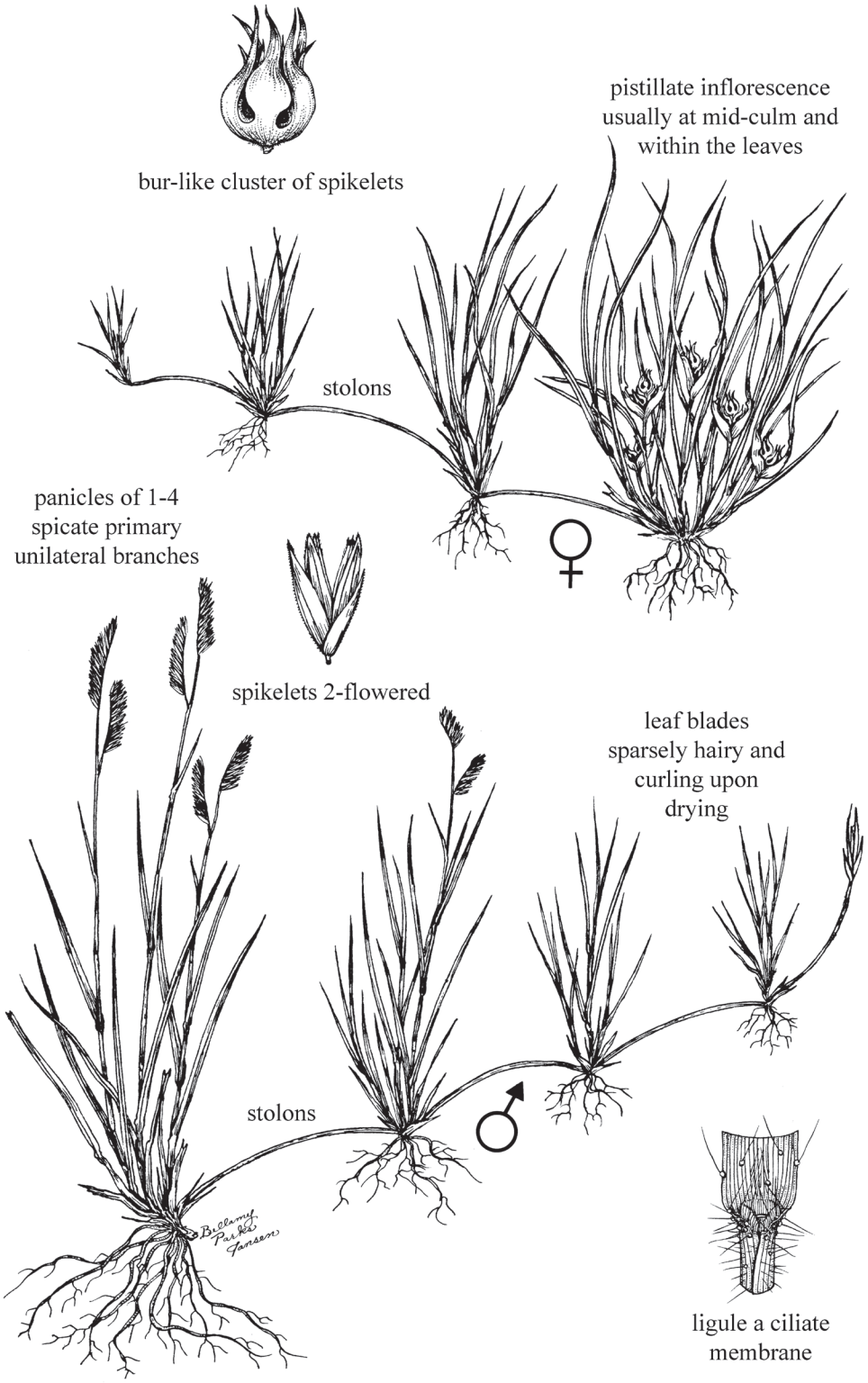
from seed treated to enhance germination. Its low herbage yield, however, makes it less desirable as a forage plant in Nebraska, and its use in rangeland seeding usually is not recommended. Buffalograss makes a dense sod and effectively controls erosion on silt loam to clay soils.

Restoration. Buffalograss is a primary component of Short-grass Prairie restorations. Small amounts of seed can be included in restorations in central and eastern Nebraska on dry uplands. Shade from taller grasses will cause it to decline. Care should be taken to only plant seed treated to improve germination.

Wildlife. Buffalograss provides some grazing for big game, and the seed is eaten by small mammals and songbirds.

Ornamental. Buffalograss is well adapted as a low maintenance turf grass on dry soils and in sunny sites. Stands can be established either from seed or sod plantings. It mixes easily with blue grama. Since it is a warm-season species, it does not green up as early in the spring or stay green as late in the fall as Kentucky bluegrass. Buffalograss requires little or no supplemental water. It becomes dormant during times of drought, but it recovers quickly. Many cultivars of buffalograss are available.

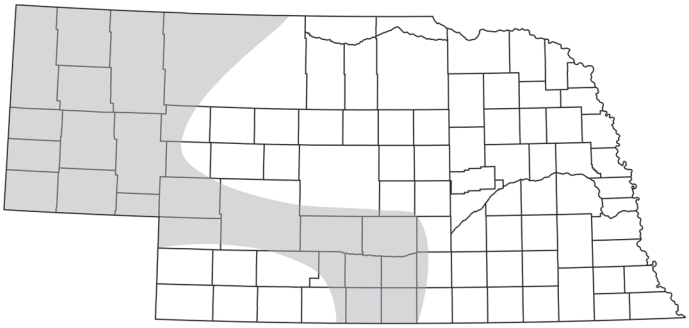


Buffalograss

Other

False buffalograss [*Munroa squarrosa* (Nutt.) Torr.] grows in mats to 50 cm wide and is common on recently disturbed sites such as anthills, prairie dog towns, pocket gopher mounds, trails, corrals, and drought-bared soil. It resembles buffalograss but differs in having bisexual flowers and sharply 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 with poor forage value.

Alkali sacaton



COMMON NAME:	Alkali sacaton
Species:	*Sporobolus airoides* (Torr.) Torr.
Life Span:	Perennial
Origin:	Warm
Season:	Native
Growth Form:	Bunchgrass
Flowering:	June to October

Vegetative Characteristics

culms: erect (to 1.5 m tall), stout,tufted, shiny, glabrous; base bleached to a light color

sheaths: rounded, collar glabrous to sparsely pubescent (to 4 mm long); lower sheaths usually bleached to a light color

ligules: ciliate membrane, (less than 1 mm long), backed or flanked with longer hairs (to 3 mm long)

blades: flat (to 50 cm long, to 6 mm wide), becoming rolled, firm, pointed, wide at base; upper surface ridged

rhizomes: none

Inflorescence Characteristics

type: panicles (to 50 cm long, to 25 cm wide), highly variable in size, subpyramid- to pyramid-shaped, usually open; lower branches single or paired, no spikelets on the lower one-fourth of the branches; often purplish to pink

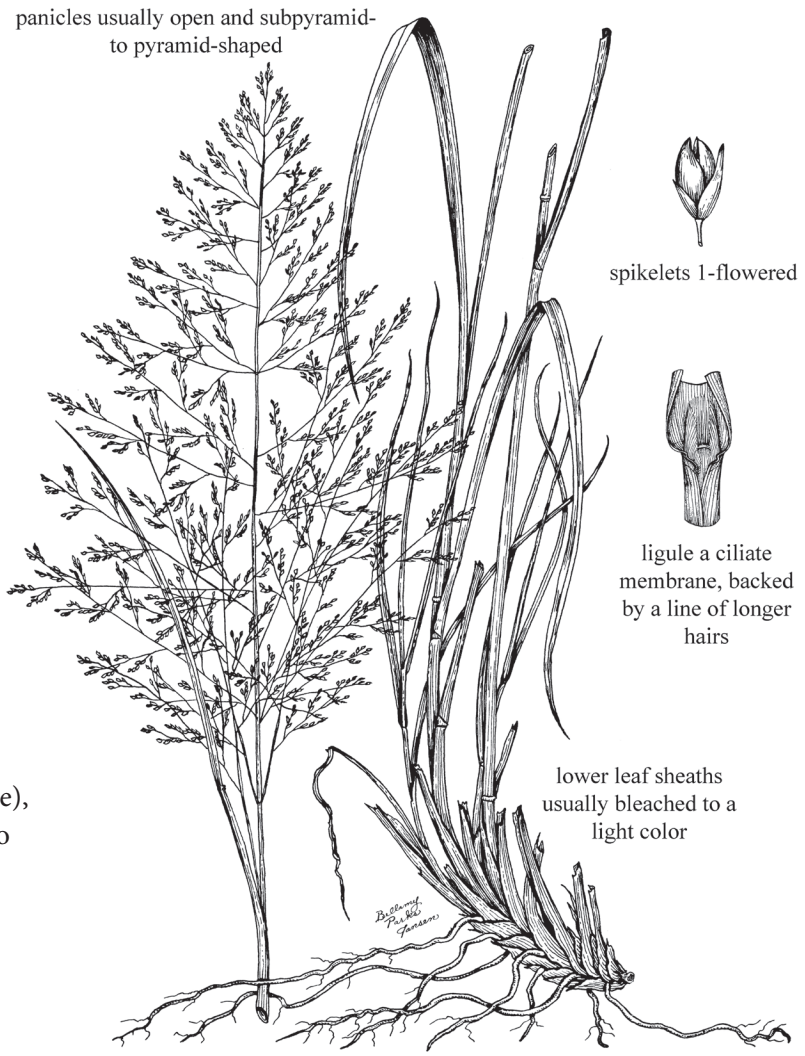
spikelets: 1-flowered (to 2.7 mm long), mostly on spreading pedicels (to 2 mm long); glumes unequal, first glume (to 2 mm long) pointed, usually 1-veined, may be veinless; second glume (to 2.7 mm long) pointed, 1-veined; lemmas equaling the length of the second glumes, 1-veined, pointed; paleas nearly equal to the lemma

awns: none

other: exerted from the sheath or only the upper portion exerted

Distribution and Habitat

Alkali sacaton is well adapted to dry or moist saline bottomlands. It is common in meadows and river valleys in western Nebraska, particularly along the North Platte,



Alkali sacaton

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White, and Niobrara rivers. It is adapted also to moderately alkaline soils where other species are uncommon. Although most common in the western one-third of Nebraska, it also occurs along the Platte River in central Nebraska. It grows on rangeland in nearly pure stands or intermixed with inland saltgrass, western wheatgrass, and switchgrass.

Uses and Values

Forage. Alkali sacaton has fair to good forage value. Its herbage is palatable during early growth stages, but it becomes coarse and tough as it matures. It is not a desirable grass for prairie hay. Palatability of alkali sacaton is much lower than the bluestems and the gramas. However, when compared to the plants which grow with it on saline subirrigated ecological sites, forage value is good. Forage value before maturity is similar to that of western wheatgrass. Alkali sacaton produces a high volume of forage, but production is reduced by heavy grazing. Solid stands of this grass are best grazed in the spring and early summer. However, mature cattle do well on alkali sacaton in winter when adequate protein and mineral supplements are provided.

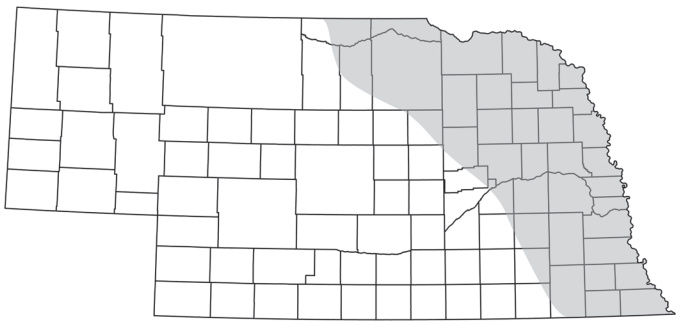
Establishment. Alkali sacaton has good salt tolerance and is recommended for native grass seedings on saline subirrigated ecological sites in mixture with grasses such as western wheatgrass and switchgrass. In some parts of the United States, alkali sacaton has been used in remediation efforts. It removes selenium from the soil, storing it in its shoots.

Restoration. Alkali sacaton can be used in prairie restorations in saline bottomlands in western Nebraska.

Wildlife. Alkali sacaton provides valuable cover and forage for small mammals and birds. Deer, pronghorn, and elk lightly graze the foliage.

Ornamental. Arching mounds of fine foliage and light purple to pink panicles make alkali sacaton an attractive plant massed in perennial beds. It grows on all soil textures. It tolerates moist to occasionally dry conditions and alkaline or saline soils making it appropriate for difficult spots.

Prairie dropseed



COMMON NAME:	Prairie dropseed
Species:	*Sporobolus heterolepis* (A. Gray) A. Gray
Life Span:	Perennial
Origin:	Native
Season:	Warm
Growth Form:	Bunchgrass
Flowering:	July to October

Vegetative Characteristics

culms:	erect (to 85 cm tall), slender, tufted, glabrous, not branched above the bases
sheaths:	round to slightly keeled, may be hairy on the throat, lower sheaths may have long hairs; purplish at the base
ligules:	line of hairs (less than 0.5 mm long)
blades:	rolled, may be folded or flat, (to 40 cm long, to 6 mm wide), upper ones shorter, glabrous
rhizomes:	occasionally with short rhizomes but normally a bunchgrass
other:	forms a distinct bunch

Inflorescence Characteristics

type:	panicles (to 20 cm long, to 7 cm wide), loosely contracted, somewhat pyramid-shaped; panicle branches ascending to spreading; 2–3 branches at lower nodes
spikelets:	1-flowered (to 7 mm long); glumes unequal, pointed, shiny; first glume (to 4.6 mm long) slender, veined or veinless; second glume broader, longer (to 6 mm long), 1- or occasionally 3-veined; fruit globe-shaped; lead-colored
awns:	none
other:	well-exerted from the sheath

Distribution and Habitat

Prairie dropseed grows on upland sandy to silt loam soils. It is normally found as scattered plants growing on ridges and hill sides with needleandthread, little bluestem, and porcupinegrass. Occasionally, it is found on lowlands with big bluestem and indiangrass.

Uses and Values:

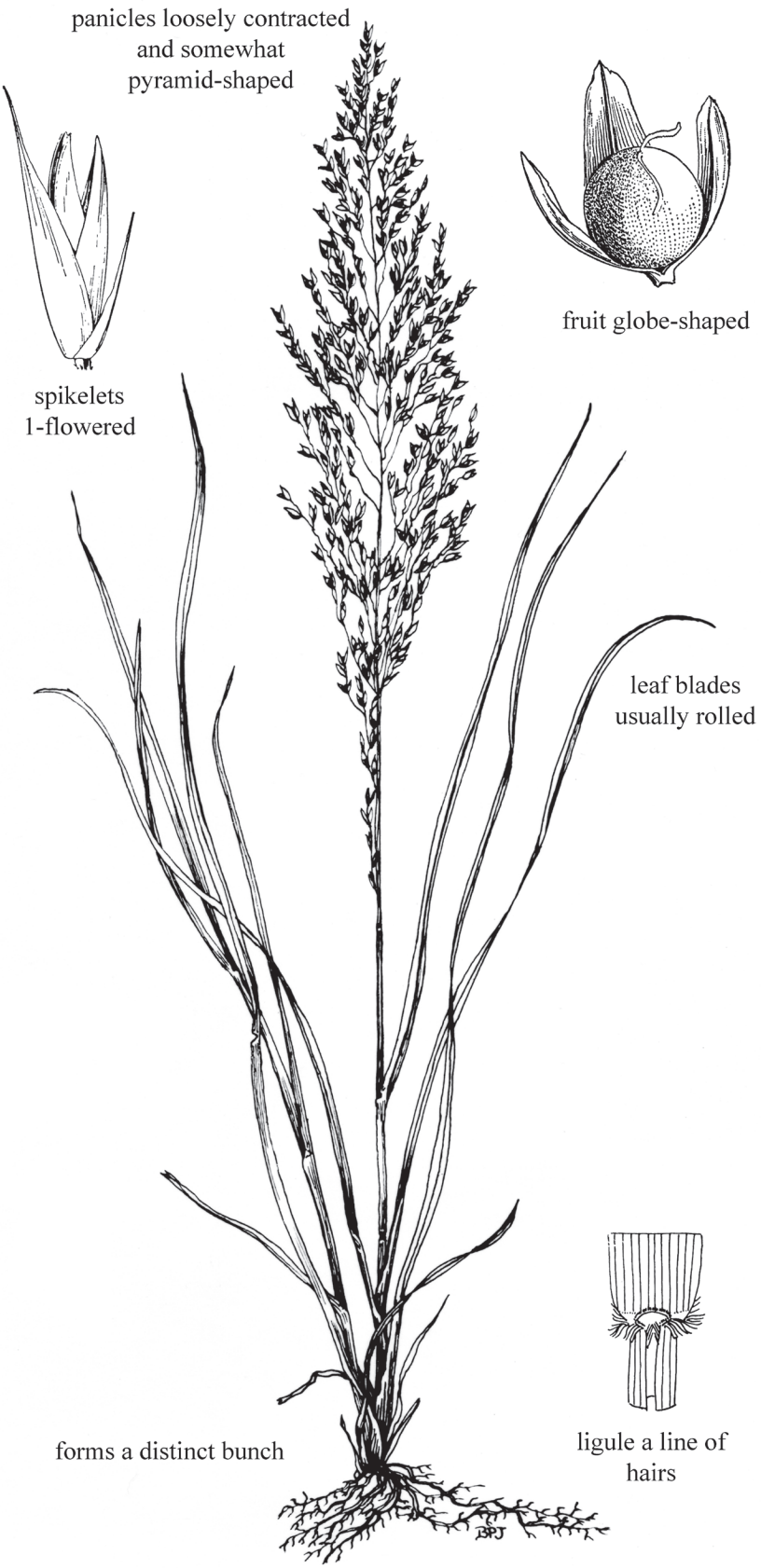
Forage. Prairie dropseed has good forage quality before reaching maturity. When cut early, it provides good quality hay, but its fine leaves are rather difficult to mow. It is somewhat more palatable than sand dropseed and tall dropseed in both hay and pastures. It declines under heavy grazing. Prairie dropseed may be locally important as pasture or hay in eastern Nebraska.

Establishment. Prairie dropseed can be used in grassland seedings, but seeds are sometimes not available.

Restoration. It can be an important component of Tallgrass Prairie restoration mixtures. Its presence in prairies is often considered a good indication of high quality prairie. If seed is not commercially available, small amounts of prairie dropseed normally occur in seed harvested from Tallgrass Prairies and are usually adequate to perpetuate this species in prairie restorations.

Wildlife. Prairie dropseed provides valuable cover for small mammals and prairie birds. Its seeds provide food for birds and small mammals, and it is grazed by deer.

Ornamental. The leaves of prairie dropseed are long, finely textured, and arch gracefully. The inflorescence emerges in late summer and produces a fine spray of delicate flowers above the foliage. This plant grows best in full sun and is useful as a specimen plant or in borders. Prairie dropseed is valued for its creamy fall color and drought tolerance.



Prairie dropseed

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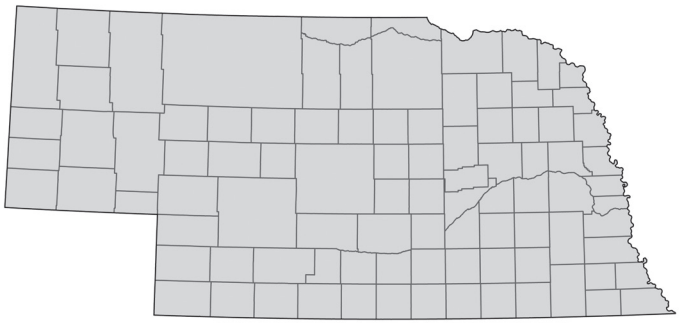
Sand dropseed



COMMON NAME:	Sand dropseed
Species:	*Sporobolus cryptandrus* (Torr.) A. Gray
Life Span:	Perennial
Origin:	Native
Season:	Warm
Growth Form:	Bunchgrass
Flowering:	June to September

Vegetative Characteristics

culms: erect (to 1.2 m tall) to ascending to geniculate (bent abruptly) below, flattened to grooved on one side, glabrous

sheaths: rounded, longer than the internode, densely hairy at throat with a conspicuous tuft of hairs (to 4 mm long); with transparent and often ciliate margins

ligules: ciliate membranes (to 2 mm long), rounded to truncate

blades: flat, rolled on drying (to 35 cm long, to 8 mm wide), tapering to long and slender tips, margins slightly scabrous

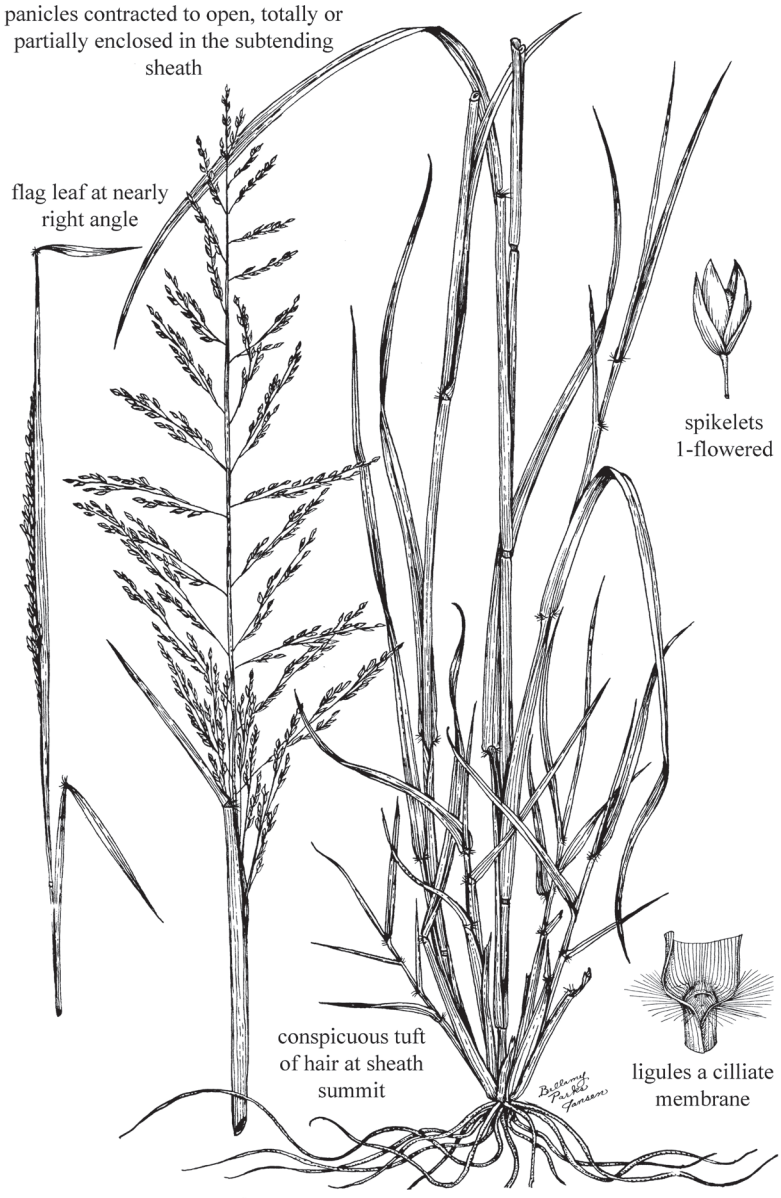
rhizomes: none

other: flag leaf (blade beneath inflorescence) often oriented at nearly a right angle to the culm, and is persistent in the fall and winter

Inflorescence Characteristics

type: panicles (to 40 cm long, to 15 cm wide), contracted to open above, terminal; branches distant, occasionally pubescent near panicle axis; without spikelets on the lower one-eighth to one-fourth, lower branches single; often lead-gray or purplish at flowering

spikelets: 1-flowered (to 3 mm long), densely crowded on upper part of panicle branches, overlapping, appressed to secondary branches, short-pedicelled; glumes unequal; first glume (to 2 mm long) shorter than the second glume (to 2.7 mm long) thin, pointed; second glume equaling or slightly shorter than lemma, 1-veined; lemmas pointed (to 2.5 mm long), 1-veined; palea equaling or slightly larger than the lemma



Sand dropseed

awns:	none
other:	inflorescences totally or partially enclosed in the subtending sheath

Distribution and Habitat

Sand dropseed is common and widely distributed on dry soils throughout Nebraska. It can be found on all ecological sites except wetland. Although most abundant on sandy soils, it frequently becomes locally prominent on medium-textured soils. Sand dropseed rapidly increases on sandy and silty soils when the other vegetation is heavily grazed or damaged by drought. It is one of the most abundant grasses on formerly cultivated land. Sand dropseed produces large quantities of seed and tolerates dry conditions. It is one of the first grasses to establish on disturbed rangelands, pastures, and along roadsides.

Uses and Values

Forage. This warm-season grass begins growth in mid-spring, grows rapidly in early summer, and matures by midsummer. Forage value is fair. Palatability is only fair to good and is similar to that of prairie sandreed in midsummer. Sand dropseed provides poor forage after maturity. Forage yields are moderate, but sand dropseed may produce a major proportion of the available forage on degraded sandy and sands sites.

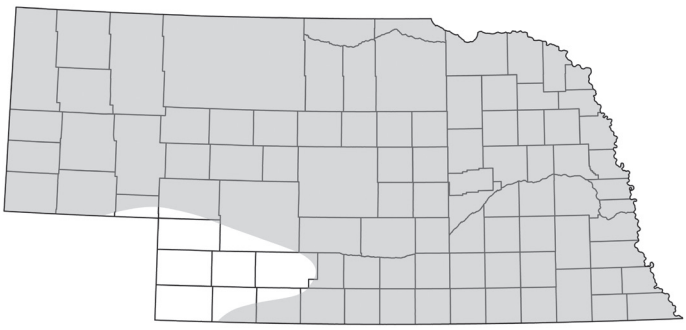
Establishment. Sand dropseed is not recommended for rangeland seeding in Nebraska. Sand dropseed invades old stands of alfalfa, particularly on sandy soils. It makes inferior grass hay and is low yielding. Sand dropseed aggressively spreads into cool-season pastures seeded on sandy soils.

Restoration. Sand dropseed is rarely included in prairie restorations. If present, it is soon replaced by other species.

Wildlife. The seed of this species provides food for birds, prairie dogs, and other small mammals. The plants are grazed by bighorn sheep, deer, and pronghorn.

Ornamental. Sand dropseed is not commonly used as an ornamental, but it may have some application on dry, sandy sites.

Tall dropseed



COMMON NAME:	Tall dropseed
Species:	*Sporobolus compositus* (Poir.) Merr. [= *Sporobolus asper* (Michx.) Kunth]
Life Span:	Perennial
Origin:	Native
Season:	Warm
Growth Form:	Bunchgrass
Flowering:	August to October

Vegetative Characteristics

culms:	erect (to 1.2 m tall), stout, solitary or tufted, glabrous
sheaths:	oval to round, open, split, glabrous or lower sheaths with long hairs near the collar
ligules:	ciliate membranes (to 0.5 mm long), truncate
blades:	flat or folded or rolled at maturity (to 60 cm long, to 8 mm wide), wide at base tapering to a fine point, few long hairs on margins, upper surfaces scabrous; upper leaf (flag leaf) ascending
rhizomes:	rarely with short rhizomes but normally a bunchgrass

Inflorescence Characteristics

type:	panicles (to 30 cm long, to 15 mm wide), narrow or contracted, terminal and axillary, few per culm, pale or whitish, sometimes purplish; branches 1–2 at lowest nodes

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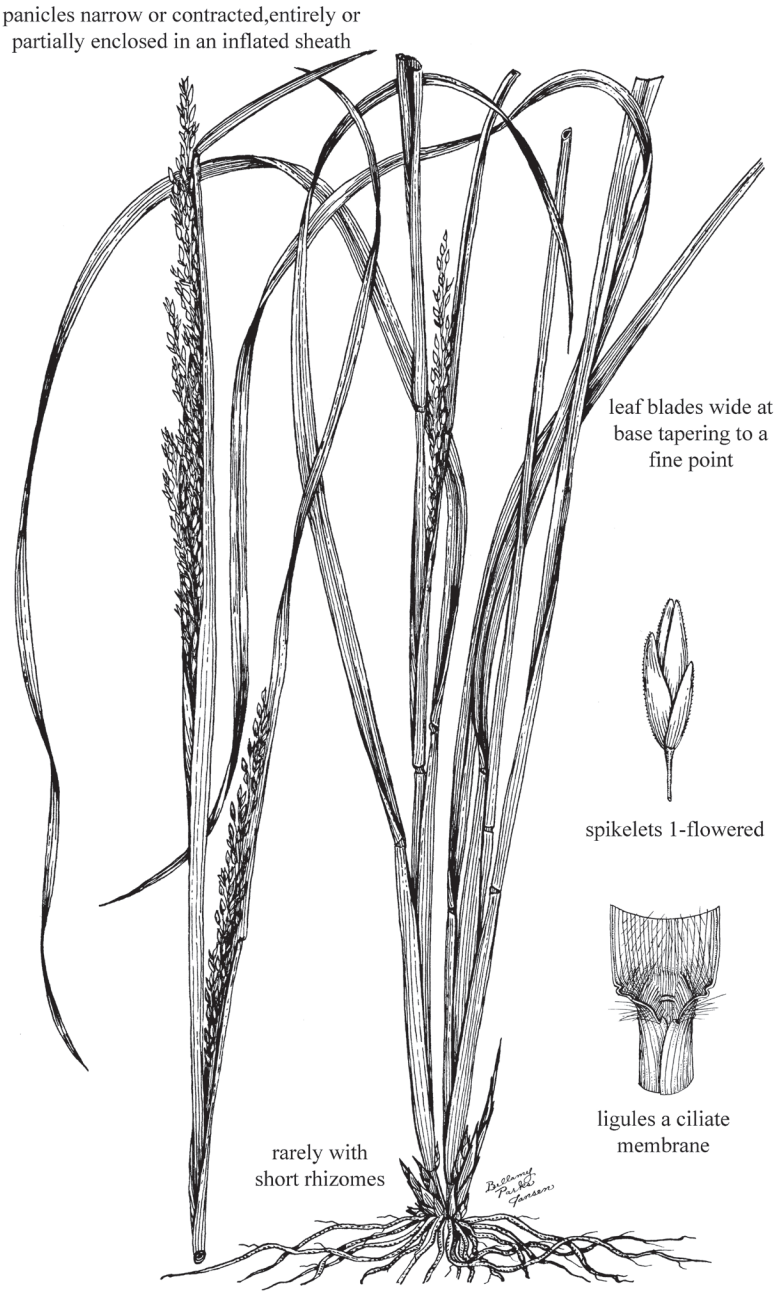
spikelets:	1-flowered (to 9 mm long); glumes unequal; first glume shortest (to 4 mm long), one-half as long as the lemma; second glume (to 5 mm long), two-thirds to three-fourths as long as the lemmas, keeled, pointed to truncate, glabrous to pubescent; midvein bright green; lemmas flattened or keeled, somewhat rounded at the tip, glabrous, 1-veined; palea conspicuous, equal in size to the lemma; straw-colored to purplish
awns:	none
other:	inflorescence entirely or partially enclosed in an inflated sheath



Tall dropseed

Distribution and Habitat

Tall dropseed is found with big bluestem, little bluestem, indiangrass, and sideoats grama on medium- and heavy-textured soils in the eastern one-half of Nebraska and on subirrigated and overflow ecological sites across the state. It is seldom seen on dry upland sites in the western one-half of Nebraska.

Uses and Values

Forage. Forage value of tall dropseed is fair at best. Palatability is highest when plants are immature and green, and it is low at maturity. Except on very dry sites, tall dropseed increases under heavy grazing at the expense of the more palatable mid- and tall grasses. Since it is one of the most drought tolerant grasses on the Tallgrass Prairie, it is able to compete better than many of the other grasses and become more conspicuous during dry years. Except in small localized areas, tall dropseed makes up only a minor part of the total forage production. Yields are not large, and it is not a particularly desirable forage grass.

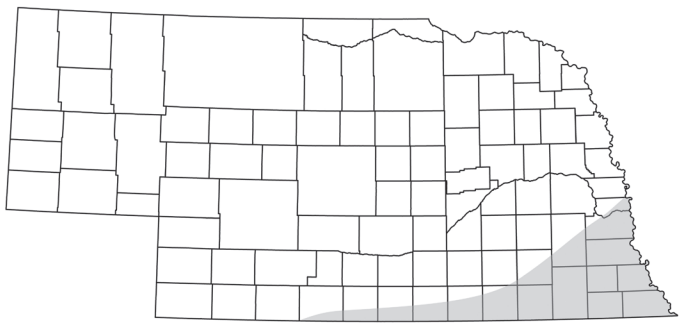
Establishment. Tall dropseed is not recommended for rangeland seeding in Nebraska.

Restoration. Small amounts of tall dropseed normally occur in seed harvested from Tallgrass Prairies and are adequate to perpetuate this species in prairie restorations.

Wildlife. Seeds of tall dropseed are valuable for small mammals and songbirds, but it provides little cover for nesting. It may be lightly grazed by big game.

Ornamental. The inflorescence of tall dropseed often remains included in the sheath and is therefore, not as showy as many other species of grass. Prairie dropseed is the preferred dropseed for ornamental use.

Eastern gamagrass



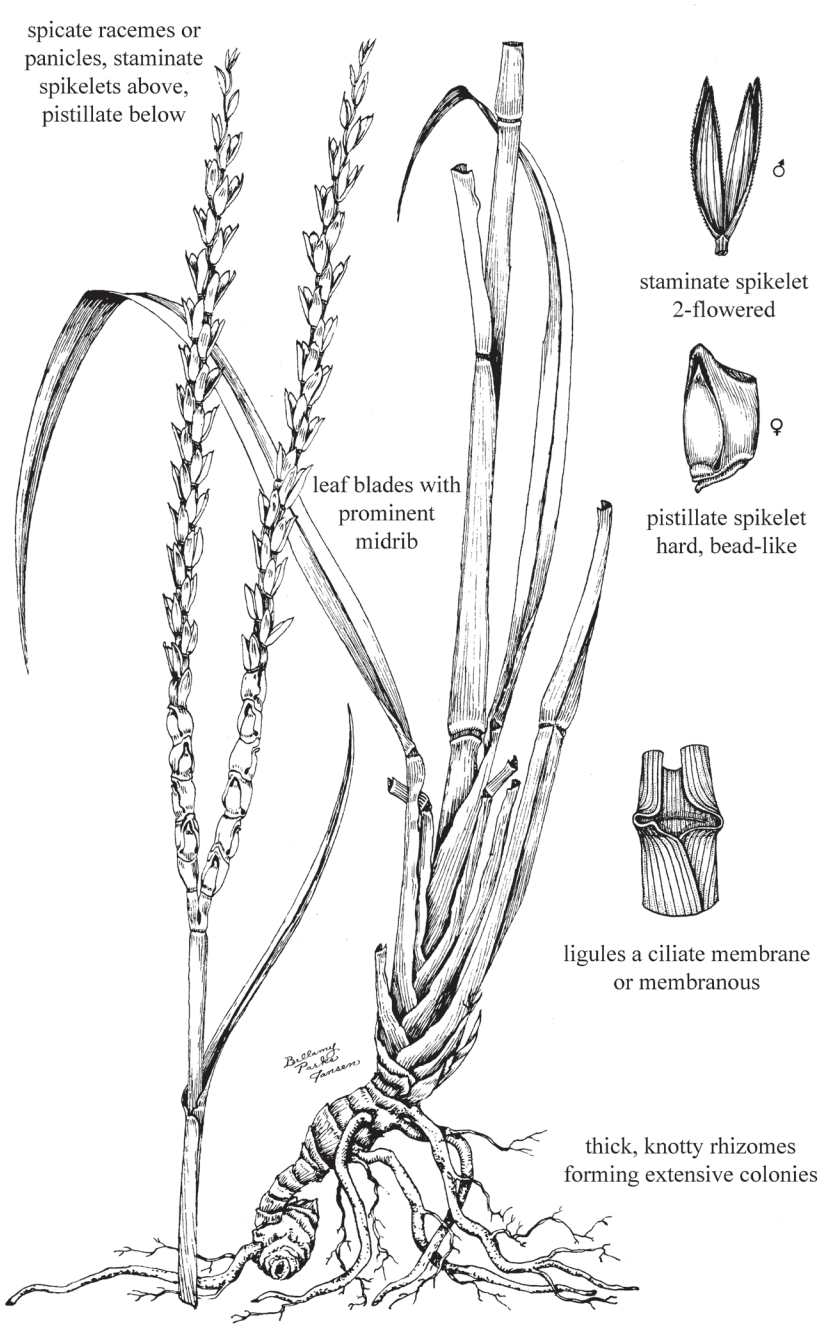
COMMON NAME:	Eastern gamagrass
Species:	*Tripsacum dactyloides* (L.) L.
Life Span:	Perennial
Origin:	Native
Season:	Warm
Growth Form:	Sod-forming
Flowering:	June to September

Vegetative Characteristics

culms:	erect (to 3 m tall), may be decumbent below, stout, solid, slightly flattened, glabrous
sheaths:	round, usually shorter than the internodes, glabrous
ligules:	ciliate membranes (to 2.5 mm long) or membranous (lacerate), truncate
blades:	flat (to 75 cm long, to 4 cm wide), midrib prominent, margins scabrous
rhizomes:	thick, knotty, forming extensive colonies
other:	close relative of corn and crushed eastern gamagrass leaves smell like crushed corn leaves

Inflorescence Characteristics

type:	spicate racemes (to 24 cm long) or panicles of 2–5 rames, terminal and axillary
spikelets:	staminate spikelets above, paired, 2-flowered (to 11 mm long), sessile or slightly pedicelled in two rows on the branch; pistillate spikelets below, solitary (to 10 mm long), hard, bead-like, imbedded in the branch, breaking into single spikelet segments at maturity; staminate spikelet glumes equal (to 12 mm long), somewhat pear-shaped, leathery, keeled; pistillate spikelet glumes equal (to 10 mm long), hard, shiny



Eastern gamagrass

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other:	pistillate portion of the inflorescence one-fourth or less of the entire length of the racemose branch

Distribution and Habitat

Eastern gamagrass is not common in Nebraska, but it is found in the southeastern part of the state on well drained soils of lowland prairies. It may be found farther north and west in the rare occasion when it has been planted for pasture. It grows in wet areas such as swales and stream banks, but it does not tolerate standing water for long periods. It is occasionally found growing on well-drained grasslands. It is most abundant in fertile soils.

Uses and Values

Forage. Eastern gamagrass is highly productive in fertile, moist soils and produces excellent forage for all classes of livestock throughout the growing season. The foliage breaks down to the soil surface rapidly in the fall making it not dependable for winter grazing. It makes good hay. It is one of the most palatable grasses and may have been more abundant before settlement which introduced year-round, heavy grazing by livestock.

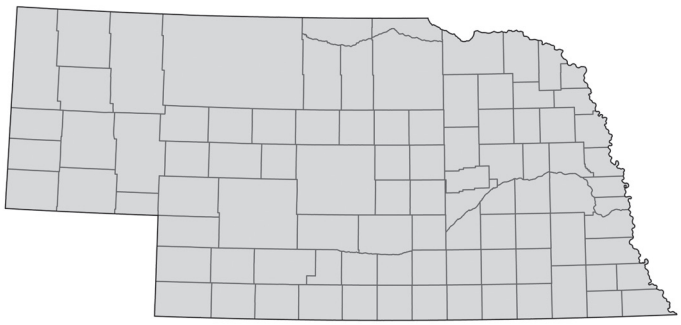
Establishment. It has been planted in pure stands in irrigated pastures, but establishment is slow and difficult. Its seeds are the largest of all the Nebraska grasses.

Restoration. Eastern gamagrass may be used in seeding mixtures for restoration of Tallgrass Prairies with moist soils. Plants become large in restorations, and few plants are needed. Since these plants are slow to start from seed, transplanting seedlings into the restorations is a good approach.

Wildlife. Eastern gamagrass provides excellent forage for deer. Turkeys, upland game birds, and small mammals eat the seeds. It is used for nesting, escape, and roosting cover by upland game birds.

Ornamental. Eastern gamagrass is rarely used as an ornamental grass because it spreads by rhizomes and quickly takes up a lot of space. It is sometimes grown as a curiosity because it is a close relative to corn [*Zea mays* L.]. Its inflorescences are used in fresh flower arrangements.

Blue grama



COMMON NAME:	**Blue grama**
Species:	*Bouteloua gracilis* (Willd. *ex* Kunth) Lag. *ex* Griffiths
Life Span:	Perennial
Origin:	Native
Season:	Warm
Growth Form:	Bunchgrass
Flowering:	June to August

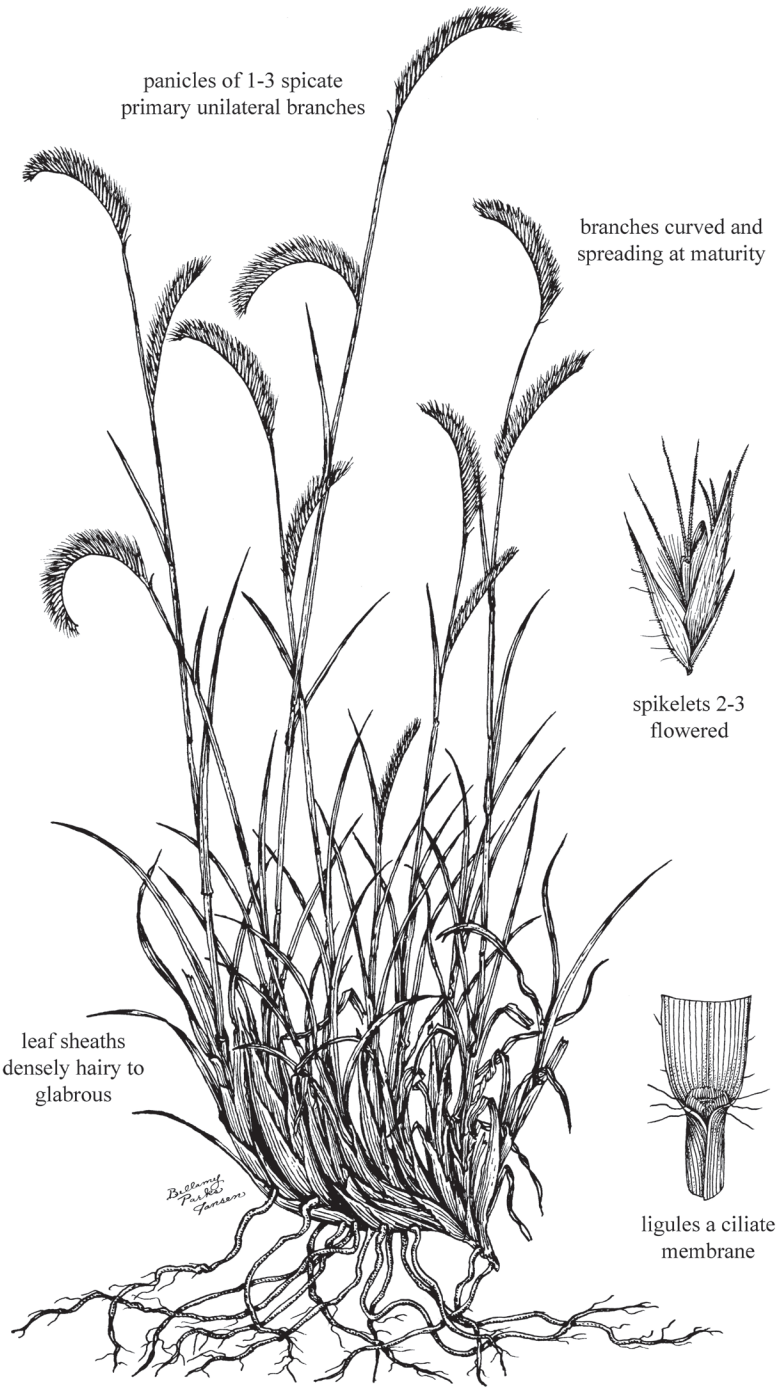
Vegetative Characteristics

culms:	erect (to 60 cm tall), slender, often geniculate below, densely tufted
sheaths:	round, densely hairy to glabrous; dense, long hairs at the collar
ligules:	ciliate membranes (to 0.5 mm long), truncate
blades:	flat at base or loosely rolled above (to 25 cm long, to 3 mm wide), few soft hairs on both surfaces
rhizomes:	rarely with short rhizomes, but blue grama in heavily grazed areas has the appearance of sod-forming grass

Inflorescence Characteristics

type:	panicles of 1–3 (sometimes 4) spicate primary unilateral branches; branches (to 5 cm long) curved and spreading at maturity; 40–90 spikelets in 2 rows on 1 side of the rachis, crowded, comb-like

spikelets:	2–3-flowered, 1 perfect floret, 1 (or more) reduced florets; first glume short (1.5–3.5 mm long), glabrous or with hairs on the midvein; second glume longer (3.5–6 mm long), glabrous or with hairs from swollen bases on the midvein awns; fertile lemmas (to 6 mm long) pubescent on back; reduced flowers or rudiments (to 3 mm long) highly variable, may be reduced to 1–3 awns
awns:	fertile lemma with 3 awns (to 3 mm long), central awn the longest; rudimentary lemmas with 1–3 awns (to 5 mm long) or may be awnless
other:	rachis not projecting beyond spikelets providing a visual distinction from hairy grama



Blue grama

Distribution and Habitat

Blue grama is widely distributed in Nebraska and occurs on all ecological 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 drier soils, since it cannot compete successfully with the taller grass species such as big bluestem and indiangrass. It is often the dominant grass on clayey, silty, and sandy ecological sites in western Nebraska where it increases under heavy grazing or frequent mowing.

Uses and Values

Forage. Forage value of blue grama is good. Range cattle preference for this grass is low to moderate in the spring and early summer but very high in late summer and fall. It cures well. It is grazed during the winter, but it is easily covered by snow. Because of its short growth, it is not important for hay. Herbage yields are much lower than the taller grasses under ideal moisture conditions. Grazing capacity of blue grama on upland sites in western Nebraska, however, may equal or exceed that of warm-season, mid- and tall grasses in years of average rainfall. Although palatability is good, blue grama is very tolerant to grazing, mowing, and trampling. Its low growth habit allows much leaf tissue to remain even under close grazing, which allows blue grama to maintain vigor and control erosion even under adverse conditions. It thrives best when not shaded by taller grasses. It may rapidly increase when the tall grasses are reduced by heavy grazing. Blue grama tolerates dry conditions, becoming dormant during drought. Blue grama renews growth quickly when soil moisture becomes available.

Establishment. Blue grama is recommended for native grass seedings on silty, clayey, and sandy ecological sites in central and western Nebraska. It is frequently used in mixtures with buffalograss and taller grasses. Initial stands of blue grama are slow to develop, but seedlings are more tolerant of dry conditions and salinity than seedlings of sideoats grama.

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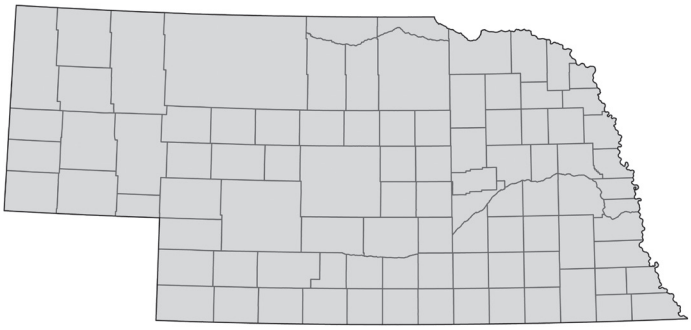
Restoration. Blue grama should be a primary component of Shortgrass and Mixed Grass Prairie restorations. Small amounts of seed should be used in mixtures planted to restore upland prairies in the Sandhills and dry locations in the Tallgrass Prairie region.

Wildlife. Blue grama is a valuable plant for wildlife. Its seeds are a source of food for upland birds, songbirds, and small mammals. Pronghorn, deer, elk, and bighorn sheep, as well as many small mammals, graze the plants.

Ornamental. Blue grama is tolerant of cold, heat, poor soils, drought, and mowing making it an acceptable turf grass, but better choices are available. Mowing promotes sod formation and little or no supplemental water is needed. It does well as a specimen plant in rock gardens and with wildflowers. It grows best in sunny sites. At frost, blue grama may develop a purple hue.

Hairy grama



COMMON NAME:	Hairy grama
Species:	*Bouteloua hirsuta* Lag.
Life Span:	Perennial
Origin:	Native
Season:	Warm
Growth Form:	Bunchgrass
Flowering:	July to September

Vegetative Characteristics

culms:	erect (to 60 cm tall), may be geniculate (bent upward) below, 4–8 nodes
sheaths:	round, veined, glabrous or lowermost thinly soft-haired; collar hairy, glandular hairs on the margins
ligules:	ciliate membrane (to 0.5 mm long)
blades:	flat or rolled (to 20 cm long, to 3 mm wide), narrow, pointed, glandular hairs on the margins, may be hairy on upper surface near base
rhizomes:	no rhizomes or stolons, but hairy grama in heavily grazed areas has the appearance of a sod-forming grass

Inflorescence Characteristics

type:	panicles of 1–4 spicate primary unilateral branches, branches (to 4 cm long) straight or slightly curved; 18–50 spikelets in 2 rows on 1 side of the rachis, crowded, comb-like
spikelets:	3-flowered, 1 perfect floret (to 6 mm long), 2 reduced florets, hairy; glumes unequal, first short, second longer (to 6 mm long), very narrow to awn-like tip; short, stiff hairs on the midveins; black glandular dots on the back; lemmas of reduced florets highly reduced often to only 1–3 awns
awns:	second glume awn-tipped, fertile floret with 3 awns (to 4 mm long), central awn longest; awns on reduced florets dark (to 4.5 mm long)
other:	rachis extending beyond spikelets (to 20 mm long) providing a visual distinction from blue grama

Distribution and Habitat

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

Uses and Values

Forage. Growth starts by mid-June or when moisture is available near that time. Palatability is highest in late summer and fall. Hairy grama is not as readily grazed as blue

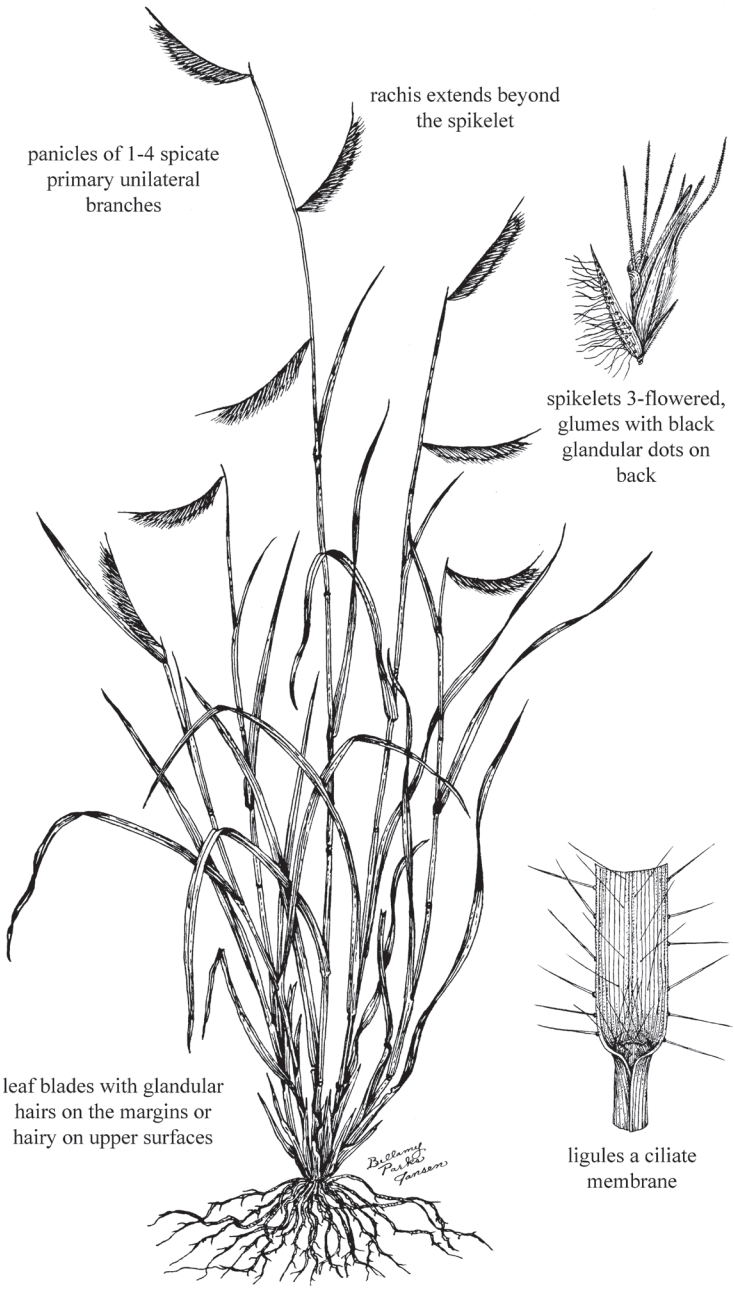
grama, and it is less tolerant than blue grama of heavy grazing. Sites where hairy grama is abundant are more valuable for grazing than for hay production. Hairy grama is resistant to both dry conditions and heavy grazing, and it usually increases under these pressures. Because of short growth and low forage yield, hairy grama makes a very small contribution of forage even on sites where it is abundant.

Establishment. It is not recommended for seeding rangelands in Nebraska, but hairy grama seed is commonly mixed with blue grama when seed is from a native harvest. It is relatively difficult to establish.

Restoration. Small amounts of hairy grama seed should be included in restoration mixtures for upland sites in the Sandhills, Mixed Grass Prairie, and Shortgrass Prairie in Nebraska.

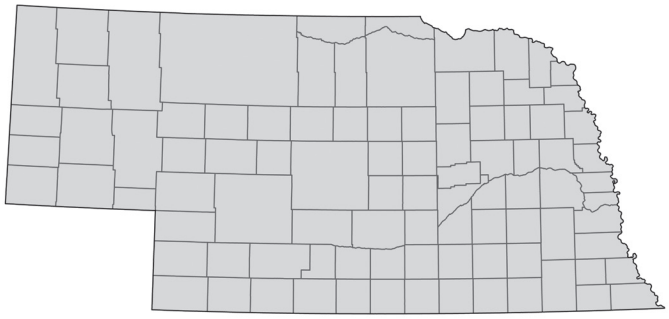
Wildlife. Hairy grama seeds are eaten by small mammals, upland birds, and songbirds. It provides forage for large and small mammals.

Ornamental. Hairy grama does well as a specimen plant in rock gardens. It does not produce good turf. It grows best in sunny sites and requires less water than blue grama.



Hairy grama

Sideoats grama



COMMON NAME:	Sideoats grama
Species:	*Bouteloua curtipendula* (Michx.) Torr.
Life Span:	Perennial
Origin:	Native
Season:	Warm
Growth Form:	Sod-forming
Flowering:	June to August

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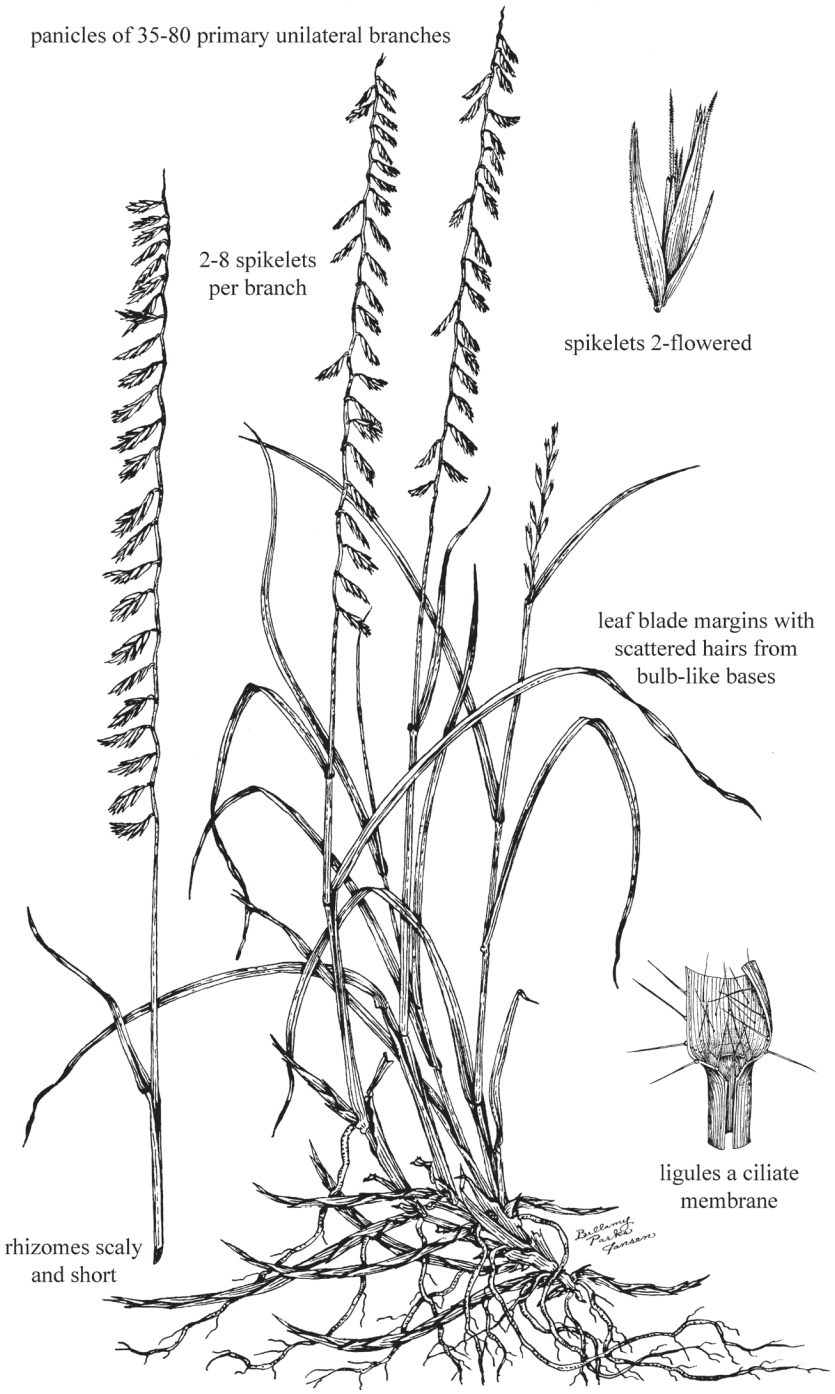
Vegetative Characteristics

culms:	erect (to 1 m tall), tufted, glabrous, nodes purple
sheaths:	round, glabrous below with a few long and soft hairs above, prominently veined; collar with long hairs on margin, leaves mostly basal
ligules:	ciliate membrane (to 0.5 mm long)
blades:	flat to slightly rolled (to 40 cm long, to 7 mm wide), margins with scattered hairs from bulb-like bases
rhizomes:	scaly, short

Inflorescence Characteristics

type:	panicles (to 30 cm long) of 35–80 primary unilateral branches (to 4 cm long); 2–8 spikelets per branch on a flattened rachis, spikelets falling as a unit
spikelets:	2-flowered; glumes unequal, first short (to 6 mm long), tapering to a point; second longer (to 8 mm long), purplish; 1 perfect floret (to 8 mm long), 3-veined; imperfect floret reduced to a short lemma
awns:	fertile lemma with 3 awn tips (to 2 mm long); infertile lemma with 3 awns (to 6 mm long), unequal
other:	individual branches turned to one side of the inflorescence, distant; branch base remains on culm after the spikelets fall



Sideoats grama

Distribution and Habitat

This native grass grows throughout Nebraska but is most common in the central and eastern parts of the state. It occurs on all upland sites except sands and choppy sands and often is especially abundant on shallow, limy upland, silty, and thin loess ecological sites. In eastern Nebraska, it is more common on hills and drier slopes. It is more drought tolerant than big bluestem and indiangrass but less drought tolerant than blue grama and hairy grama.

Uses and Values

Forage. This warm-season grass grows rapidly in late spring and early summer and may remain green into late summer when soil moisture is adequate. Sideoats grama has good forage value. It is grazed mostly in late summer and fall but remains moderately palatable into the winter. The culms are unpalatable and usually are not grazed. It is not as palatable as blue grama. Sideoats grama makes good quality hay but yields are relatively low. Sideoats

grama decreases with heavy grazing in the western part of Nebraska. It increases under close grazing on favorable sites in the higher precipitation zones where it replaces the taller grasses, but it does not withstand prolonged heavy grazing.

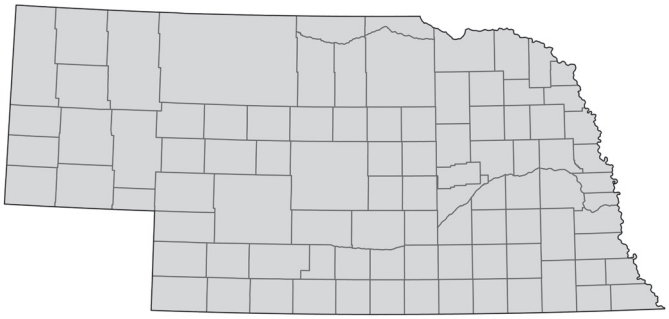
Establishment. Sideoats grama is widely used for rangeland seedings. It is recommended for seeding in native grass mixtures on silty, clayey, and sandy ecological sites throughout Nebraska and on overflow and subirrigated sites in the western part of the state. Sideoats grama is easily established, long-lived,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

Restoration. Except on sandy soils, sideoats grama is important in prairie restorations across Nebraska. It is a primary species in Mixed Grass Prairie restorations, and it should be included for drier locations in the Tallgrass Prairie region in eastern Nebraska and more moist areas in the Shortgrass Prairie of western Nebraska.

Wildlife. Sideoats grama produces forage for deer, pronghorn, bighorn sheep, and elk. The seeds are eaten by small mammals and game birds such as pheasants, quail, and doves.

Ornamental. Sideoats grama is an important ornamental grass requiring little supplemental water. Its inflorescence may be purplish, and the whole plant turns reddish-white following frost. It grows best in sunny sites and grows well in rock gardens or when planted with prairie wildflowers. Sideoats grama is frequently used in borders, but it provides only low quality turf.

Indiangrass



COMMON NAME:	Indiangrass
Species:	*Sorghastrum nutans* (L.) Nash
Life Span:	Perennial
Origin:	Native
Season:	Warm
Growth Form:	Sod-forming
Flowering:	August to October

Vegetative Characteristics

culms:	erect (to 2 m tall), robust; nodes hairy
sheaths:	round or sometimes flattened, glabrous or with long hairs near the collar
auricles:	sheath extending upward to form erect, pointed auricles (to 7 mm long) flanking and joining the ligule
ligules:	membranous (to 7 mm long), firm
blades:	flat or somewhat folded (to 60 cm long, to 10 mm wide), constricted at the base, midvein conspicuous on lower side
rhizomes:	short, scaly

Inflorescence Characteristics

type:	panicles (to 35 cm long, to 8 cm wide) of rebranched rames, loosely contracted; branches hairy, grayish; inflorescences tawny or yellowish when mature
spikelets:	2-flowered, paired; sessile spikelet perfect (to 8 mm long), tawny yellow to brownish; pedicelled spikelet sterile and reduced to a hairy pedicel; glumes nearly equal (to 8 mm long), leathery, first with long stiff hairs and with edges turned up over the second
awns:	lemma of perfect spikelet awned; awns bent (to 20 mm long), tightly twisted below the bend and loosely twisted above the bend

Distribution and Habitat

This important native grass grows throughout Nebraska and is common on most ecological sites, except wetlands, in eastern Nebraska and the Sandhills. It is commonly associated with big bluestem, but indiangrass is usually less abundant. It is moderately salt tolerant and may be common on saline subirrigated ecological sites if the salt content is not excessive. Indiangrass also occurs sparingly on most other sites where soil moisture is adequate. It will withstand occasional flooding. On upland sites with medium to heavy textured soils, indiangrass is much more common in eastern than in western Nebraska.

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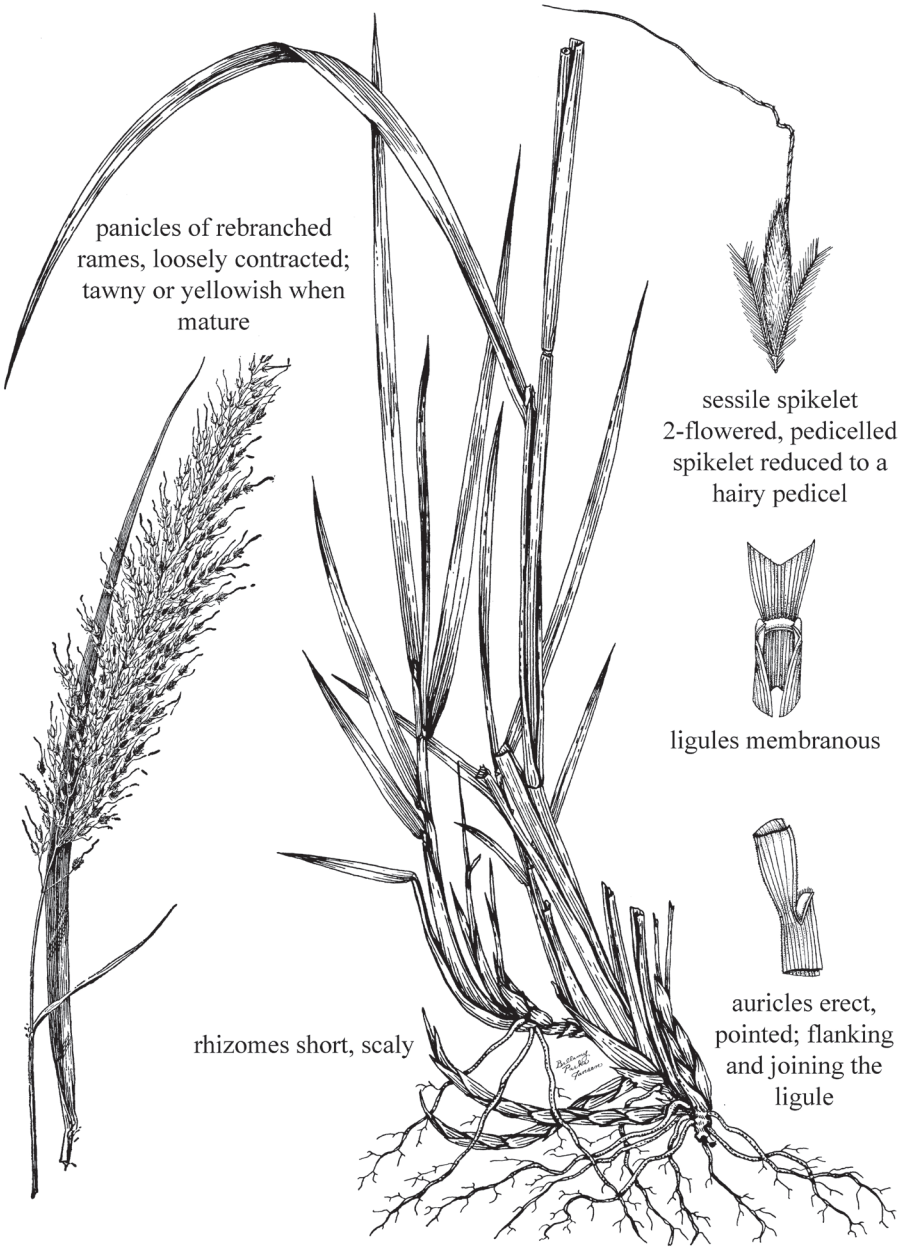
Uses and Values

Forage. This warm-season grass provides palatable herbage 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. Therefore, it produces only fair forage for winter grazing. 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 smaller, more scattered patches. Indiangrass is not tolerant of repeated close grazing. It produces good hay if cut before maturity and is often an important component of hay in eastern Nebraska and in the subirrigated valleys of the Sandhills.

Establishment. Indiangrass is recommended for rangeland seeding on subirrigated, overflow, sands, and sandy ecological sites throughout Nebraska and on clayey and silty range sites in the eastern one-half of the state. 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. Several cultivars of indiangrass are available commercially.



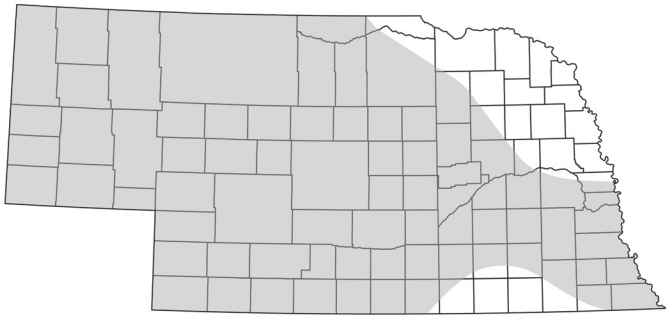
Indiangrass

Restoration. Indiangrass is a primary component of seed mixtures used in Tallgrass Prairie restorations. It is important in the Sandhills, especially the eastern Sandhills. Small amounts of seed should be included in Mixed Grass Prairie restorations, especially when the restoration sites include areas that tend to have favorable soil moisture conditions.

Wildlife. Indiangrass plants are eaten by elk and deer. They provide cover for and nesting materials for many different types of birds and small mammals. The seeds are important food for upland game birds, songbirds, and small mammals. Indiangrass is an important species in wildlife plantings in Nebraska.

Ornamental. Indiangrass is an important landscape plant in Nebraska. Its golden plume-like inflorescence makes it attractive in the fall in background and screen plantings. It grows best in full sun, but it will tolerate light shade. Its rhizomes may allow it to spread into areas where it is not wanted.

Inland saltgrass



COMMON NAME:	Inland saltgrass
Species:	*Distichlis spicata* (L.) Greene
Life Span:	Perennial
Origin:	Native
Season:	Warm
Growth Form:	Sod-forming
Flowering:	May to August

Vegetative Characteristics

culms:	erect to ascending (to 60 cm tall); internodes short and numerous, glabrous
sheaths:	closely overlapping, sometimes with long hairs in collar and upper edges
ligules:	ciliate membranes (to 0.5 mm long), truncate, often flanked by long hairs
blades:	flat to rolled, (to 12 cm long, to 4 mm wide), tightly rolled at the tip, sharply pointed, conspicuously 2-ranked (distichous)
rhizomes:	extensively creeping, scaly

Inflorescence Characteristics

type:	panicles (to 8 cm long), contracted, branches appressed; pistillate panicles more irregular and spreading than staminate panicles
spikelets:	male and female inflorescence produced on separate plants (spikelets of both sexes 6–20 mm long); strongly compressed; female spikelet 3–12-flowered and greenish, male spikelet 6–11-flowered and yellowish; glumes unequal, sharply pointed, glabrous; first glume 5–9-veined (pistillate to 6 mm, staminate to 4.5 mm long); second glume 5–11-veined; lemma firmer than glumes and sharply pointed (to 6 mm long), 3–7 veined; palea soft, narrowly winged
awns:	none

Distribution and Habitat

This native, warm-season grass is found on saline subirrigated ecological sites often in pure stands where it forms a dense sod, or in mixed stands with foxtail barley, alkali sacaton, 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 ecological sites.

Uses and Values

Forage. Inland saltgrass has low palatability since it is wiry and tough, but it may be grazed when other forage is not available. Growth starts in early summer at a slow rate, and often remains green until fall. Its best use is grazing during late spring and summer when green and actively growing. When used for winter forage, saltgrass is low in phosphorus, protein, and vitamin A, and palatability is very low. Livestock grazing almost solely on dried saltgrass can sometimes develop severe rumen compaction. Exclusive 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 increases

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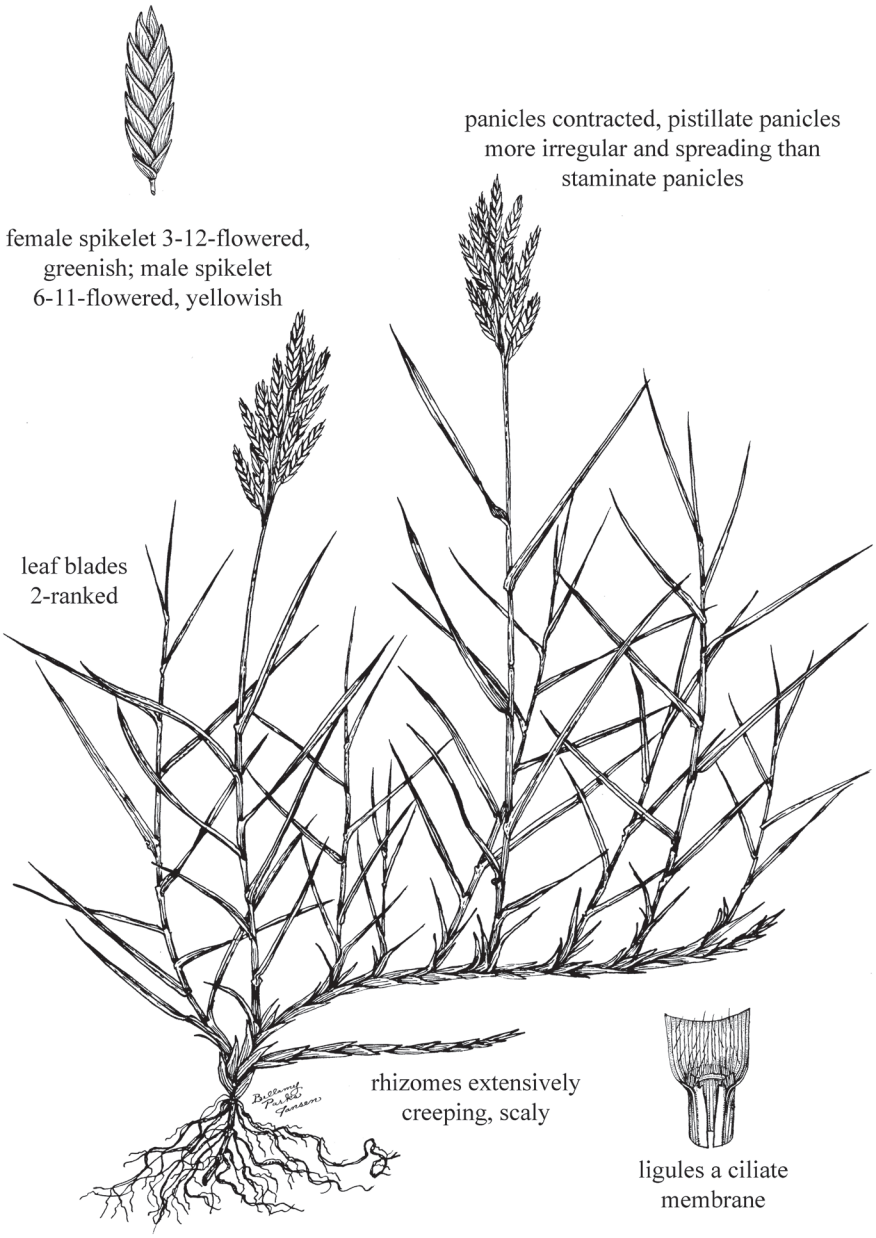


Inland saltgrass

on saline subirrigated ecological sites, but it is also very aggressive and may spread into dry sites when competition from other grasses is reduced.

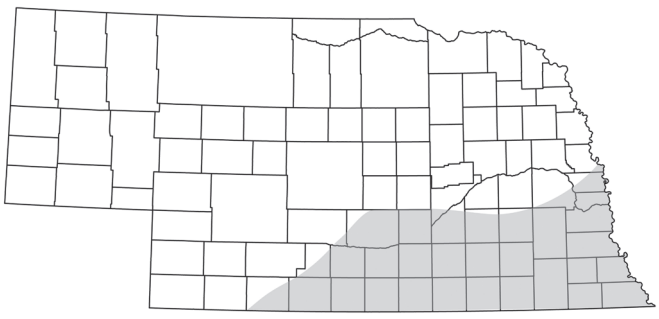
Establishment. Inland saltgrass is not used in rangeland seedings in Nebraska.

Restoration. Its dense sod prevents erosion, and it is potentially valuable for restoration on saline and alkaline ecological sites where few other species grow. Seeds have low germinability due to seed dormancy, so stratification or scarification is necessary.

Wildlife. It produces poor forage for wildlife. Waterfowl and small mammals eat the seeds, and it provides a minor amount of cover for nesting birds.

Ornamental. Inland saltgrass is receiving attention as a turf grass for out-of-play areas on golf courses and other areas receiving heavy traffic.

Johnsongrass



COMMON NAME:	Johnsongrass
Species:	*Sorghum halepense* (L.) Pers.
Life Span:	Perennial
Origin:	Introduced
Season:	Warm
Growth Form:	Sod-forming
Flowering:	July to October

Vegetative Characteristics

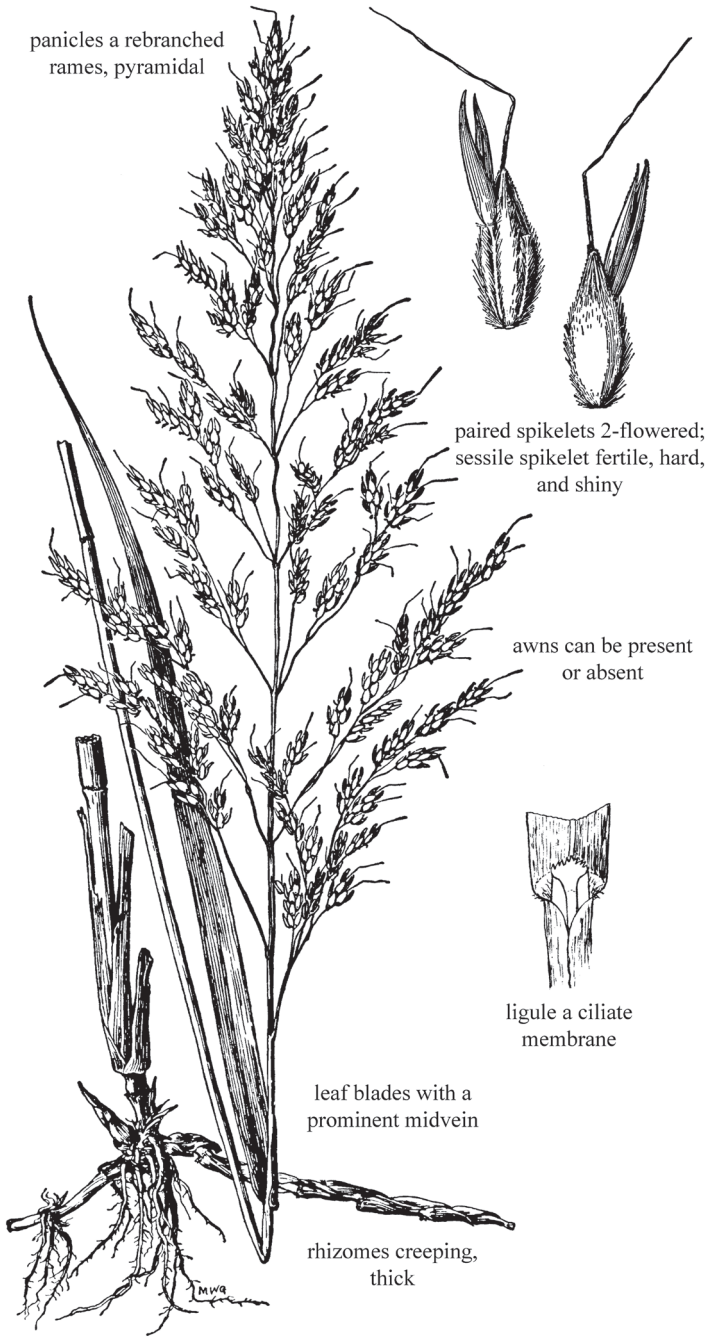
culms:	erect (to 2 m tall), stout, pubescent at the nodes (otherwise glabrous), rarely rooting at the nodes
sheaths:	round to slightly keeled, open, glabrous
ligules:	ciliate membranes (to 6 mm long), erose
blades:	flat (to 90 cm long, to 4 cm wide), midvein prominent (lighter color), usually glabrous
rhizomes:	creeping, thick

Inflorescence Characteristics

type:	panicle (to 50 cm long, to 25 cm wide) of rebranched rames, open, pyramidal; often purple
spikelets:	paired; 2-flowered; in pairs, sessile spikelet fertile (to 5.5 mm long), pedicellate spikelet staminate or neuter (to 7 mm long); sessile spikelet glumes nearly equal (to 5.6 mm long), hard, shiny, veins obscure; pedicellate spikelet glumes nearly equal (to 5.6 mm long), 5–9-veined lemmas of fertile spikelets thin and hyaline; first floret fertile, 2-veined; second floret sterile, 3–7-veined
awns:	fertile lemma awnless or awned (7–20 mm long); awns geniculate and twisted

Distribution and Habitat

Johnsongrass is native to the warm Mediterranean region of Europe and Africa. In Nebraska, it is found in the southern counties. It is most common on bottomland, overflow, and other moist sites. Cold winters may keep it from spreading farther north. It grows in moist soil of pastures, roadsides, waste places, and cultivated fields.



Johnsongrass

Uses and Values

Forage. Johnsongrass is an escaped grass that was planted for pastures in the southern states.

It has moderate forage value when grazed before reaching maturity. Johnsongrass can poison livestock, because hydrocyanic acid may form in new plant material after growth is interrupted by drought or frost.

Establishment. Johnsongrass is considered to be a weed, and it is not used in seedings.

Restoration. Introduced species are not used in restorations.

Wildlife. It provides roosting, loafing, and nesting cover for pheasants, prairie chickens, and quail.

Ornamental. Johnsongrass has no ornamental value.

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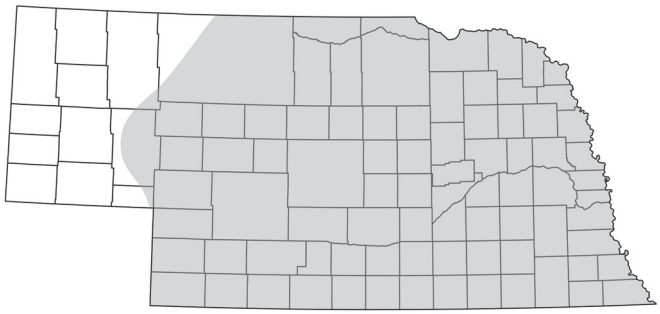
Purple lovegrass



COMMON NAME:	Purple lovegrass
Species:	*Eragrostis spectabilis* (Pursh) Steud.
Life Span:	Perennial
Origin:	Native
Season:	Warm
Growth Form:	Sod-forming
Flowering:	July to October

Vegetative Characteristics

culms: erect (to 75 cm tall), tufted from a knotty base

sheaths: round, shorter than the internodes, overlapping, usually with long hairs on collar and upper margins

ligules: membranous (to 0.3 mm long), backed and flanked by a ring of hairs (to 4 mm long)

blades: flat (to 40 cm long, to 7 mm wide); folded or rolled on drying; stiff, usually with long hairs on the upper surface near the base

rhizomes: usually with short, stout rhizomes; but has the appearance of a bunchgrass

Inflorescence Characteristics

type: panicle (to 45 cm long, to 30 cm wide), oblong to ovate, open and widely spreading; branches stiff, wiry; prominent hairs at the junction of panicle branches; purplish

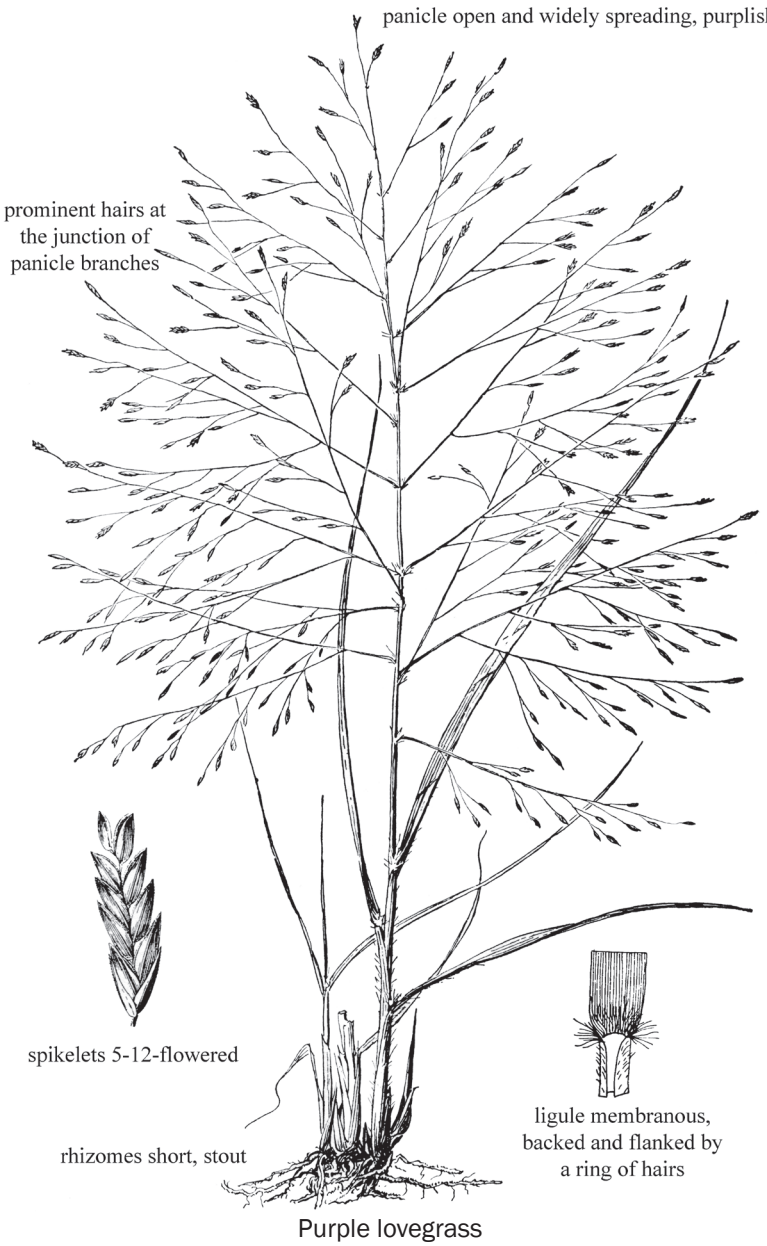
spikelets: 5–12-flowered (to 7 mm long), flattened; glumes slightly unequal (to 2.5 mm long), tips sharply pointed; slightly scabrous, first glume 1-veined, second glume 1–3-veined; lemmas sharply pointed (1–2.2 mm long)

awns: none

other: inflorescence separates from the plant at maturity and is rolled by the wind

Distribution and Habitat

Purple lovegrass occurs in scattered stands over most of Nebraska, except in the extreme west. It is most abundant



Purple lovegrass

on sandy, sands, and choppy sands ecological sites. It may be found in small amounts on dry, silty, or clayey soils. It is common on roadsides, waste places, and old fields.

Uses and Values

Forage. Herbage produced by purple lovegrass is rather coarse, and the forage value is only fair when it is green and growing. The inflorescences and the mature foliage are largely ignored by cattle. Purple lovegrass is not a high forage producer.

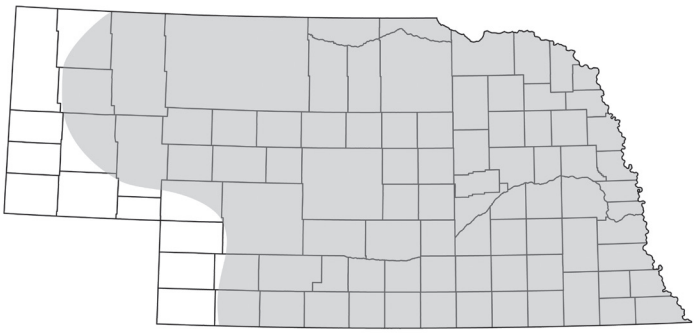
Establishment. Purple lovegrass is not used in grassland seedings because of its low palatability and forage production.

Restoration. Purple lovegrass is not important for prairie restoration in Nebraska. It cannot withstand competition from vigorous prairie plants. Small amounts of seeds can be planted on harsh sites to add color to the vegetation.

Wildlife. It provides good nesting cover for some upland birds.

Ornamental. Purplish inflorescences and reddish-purple fall colors make purple lovegrass one of the most attractive native grasses and a popular ornamental grass. The inflorescences are used in fresh cut and dried arrangements.

Sand lovegrass



COMMON NAME:	Sand lovegrass
Species:	*Eragrostis trichodes* (Nutt.) Alph. Wood
Life Span:	Perennial
Origin:	Native
Season:	Warm
Growth Form:	Bunchgrass
Flowering:	July to September

Vegetative Characteristics

culms:	erect (to 1.6 m tall), glabrous
sheaths:	round, overlapping, prominent hairs on upper edges, and on the collar; occasionally hairy on the back or margins
ligules:	line of hairs (to 0.5 mm long)
blades:	flat or somewhat rolled (to 55 cm long, to 8 mm wide), scabrous on upper surface, tapered to a slender point, midvein prominent
rhizomes:	none

Inflorescence Characteristics

type:	panicle (to 70 cm long, to 30 cm wide), ovoid to oblong, open, much-branched, may be one-half the length of the plant; hair-like branches in groups of 3 or 4 with a few long hairs in the axils
spikelets:	4–18-flowered (to 10 mm long, to 3.5 mm wide), compressed; long pedicels; glumes, thin, pointed, 1-veined, first to 2 mm long, second to 4 mm long; lemmas pointed (to 3.5 mm long), 3-veined, lateral veins prominent
awns:	none
other:	panicle purple or red, becoming gold when mature

Distribution and Habitat

Sand lovegrass is native to the Nebraska Sandhills and Sandsage Prairie 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 mixtures with other native grasses.

Uses and Values

Forage. This warm-season grass starts growth as much as two weeks earlier than most other warm-season grasses. It is a good forage producer and remains green into the fall when good soil moisture prevails. It is very palatable and nutritious when it is green and growing. Sand lovegrass is

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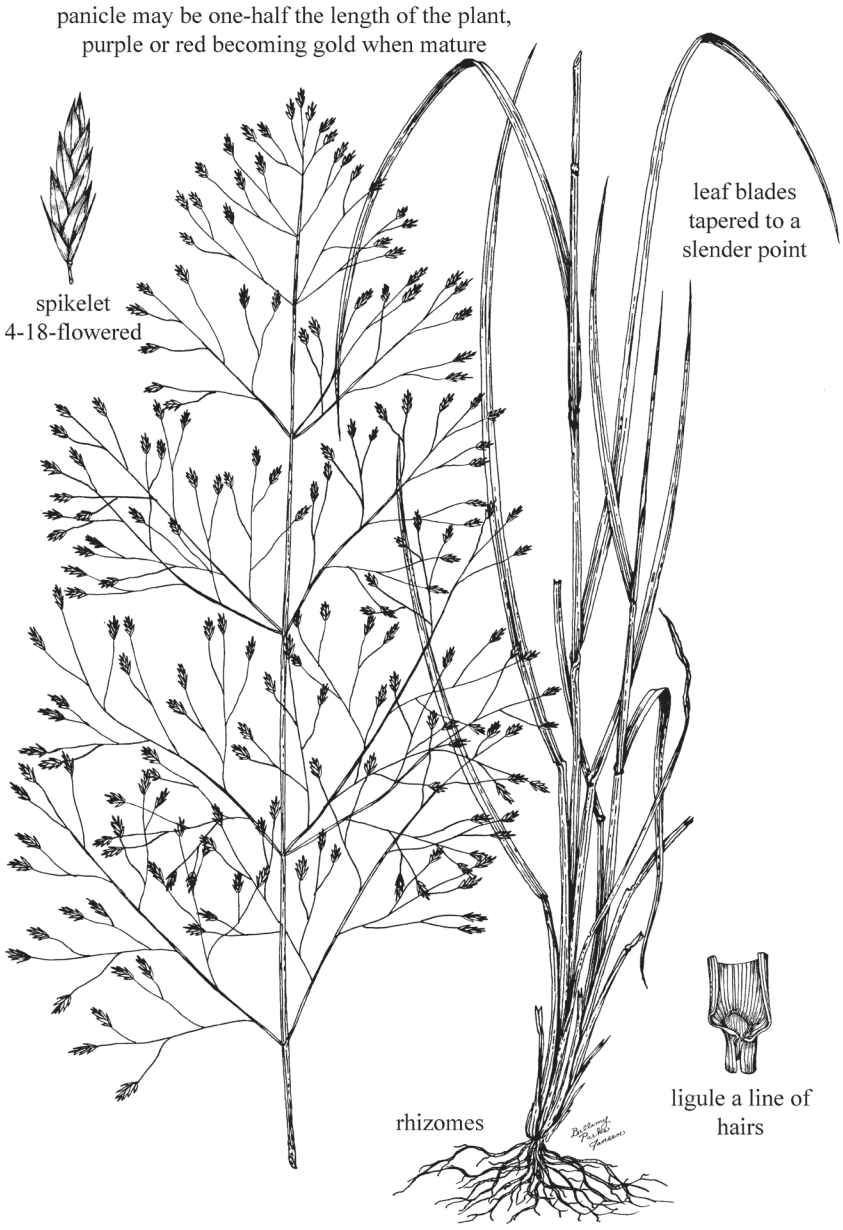
highly preferred and may be used too heavily during the summer. Palatability is fair to good after maturity. Hay quality is high if it is cut early.

Establishment. Sand lovegrass is valuable for seeding on sands and sandy sites throughout Nebraska. It is commonly seeded to stabilize disturbed areas. On sandy soils, it is seeded with other palatable, warm-season, native grasses. It is also recommended as a component in warm-season grass mixtures on all except the driest silty 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 short-lived, it readily reseeds itself. Sand lovegrass seeds are extremely small, and it is one of only a few grasses that will germinate and grow after simply scattering seeds on the surface of the soil.

Restoration. It is important to include sand lovegrass in restorations in the Sandhills. It establishes quickly and provides cover while other grasses are small. It will decrease after 3 or 4 years as other grasses begin to dominate.

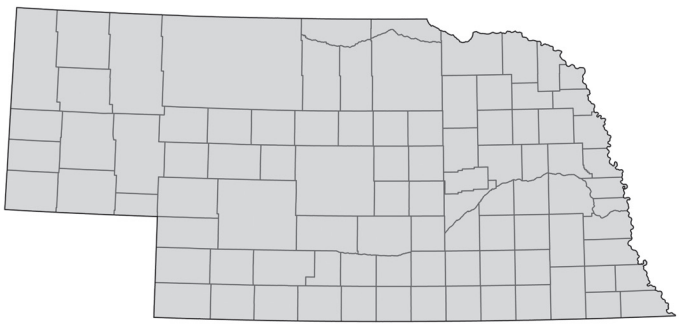
Wildlife. Sand lovegrass is highly palatable to deer, elk, and pronghorn. It provides good nesting and protective cover for upland game birds.

Ornamental. The reddish-purple inflorescences that turn gold in the fall make this an attractive accent or screen plant. The inflorescences are used in fresh and dried arrangements.



Sand lovegrass

Marsh muhly



COMMON NAME:	Marsh muhly
Species:	*Muhlenbergia racemosa* (Michx.) Britton, Sterns & Poggenb.
Life Span:	Perennial
Origin:	Native
Season:	Warm
Growth Form:	Sod-forming
Flowering:	July to October

Vegetative Characteristics

culms:	erect (to 1.2 m tall), flattened below the nodes, often branching at middle nodes, glabrous or minutely pubescent
sheaths:	flattened, compressed, loose, glabrous to scabrous, margins thin and translucent
ligules:	membranous (to 1.7 mm long), lacerate or erose, truncate to rounded
blades:	flat or occasionally loosely rolled (to 18 cm long, to 7 mm wide), evenly distributed along the culm; leafy to near the base of the inflorescence
rhizomes:	branching, scaly, white

Inflorescence Characteristics

type:	panicles (to 15 cm long, to 14 mm wide), contracted, densely flowered, lobed or interrupted, pedicels shorter than spikelets, occasionally partly enclosed in the upper sheath
spikelets:	1-flowered; glumes nearly equal (to 4.5 mm long), lanceolate, 1-veined; veins ciliate or scabrous; lemmas gradually pointed (to 4.5 mm long), pilose below, 3-veined
awns:	glumes awn-tipped or with slender awns (to 8 mm long), scabrous; lemmas rarely awn-tipped

Distribution and Habitat

Marsh muhly grows throughout Nebraska in moist and dry soils of pastures, waste places, and roadsides. It grows well in partial shade, such as under trees.

Uses and Values

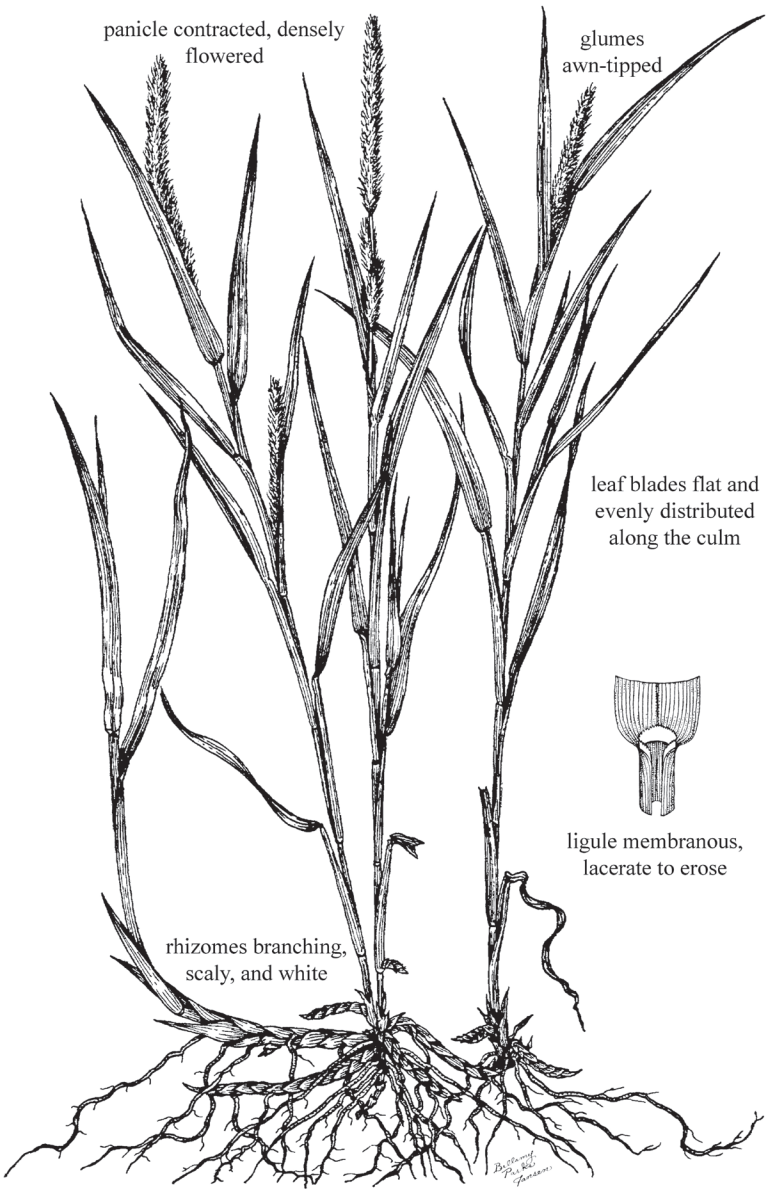
Forage. Marsh muhly produces fair forage for livestock while it is green and actively growing.

Establishment. It is not used in rangeland and pasture seedings because productivity is low and there are better species to select for the seeding mixture.

Restoration. Marsh muhly is not used in prairie restorations.

Wildlife. Deer, pronghorn, and elk lightly graze marsh muhly.

Ornamental. It is not used as an ornamental.



Marsh muhly

Other

Three other species of muhlys have an appearance similar to marsh muhly and grow in similar habitats. The culms of spike muhly [*Muhlenbergia glomerata* (Willd.) Trin.] are rounded below the nodes while the culms of marsh muhly are flattened below the nodes. Wirestem muhly [*Muhlenbergia frondosa* (Poir.) Fernald] and Mexican muhly [*Muhlenbergia mexicana* (L.) Trin.] differ from marsh muhly by having glumes that are relatively short (rarely to 4 mm), about equaling or slightly longer than the lemmas, and awnless or awn-pointed. The internodes of Mexican muhly are dull and have short pubescence, especially near the summit, while the internodes of wirestem muhly are smooth and shiny.

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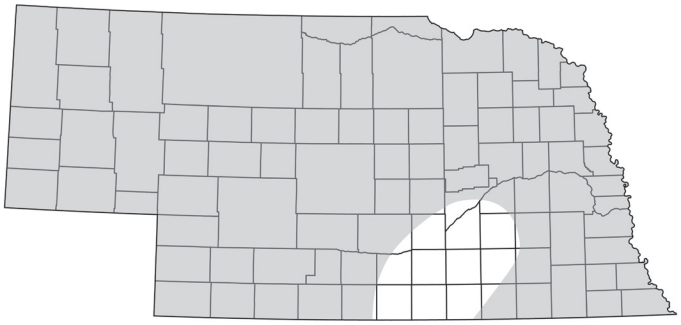
Plains muhly



COMMON NAME:	Plains muhly
Species:	*Muhlenbergia cuspidata* (Torr. *ex* Hook.) Rydb.
Life Span:	Perennial
Origin:	Native
Season:	Warm
Growth Form:	Bunchgrass
Flowering:	June to September

Vegetative Characteristics

culms:	erect (to 60 cm tall), slender, stiff, wiry, much-branched; from a hard bulb-like and scaly base
sheaths:	flattened, compressed (to 10 cm long, to 2 mm wide), shorter than the internodes
ligules:	membranous (to 0.8 mm long), truncate
blades:	flat or folded (to 22 cm long, to 3.5 mm wide), prominently veined, with fine stiff hairs on upper surface
rhizomes:	none

Inflorescence Characteristics

type:	panicles terminal and axillary (to 15 cm long, to 10 mm wide), contracted, narrow, spike-like; branches erect and ascending; pedicels shorter or longer than spikelets
spikelets:	1-flowered (to 3.6 mm long); glumes nearly equal (to 3 mm long), 1-veined, taper to a point; lemmas 3-veined, pointed, may be finely hairy
awns:	none

Plains muhly

Distribution and Habitat

This native grass is found on uplands and hillsides over much of the state, although it rarely grows on loose sands. Plains muhly is particularly abundant on limey upland and thin loess ecological sites.

Uses and Values

Forage. 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 become thick on hillsides and produce a considerable amount of forage. Plains muhly decreases under heavy grazing and is found principally on rangeland in good health.

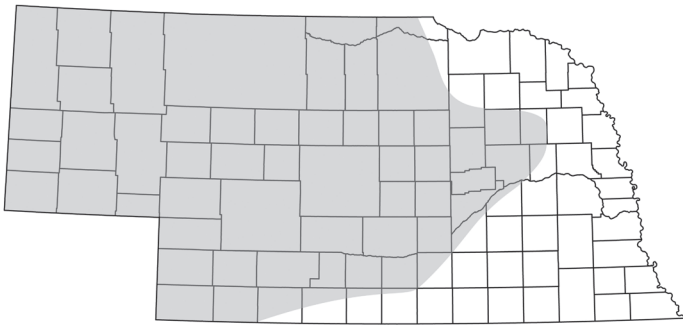
Establishment. Plains muhly seed is not readily available, and it is seldom used in grass seedings.

Restoration. A small amount of plains muhly seeds can be added to mixtures in the Shortgrass Prairie and western Mixed Grass Prairie regions if the restoration sites include hillsides and breaks. In most cases, seed will need to be harvested by hand from nearby grasslands.

Wildlife. It furnished fair to good forage for deer, pronghorn, bighorn sheep, and elk and fair nesting cover for upland game birds. Plains muhly seeds are eaten by wild turkeys, upland game birds, songbirds, and small mammals.

Ornamental. Plains muhly may be used as a specimen planting in rock gardens.

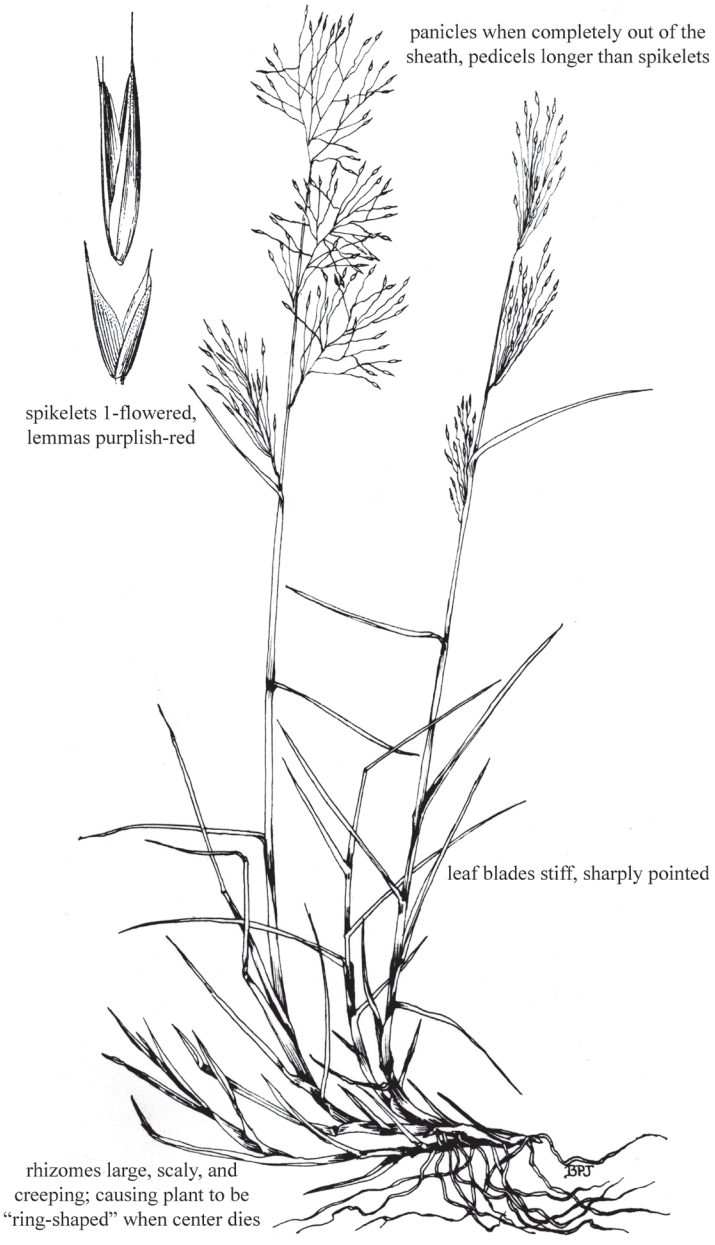
Sandhill muhly



COMMON NAME:	Sandhill muhly
Species:	*Muhlenbergia pungens* Thurb. *ex* A. Gray
Life Span:	Perennial
Origin:	Native
Season:	Warm
Growth Form:	Sod-forming
Flowering:	July to September

Vegetative Characteristics

culms:	spreading to erect (to 80 cm), base much-branched, usually glabrous; may be covered with fine, short, bristly hairs
sheaths:	flattened to round, open; margins wide, transparent
ligules:	membranous (to 1.5 mm long), lacerate or erose, truncate
blades:	flat to rolled (to 15 cm long, to 6 mm wide), stiff, sharply pointed; veins on upper surface raised and covered by short, bristly hairs
rhizomes:	large, scaly, creeping; causing plant to be "ring-shaped" when the center portion dies with age



Sandhill muhly

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Inflorescence Characteristics

type:	panicles (to 20 cm long, 10 mm wide) when completely out of the sheath, open, diffuse; branches appeal fascicled, pedicels longer than spikelets
spikelets:	1-flowered (to 5 mm long); glumes nearly equal (to 2.6 mm long), often notched or toothed, 1-veined; lemmas faintly 3-veined (to 3.6 mm long), purplish-red; paleas 2-veined
awns:	glumes and lemmas awned (to 2 mm long)

Distribution and Habitat

This native grass is found on sands and choppy sands ecological sites. It is most common on sandy ridge tops, edges of blowouts, and dry south and west sides of choppy sand hills. The primary importance of sandhill muhly is as an early successional species and as a soil stabilizer. It often grows with blowout grass and lemon scurfpea and provides preliminary control of wind erosion in 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.

Uses and Values

Forage. This warm-season grass produces harsh, prickly foliage of poor forage value. It is an undesirable 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 and following fires, and it remains indefinitely on abused rangeland.

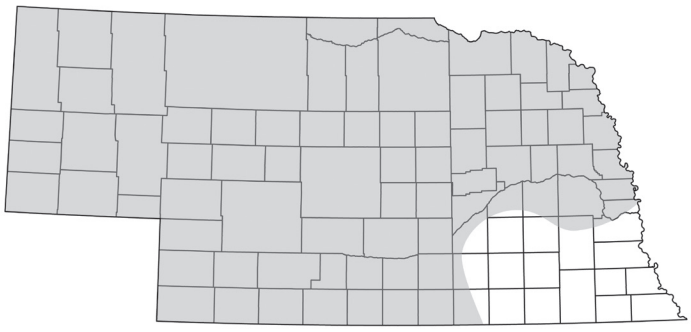
Establishment. Sandhill muhly is not used in grassland seedings.

Restoration. Sandhill muhly is seldom used in restorations because it normally grows in open sand and cannot successfully compete with taller grasses. Seed is not available commercially.

Wildlife. It is not used by wildlife for food or cover.

Ornamental. Sandhill muhly has been used as a specimen planting in rock gardens with the purplish-red inflorescences adding color to the landscape.

Scratchgrass



COMMON NAME:	Scratchgrass
Species:	*Muhlenbergia asperifolia* (Nees. & Meyen *ex* Trin.) Parodi
Life Span:	Perennial
Origin:	Native
Season:	Warm
Growth Form:	Sod-forming
Flowering:	June to October

Vegetative Characteristics

culms:	ascending to spreading (to 90 cm), slightly flattened, shiny
sheaths:	round to slightly keeled, glabrous
ligules:	ciliate membranes (to 6 mm long), truncate
blades:	flat to folded (to 15 cm long, to 3 mm wide), scabrous
rhizomes:	large, scaly, creeping

Inflorescence Characteristics

type:	panicles (to 15 cm long, to 15 cm wide) open, diffuse; often partly enclosed in the sheath below; pedicels much longer than spikelets

spikelets:	1-flowered (to 2 mm long); glumes subequal (to 6 mm long), glabrous, 1-veined, veins scabrous; lemmas faintly 3-veined (to 2 mm long), rounded to short-mucronate, glabrous, purplish-red to stramineous
awns:	none

Distribution and Habitat

This native grass is most common in the western three-fourths of the state. It usually grows in moist soils of meadows, marshes, and stream, lake, and pond margins. It tolerates a moderate level of alkalinity.

Uses and Values

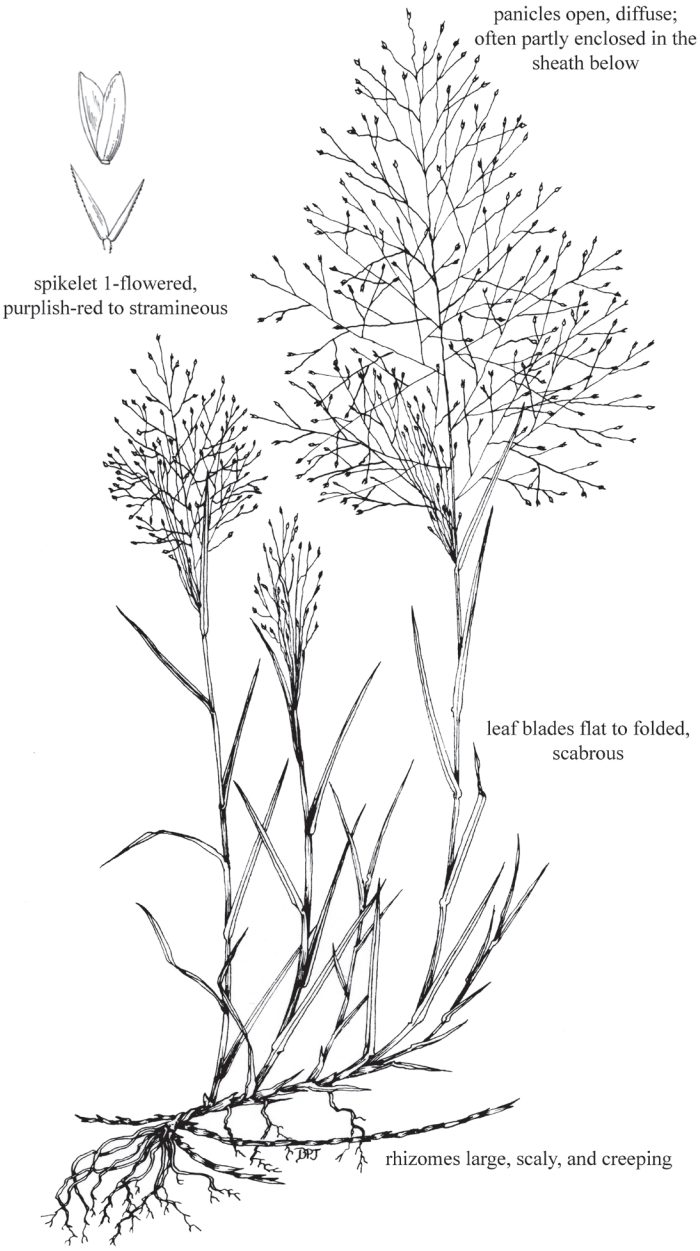
Forage. This warm-season grass is palatable to livestock while it is actively growing in the spring. Forage quality rapidly decreases with maturity. It withstands relatively heavy grazing, but it is not an important forage grass.

Establishment. Scratchgrass is not used in grassland seedings.

Restoration. Scratchgrass is not used in restorations. Seed is not available commercially.

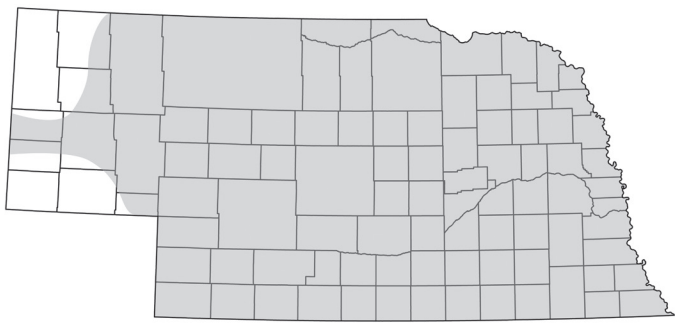
Wildlife. It is lightly used by wildlife for food or cover.

Ornamental. Scratchgrass is not used in ornamental plantings



Scratchgrass

Phragmites



COMMON NAME:	Phragmites (common reed)
Species:	*Phragmites australis* (Cav.) Trin. *ex* Steud. [= *Phragmites communis* Trin.]
Life Span:	Perennial
Origin:	Native and Introduced
Season:	Warm
Growth Form:	Sod-forming
Flowering:	July to October

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Vegetative Characteristics

culms:	erect to ascending (to 5 m tall), round (to 20 mm in diameter), glabrous, hollow; sometimes purplish
sheaths:	round, open, smooth, margins with fine hairs
ligules:	ciliate membrane (to 3 mm long), backed by both short and long silky hairs
blades:	flat (to 60 cm long, to 5 cm wide), tapering to long-pointed tips; margins scabrous, glabrous; upper surface ridge-veined, lower surface without hair or sparsely hairy
rhizomes:	extensive (up to 10 m long), stout (up to 20 mm in diameter), scaly; commonly stoloniferous (to 15 m long)

Inflorescence Characteristics

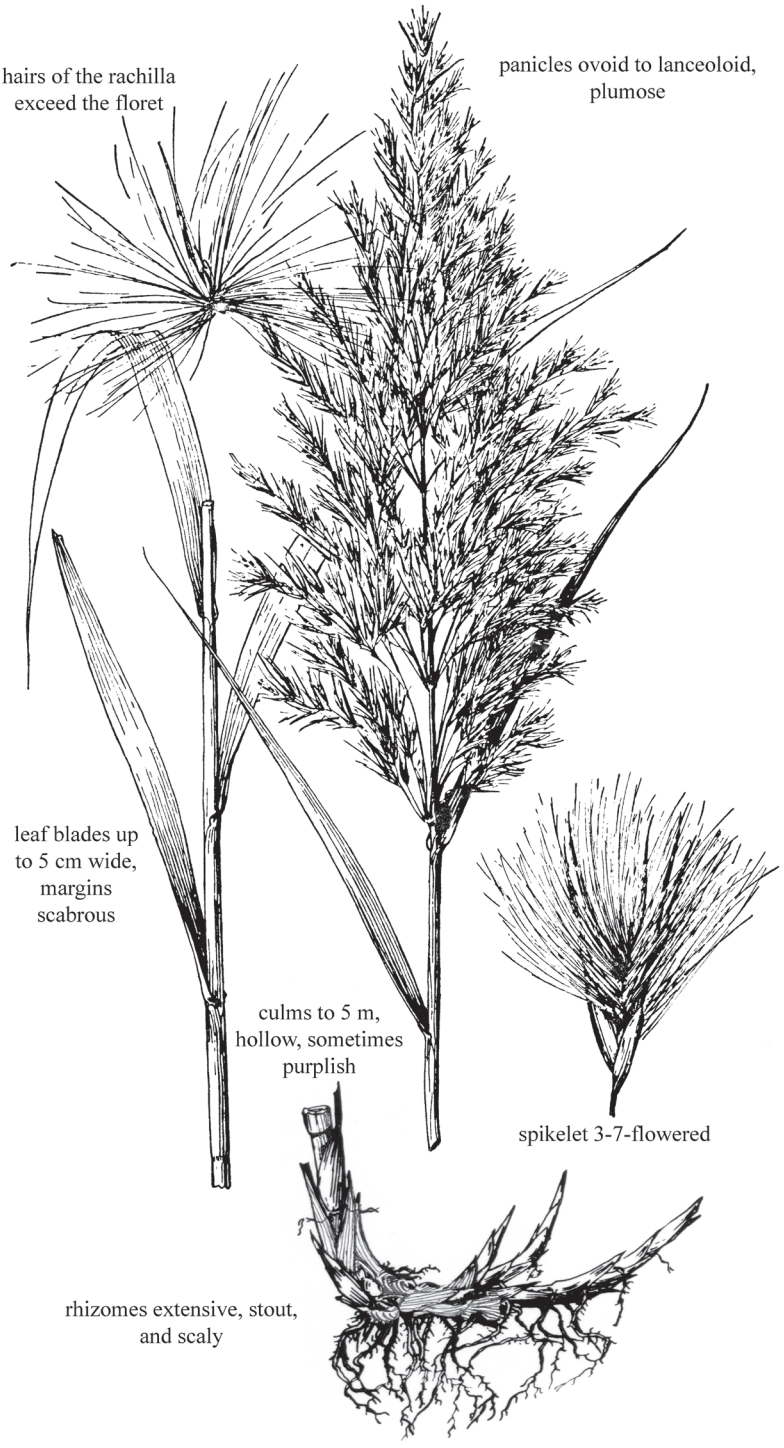
type:	panicles (to 50 cm long, to 20 cm wide), ovoid to lanceoloid, plumose, much-branched; branches nodding at maturity, densely flowered; often purplish, becoming stramineous
spikelets:	3–7-flowered (to 18 mm long); glumes unequal, first glume shorter (to 6 mm long) than the second (to 8 mm long), first glume 3-veined, second glume 3–5-veined; lemmas sharply pointed, glabrous, 3-veined; lowest floret staminate; hairs of the rachilla exceed the florets
awns:	fertile lemmas awned

Distribution and Habitat

Phragmites is found throughout Nebraska forming dense patches in wet and moderately fertile soils of meadows, pastures, and fields. Phragmites also grows along banks of ponds, lakes, streams, marshes, and roadside ditches. It tolerates moderate salinity. It is rapidly increasing along the main rivers and their tributaries throughout Nebraska.

Uses and Values

Forage. Immature phragmites is readily eaten by cattle and horses. It has fair to good forage value when young and rapidly growing, but palatability rapidly decreases with maturity. Even when it is abundant, it is not an important forage species.



Phragmites

Establishment. Phragmites is not used in grassland seedings.

Restoration. It rapidly spreads and should not be used in restorations. It is classified as a noxious weed in Nebraska.

Wildlife. Phragmites seeds are eaten by waterfowl, and the rhizomes and stems are eaten by muskrats. Red-winged blackbirds preferentially nest in phragmites. The

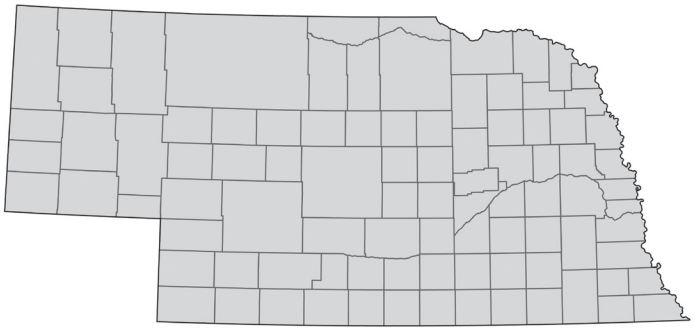
foliage may be lightly grazed by deer. It provides escape cover for upland game birds and other wildlife.

Ornamental. Since it is a noxious weed, it should not be used in ornamental plantings.

Other

In addition to native plants, phragmites also was introduced from Europe. The introduced plants have a dense inflorescence, yellow rhizomes that are oval in cross section, persistent leaf sheaths in the fall, and tan stems that are scabrous. Native phragmites has a more open and sparse inflorescence, white and round rhizomes, leaf sheaths that are easily detached in the fall, and smooth culms that are red to chestnut in color. Native phragmites is not as aggressive as plant material originating from Europe.

Prairie cordgrass



COMMON NAME:	Prairie cordgrass
Species:	*Spartina pectinata* Link
Life Span:	Perennial
Origin:	Native
Season:	Warm
Growth Form:	Sod-forming
Flowering:	August to September

Vegetative Characteristics

culms:	erect to ascending (to 2.5 m tall), solitary or in clusters, coarse, robust
sheaths:	round (may be keeled above), open, distinctly veined, mostly glabrous and usually hairy only on the throat, margins scabrous
ligules:	ciliate membranes (to 4 mm long), truncate
blades:	flat when green (to 100 cm long, to 15 mm wide), rolled when dry, tapering to a point, scabrous; margins saw-toothed
rhizomes:	stout (to 10 mm in diameter), scaly, sharply pointed, widely spreading

Inflorescence Characteristics

type:	panicles of 6–40 spicate primary unilateral branches (each branch to 15 cm long), alternate, appressed to spreading; 20–80 spikelets arranged alternately in two rows on one side of the rachis, comb-like, dense
spikelets:	1-flowered; glumes unequal; first glume (to 7 mm long); 1-veined, second glume (to 11 mm long) 3-veined; scabrous with stiff hairs on keel, saw-toothed margins; lemma laterally compressed (to 9 mm long), 3-veined, keel scabrous
awns:	first glume with short awn (to 4 mm long), second glume awned; awn (to 10 mm long) stout with fine teeth on base

Distribution and Habitat

Prairie cordgrass is abundant on wet, non-saline soils throughout the state. It is most common in sloughs and along the edges of lakes and marshes in Sandhills valleys and along the Elkhorn, Loup, Platte, and Missouri rivers and their tributaries. Prairie cordgrass is one of the dominant native grasses on wetland ecological sites. Here it occurs in pure stands or with other grasses and sedges. Soils on which it grows are normally wet for several weeks each year and are too wet for big bluestem, switchgrass, and indiangrass. However, prairie cordgrass grows in scattered stands with these grasses on subirrigated ecological sites.

Uses and Values

Forage. 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 it

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grows in association with coarse sedges but it is only fair when growing with big bluestem, indiangrass, switchgrass, and bluejoint reedgrass. Under heavy spring grazing, prairie cordgrass becomes harsh and stemmy and only the leaf tips are eaten. A high yield of fair quality hay can be obtained from prairie cordgrass on wetland sites if it is cut before inflorescences 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 equipment. Reproduction is usually by rhizomes except in bare areas where seedlings can establish.

Establishment. Prairie cordgrass is not usually recommended for rangeland seeding. If forage production is the objective, redtop bent and creeping foxtail are preferred over prairie cordgrass. It is a valuable species for pond and stream bank stabilization and has some salt tolerance.

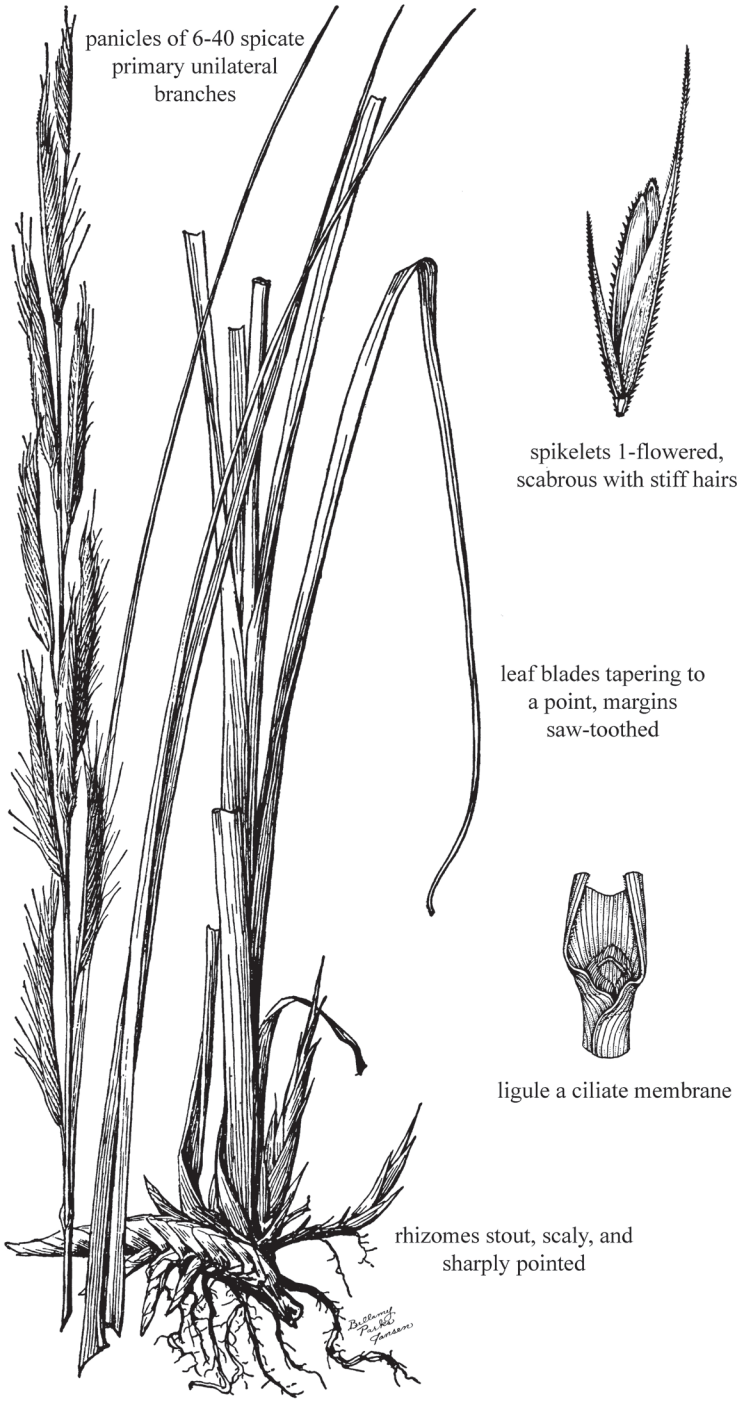
Restoration. Prairie cordgrass can be used in restoration of wetlands ecological sites and to stabilize banks of streams and ponds. It can be established by seeds or transplanting plant bases with attached rhizomes.

Wildlife. Prairie cordgrass forage is lightly grazed by big game. Its greatest value to wildlife is nesting, roosting, and escape cover. A few birds, such as red-winged blackbirds, nest in prairie cordgrass.

Ornamental. Prairie cordgrass is planted as an ornamental along streams and ponds and in other wet areas. It is very aggressive and can spread into surrounding areas. A variegated form with yellow leaf margins is available from nurseries.

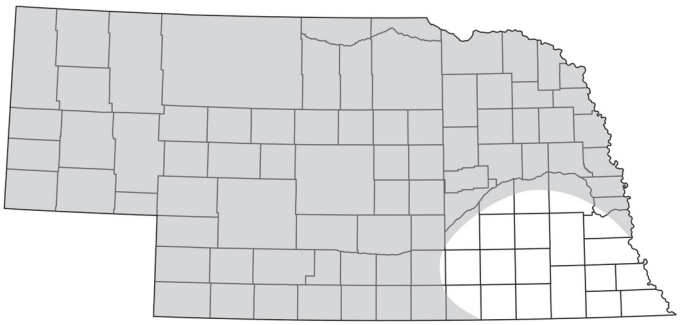
Other

Alkali cordgrass [*Spartina gracilis* Trin.] closely resembles prairie cordgrass, but it can be distinguished by its smaller size and nearly awnless spikelets. Leaves are narrower (7 mm or less), spicate primary unilateral branches are shorter (5 cm or less), and culms are shorter (1 m or less). Alkali cordgrass grows in wet, saline soils of the Sandhills and western Nebraska where few other grasses can thrive. Forage value and characteristics as hay grass are similar to prairie cordgrass. It is also a native, warm-season grass



Prairie cordgrass

Prairie sandreed



COMMON NAME:	Prairie sandreed
Species:	*Calamovilfa longifolia* (Hook.) Scribn.
Life Span:	Perennial
Origin:	Native
Season:	Warm
Growth Form:	Sod-forming
Flowering:	July to September

Vegetative Characteristics

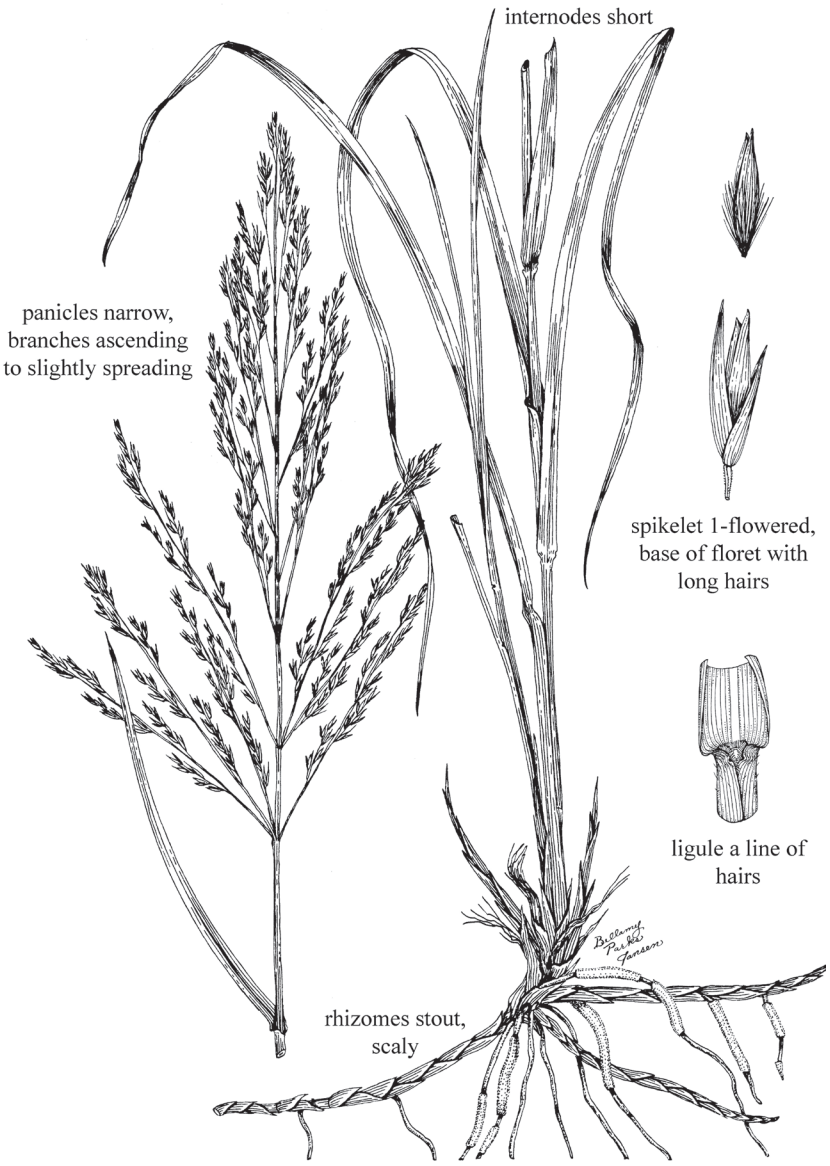
culms:	erect (to 1.8 m tall), solitary, robust, glabrous; internodes short
sheaths:	round, glabrous to hairy, distinctly veined, short hairs on margin; expanded or enlarged collars with hairs (to 3 mm long) at the throat
ligules:	line of hairs (to 3 mm long)
blades:	flat below, rolled above (to 70 cm long, to 12 mm wide), stiff, glabrous, margins scabrous
rhizomes:	stout, scaly

Inflorescence Characteristics

type:	panicles (to 60 cm long, to 3 cm wide), narrow; branches stiffly ascending to slightly spreading, shiny, tawny
spikelets:	1-flowered; glumes unequal; first (to 7 mm long) shorter than the second (to 8 mm long), pointed, rigid, 1-veined; lemma pale (to 7 mm long); callus (base of floret) with long hairs
awns:	none

Distribution and Habitat

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



Prairie sandreed

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Uses and Values

Forage. 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 with many stems, palatability is fair to good and relatively stable throughout the growing season. Prairie sandreed is more palatable while growing in early spring than later. However, it is primarily grazed in the mid-summer through winter because other Sandhills grasses are more palatable early in the growing season. Upland hay cut in the Sandhills includes large amounts of prairie sandreed, and the quality is acceptable if it is not cut too late. Prairie sandreed is tolerant of dry conditions 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 eliminated by prolonged improper use. Because of its stable and uniformly high production of forage on sandy soils, it is one of the most important Sandhills forage grasses.

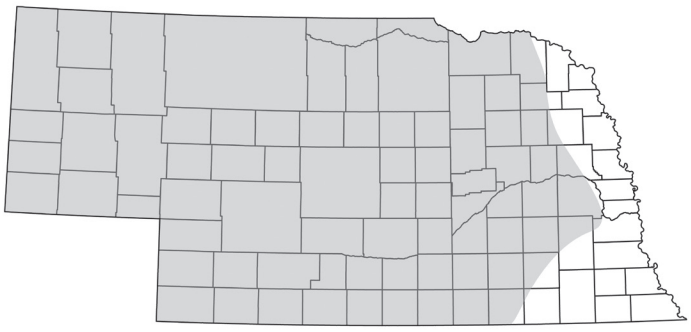
Establishment. Prairie sandreed is recommended in warm-season grass mixtures for seeding on sandy soils. Some prairie sandreed commonly occurs in seed mixtures harvested from native stands. A few commercial cultivars are available.

Restoration. Prairie sandreed is an important component of upland prairie restorations in the Sandhills Prairie. Plant bases with attached rhizomes may be transplanted in restorations of very small areas.

Wildlife. Prairie sandreed produces fair forage for big game. It provides important cover for nesting birds, and the seeds are eaten by birds and small mammals.

Ornamental. Prairie sandreed is infrequently used as a background or screen plant in areas with sandy soil.

Purple threeawn



COMMON NAME:	Purple threeawn
Species:	*Aristida purpurea* Nutt.
Life Span:	Perennial
Origin:	Native
Season:	Warm
Growth Form:	Bunchgrass
Flowering:	May to August

Vegetative Characteristics

culms:	erect to ascending (to 90 cm tall), not branching above the base, glabrous
sheaths:	round, shorter or longer than the internodes, open, smooth to slightly scabrous; collar with a tuft of long and soft hairs on both sides
ligules:	ciliate membranes (less than 0.5 mm long)
blades:	rolled to rarely flat (to 25 cm long, to 2 mm wide), sharply pointed, curved, scabrous, sometimes hairy
rhizomes:	none

Inflorescence Characteristics

type:	panicles (to 25 cm long, to 14 cm wide), open or contracted, sometimes reduced to a raceme, purplish to reddish; branches lax or erect, somewhat flexuous, curving or U-shaped; pedicels shorter or about equal to spikelet length
spikelets:	1-flowered; glumes unequal, broad 1–2-veined; first glume (to 11 mm long), about one-half as long as second glume (to 24 mm long); lemma firm (to 17 mm long, excluding awns), 3-veined, base hairy
awns:	first glume awnless or awned to 1 mm long; lemma awn branches into 3 awns (to 10 cm long), nearly equal, spreading; awn column to 2 mm long

Distribution and Habitat

This native grass is widely distributed except on low, wet sites. It grows on a wide range of soil textures and is found on all upland ecological sites. It is a common component of the vegetation on abused, silty sites. Stands are normally

quite scattered, but purple threeawn may be locally abundant on dry, sandy soils of hillsides, rocky slopes, and disturbed sites.

Uses and Values

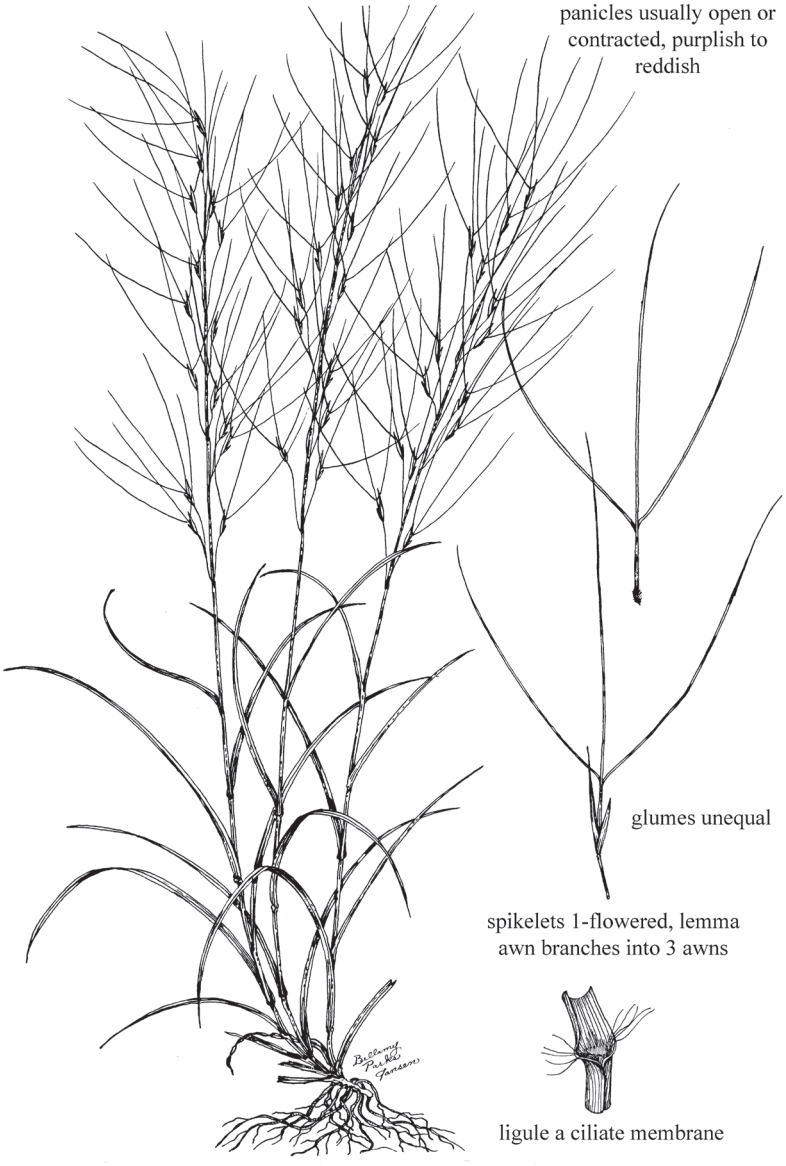
Forage. This warm-season grass provides a minor amount of usable forage. It is relatively unpalatable and is only occasionally grazed in early growth stages. After awns develop, the grass is worthless as forage. When sheep are grazed on rangeland containing purple threeawn, the long awns get into the fleece and also may cause irritation and abscesses in the mouth and nostrils. Because this grass is seldom eaten, it is able to spread into 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. Purple threeawn can tolerate dry conditions and rapidly invade 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 rangeland where the desirable grasses have been depleted.

Establishment. Purple threeawn is not a desirable grass on rangeland and is not recommended for seeding.

Restoration. It is not used in prairie restorations.

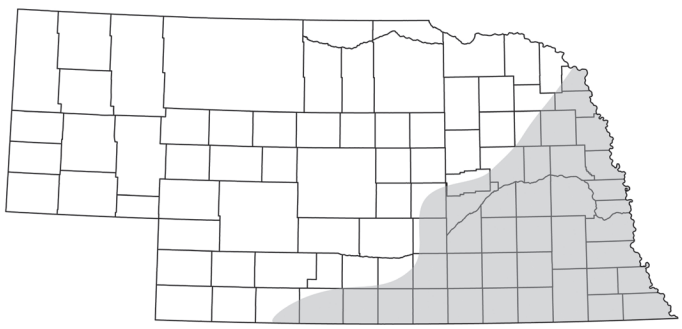
Wildlife. Purple threeawn produces poor forage for wildlife. It provides limited cover, and small mammals eat the seeds.

Ornamental. It is sold as an ornamental because the nodding purplish inflorescence contrasts nicely with other foliage and background plants. This attractive accent is used in dryscapes because it requires little water. Purple threeawn grows best in full sunlight.



Purple threeawn

Purpletop



COMMON NAME:	Purpletop
Species:	*Tridens flavus* (L.) Hitchc.
Life Span:	Perennial
Origin:	Native
Season:	Warm
Growth Form:	Bunchgrass
Flowering:	July to October

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Vegetative Characteristics

culms:	erect or ascending (to 1.6 m tall), round or slightly compressed, nodes glabrous
sheaths:	keeled, open; pubescent near the collar, otherwise glabrous
ligules:	ciliate membranes (less than 1 mm long)
blades:	flat (to 60 cm long, to 12 mm wide), midrib prominent near base, usually glabrous or sparsely hispid
rhizomes:	rarely with short rhizomes

Inflorescence Characteristics

type:	panicles (to 40 cm long, to 30 cm wide), open; branches spreading, drooping at maturity; axils pubescent; usually purple to black at maturity
spikelets:	4–8-flowered (to 10 mm long); glumes nearly equal (to 4.8 mm long), 1-veined; lemmas obtuse (to 5 mm long), broad, 3-veined; pubescent on the lower one-half of the veins; lateral veins excurrent and mucronate
awns:	none

Distribution and Habitat

Purpletop grows in the southeastern part of Nebraska in a broad range of soils. It is most noticeable along roadsides in the fall after the inflorescences have turned a deep purple color. Also, it may be found in pastures, open woods, abandoned farmland, and waste areas.

Uses and Values

Forage. Purpletop produces good forage for livestock until it reaches maturity in early fall. Seldom is it present in large enough quantities to be an important source of forage.

Establishment. It is infrequently used in grassland seedings.

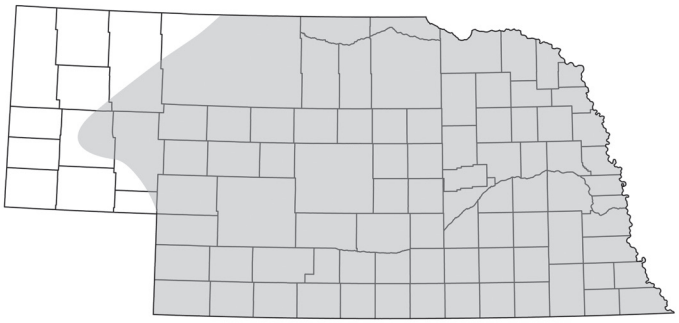
Restoration. Purpletop does not compete well with taller grasses used in restoration of Tallgrass Prairies, and it is seldom included in restoration mixtures.

Wildlife. Deer lightly graze the foliage. Birds and small mammals eat the seed, and it provides nesting an escape cover for upland birds.

Ornamental. Screen plantings would be a potential use for purpletop.

Purpletop

Sand paspalum



COMMON NAME:	Sand paspalum
Species:	*Paspalum setaceum* Michx.
Life Span:	Perennial
Origin:	Native
Season:	Warm
Growth Form:	Bunchgrass
Flowering:	May to September

Vegetative Characteristics

culms: ascending to spreading to prostrate (to 80 cm tall), nodes may be slightly pubescent

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

ligules: membranous (to 0.5 mm long), often backed with hairs

blades: flat (to 35 cm long, to 15 mm wide), soft, may have a few long hairs to densely hairy

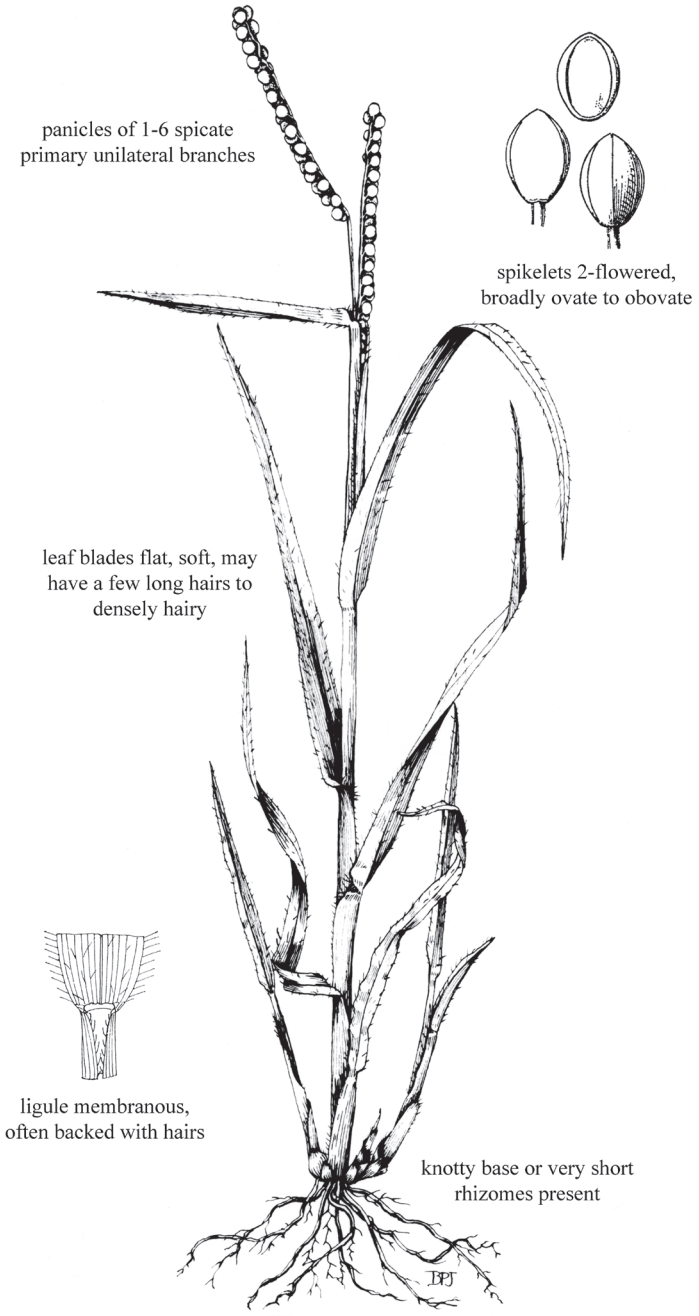
rhizomes: knotty base or rarely with very short rhizomes, but it has the appearance of a bunchgrass

Inflorescence Characteristics

type: panicles of 1–6 spicate primary unilateral branches (or spicate racemes) (to 15 cm long); branches 1–3 on terminal peduncles, usually solitary on lateral branches, the lower branch often remaining partially in the sheath

spikelets: 2-flowered (to 2.6 mm long); placed in 2 rows on 1 side of the rachis; broadly ovate to broadly obovate, glabrous to sparsely pubescent; first glume usually missing; second glume as large as the spikelet, 3–5-veined; sterile lemma usually 3-veined or 2-veined (with the midvein missing); fertile lemma indurate, smooth, straminеous to light-green, sometimes spotted

awns: none



Sand paspalum

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Distribution and Habitat

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

Uses and Values

Forage. This warm-season grass has 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. Therefore, herbage yield is low, and the grass warrants only minor consideration in management. It readily establishes naturally on formerly cultivated land.

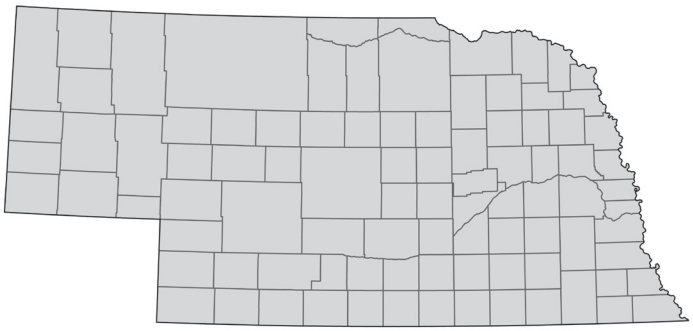
Establishment. Sand paspalum is not included in grassland seedings.

Restoration. It is not used in prairie restorations.

Wildlife. Seeds are an important food for birds and small mammals.

Ornamental. Sand paspalum is not used as an ornamental plant.

Switchgrass



COMMON NAME:	Switchgrass
Species:	*Panicum virgatum* L.
Life Span:	Perennial
Origin:	Native
Season:	Warm
Growth Form:	Sod-forming
Flowering:	July to September

Vegetative Characteristics

culms:	erect or ascending (to 3 m tall), robust, usually unbranched above base
sheaths:	round, margins may be hairy; often purple to red at the base
ligules:	ciliate membrane (to 3 mm long), mostly hairs, truncate
blades:	flat (to 60 cm long, to 15 mm wide), firm, margins weakly barbed; triangular patch of hair just above the ligule extending outward along midrib of leaf blade
rhizomes:	creeping, scaly, numerous

Inflorescence Characteristics

type:	panicles (to 60 cm long, to 3.5 cm wide), terminal, open, spreading, pyramidal to ovate; spikelets near ends of long branches, lower branches in whorls, pairs, or single
spikelets:	2-flowered; glumes unequal, first glume shorter (to 3.8 mm long) than the second (to 6 mm long), sharply pointed; base of the second glume enclosed by the first glume; upper floret fertile (to 6 mm long), smooth and shiny, margins inrolled at base; lower floret reduced to a lemma
awns:	none

Distribution and Habitat

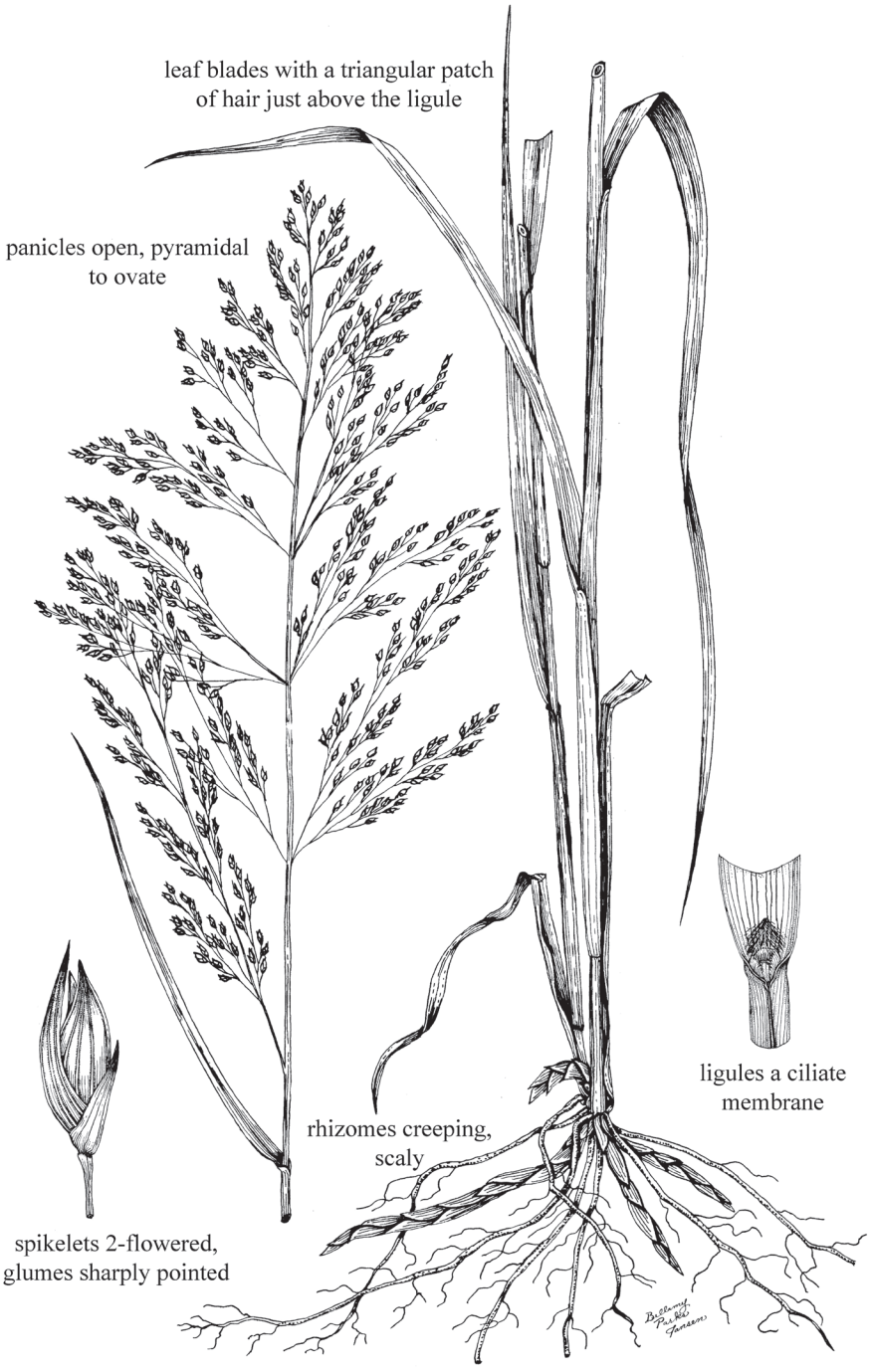
This native grass occurs throughout Nebraska on subirrigated, overflow, sands, sandy, and choppy sands ecological sites. In the eastern one-half of the state, it is also found on upland silty and clayey sites. It grows best where moisture is abundant and thrives on sites where big bluestem grows. However, like big bluestem, it is unable to survive prolonged drought and seldom is common on the 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

Forage. This warm-season grass grows rapidly in late spring and early summer. During this time, it has good forage value and readily grazed by cattle, horses, and sheep. As the stems and inflorescences begin to mature in

midsummer, nutrient content and palatability decline rapidly. On rangeland grazed in the fall and winter, palatability is low, and only the leaves and inflorescences are normally eaten. On adapted sites, switchgrass yields high quantities of good quality hay when cut early. Palatability and quality drop more rapidly with maturity than for sand bluestem or big bluestem.

Establishment. Switchgrass is a major component of warm-season, native grass seedings and is most commonly planted in mixture with the bluestems, sideoats grama, indiangrass, and sand lovegrass. Several cultivars of high quality seed are readily available. Although seedlings are somewhat slow to establish, stands tend to improve as plants spread by rhizomes and through natural reseeding. Switchgrass is recommended for seeding throughout Nebraska on subirrigated, overflow, sands, and sandy ecological sites and on most moderately saline subirrigated sites. It is recommended also for silty and clayey sites in the eastern one-half of the state. Switchgrass is adapted for use in warm-season pastures when seeded alone or in mixtures with other tall, warm-season grasses. It is commonly seeded in waterways because it provides good soil erosion control.



Switchgrass

Restoration. Switchgrass is a primary component in Sandhill Prairie and Tallgrass Prairie restorations. It will grow farther west in moist soils. Care should be taken in using only a small amount of switchgrass seed in restorations because it establishes relatively quickly and can crowd out other plants. Too much switchgrass in the mixture and management with spring prescribed burning can result in a restored prairie with the appearance of a field of switchgrass.

Wildlife. Switchgrass is grazed by deer and elk. It provides excellent nesting cover for waterfowl and upland game birds. It provides escape and roosting cover for pheasants and other upland game birds. Its seeds are eaten by doves, pheasants, quail, wild turkeys, sharptail grouse, prairie chickens, and small mammals.

Ornamental. The finely textured or airy inflorescences produce a cloud-like affect making switchgrass useful as a screen or background plant. The plants have a bluish-cast in the summer and a reddish fall color. Caution should be exercised because switchgrass may spread quickly.

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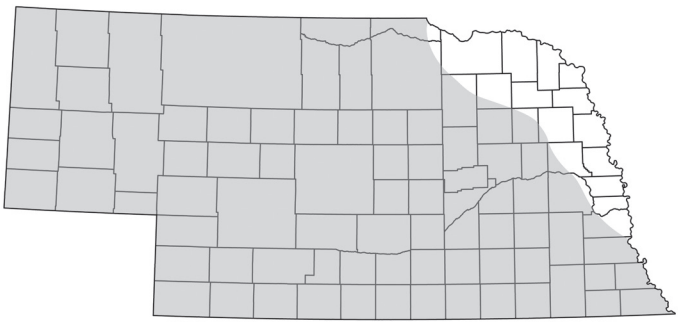
Tumblegrass



COMMON NAME:	Tumblegrass
Species:	*Schedonnardus paniculatus* (Nutt.) Trel.
Life Span:	Perennial
Origin:	Native
Season:	Warm
Growth Form:	Bunchgrass
Flowering:	June to August

Vegetative Characteristics

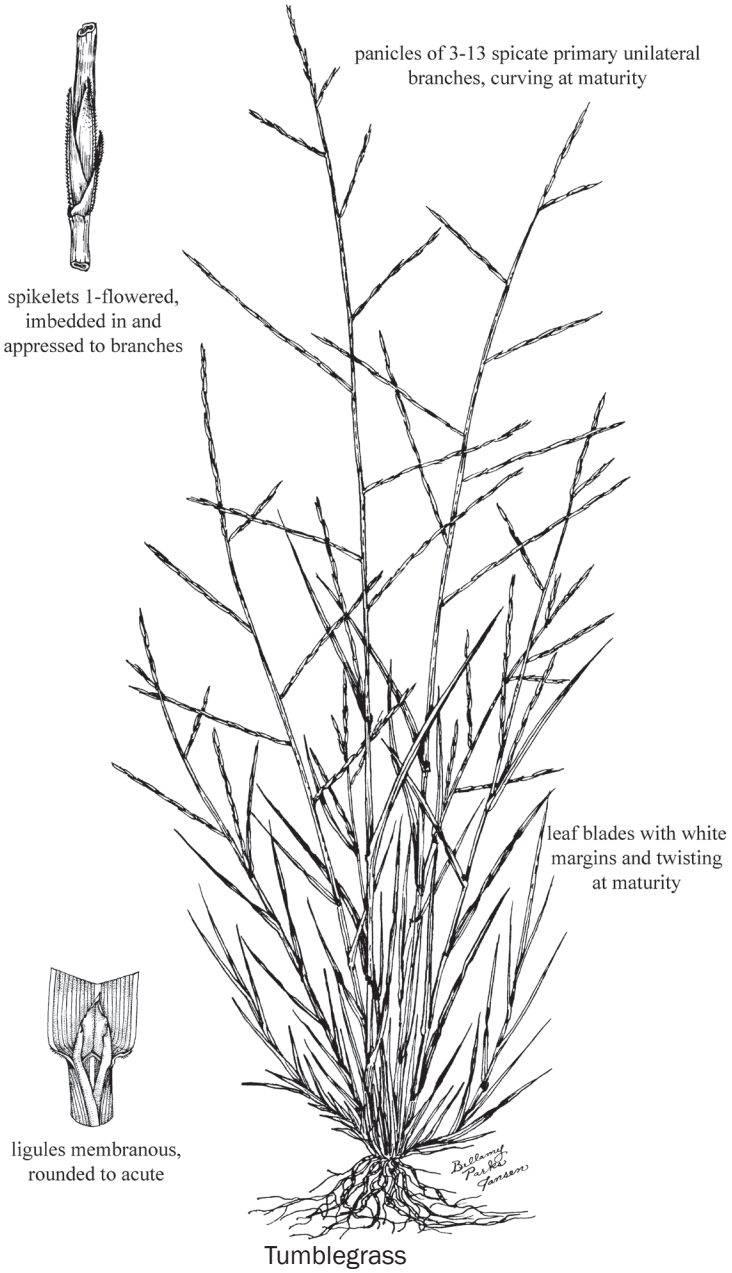
culms:	erect to ascending (to 70 cm tall); often decumbent at the base and stiffly curving upward, scabrous
sheaths:	laterally compressed, loose, margins hyaline, glabrous, crowded at the base of the plant
ligules:	membranous (to 3 mm long), rounded to acute, erose
blades:	folded (to 15 cm long, to 3 mm wide), stiff, smooth or scabrous on margins, margins white, midvein prominent; wavy and becoming twisted at maturity
rhizomes:	none

Inflorescence Characteristics

type:	panicles (to 60 cm long) of 3–13 spicate primary unilateral branches; branches (to 20 cm long), spreading, remote, curved at maturity; spikelets in 2 rows on one side of the branches
spikelets:	1-flowered, widely spaced (to 4 mm long), slender, sessile, imbedded in and appressed to branches; glumes unequal, second glume as long as the lemma (to 4 mm long); first glume shorter; narrow and tapering at both ends, stiff 1-veined; lemma 3-veined
awns:	glumes may be awn-pointed
other:	inflorescence breaks off at the base and may be tumbled by the wind

Distribution and Habitat

This native grass is common on roadsides, waste places, and abused rangeland. It is found on open, disturbed, and relatively dry sites, but it never occupies extensive areas. It



Tumblegrass

grows best in finely textured soils and is common on "slick spots" associated with impermeable soils high in sodium.

Uses and Values

Forage. 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 to worthless. It tends to increase with abusive grazing and disturbance.

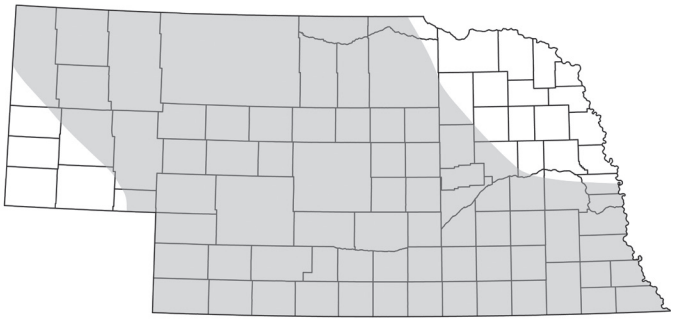
Establishment. It is not used in grassland seedings because of low productivity and poor forage quality.

Restoration. Tumblegrass is not recommended for restorations.

Wildlife. The seeds are eaten by small mammals and birds, but it has little value for forage or cover for wildlife.

Ornamental. Tumblegrass is not used as an ornamental.

Windmillgrass



COMMON NAME:	Windmillgrass
Species:	*Chloris verticillata* Nutt.
Life Span:	Perennial
Origin:	Native
Season:	Warm
Growth Form:	Bunchgrass
Flowering:	May to September

Vegetative Characteristics

culms:	erect above (to 45 cm tall), decumbent and geniculate below, flattened, solid; often rooting at the lower nodes
sheaths:	keeled, glabrous
ligules:	ciliate membranes (to 2 mm long), truncate; with long hairs behind and at the margins
blades:	folded (to 18 cm long, to 4 mm wide), keeled especially near the base, glabrous or scabrous
rhizomes:	none; rarely stoloniferous

Inflorescence Characteristics

type:	panicles of 6–20 spicate primary unilateral branches; branches (to 20 cm long) partly in verticels
spikelet:	2-flowered, one perfect and one reduced; glumes unequal; first shorter (to 3.2 mm long) than the second (to 4.2 mm long), midveins scabrous; fertile lemma keeled (to 3.5 mm long), 3-veined, midveins glabrous, margins pubescent; rudimentary lemma blunt (to 2.5 mm long), 3-veined, truncate
awns:	fertile lemma awned (to 9 mm long) from below the tip; rudiment lemma awned (to 7 mm long)

Distribution and Habitat

Windmillgrass may be found in most parts of the state, but it is most common in the Sandsage Prairie. It grows in lawns, abused rangelands, waste areas, and along roadsides. It grows in all types of soils and does best in well-drained soils.

Uses and Values

Forage. Windmillgrass provides poor forage for livestock. It is occasionally grazed while it is actively growing, but its palatability is low.

Establishment. It is not used in seedings and usually is considered to be a weed on grasslands. It can become a serious weed in lawns.

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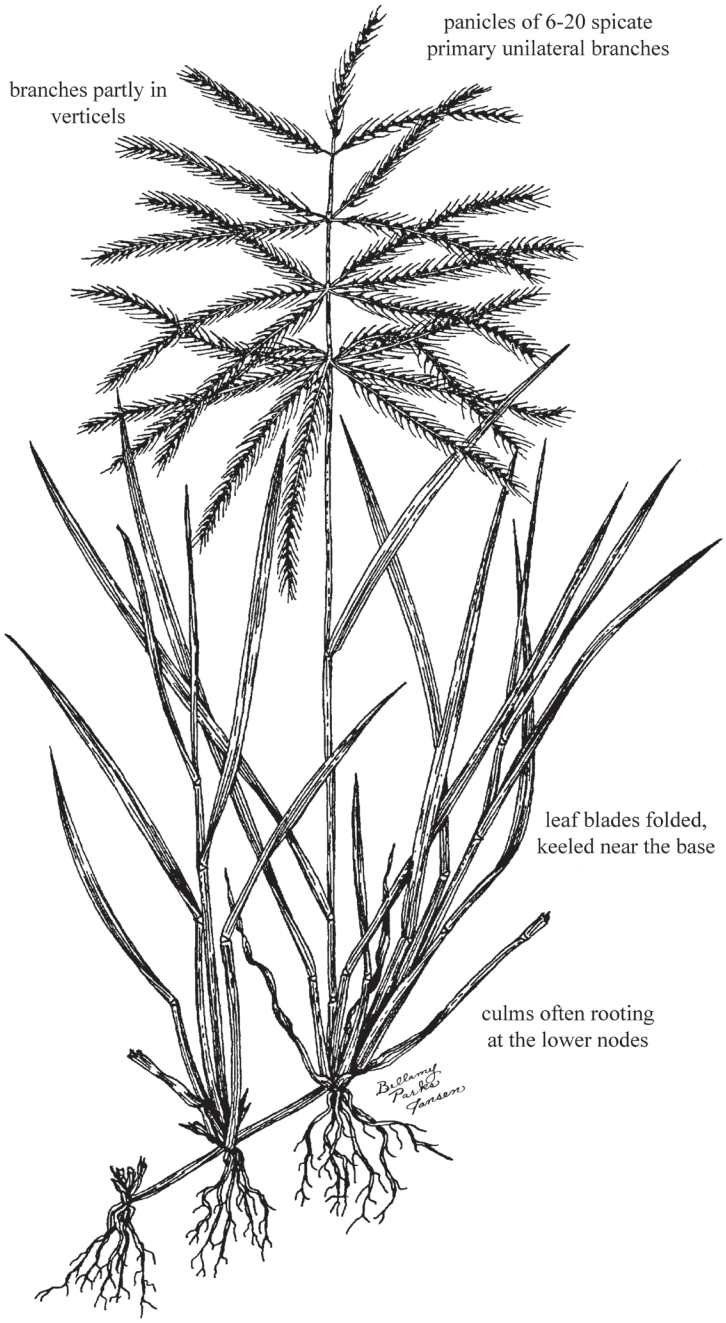
Restoration. Windmillgrass is not used in prairie restorations.

Wildlife. Windmillgrass provides poor forage for big game. Birds and small mammals eat the seeds.

Ornamental. It has been grown as an ornamental because its inflorescence is unusual and attractive. Its use is not recommended because it can spread quickly into lawns.

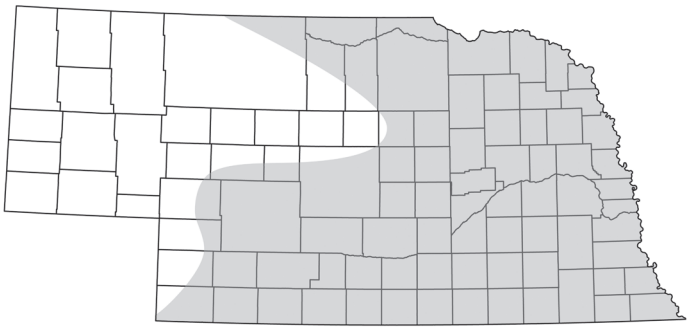


Windmillgrass

Warm-Season Annual Grasses

Barnyardgrass
Bearded sprangletop
Hairy crabgrass
Smooth crabgrass
Fall panicum
Green foxtail
Hooked foxtail
Yellow foxtail
Goosegrass
Poverty dropseed
Purple sandgrass
Sandbur
Stinkgrass
Forktip threeawn
Prairie threeawn
Witchgrass

Barnyardgrass



COMMON NAME:	Barnyardgrass
Species:	*Echinochloa crus-galli* (L.) P. Beauv.
Life Span:	Annual
Origin:	Introduced
Season:	Warm
Flowering:	June to September

Vegetative Characteristics

culms: ascending to decumbent (to 1.2 m tall), arising from a decumbent base which trails along the ground, stout, branching above the base

sheaths: open, compressed, sometimes keeled; glabrous, often with small glands on the margins near the collar

ligules: none

blades: flat (to 40 cm long, to 2.5 cm wide), glabrous, margins coarsely scabrous, veins prominent

rhizomes: none

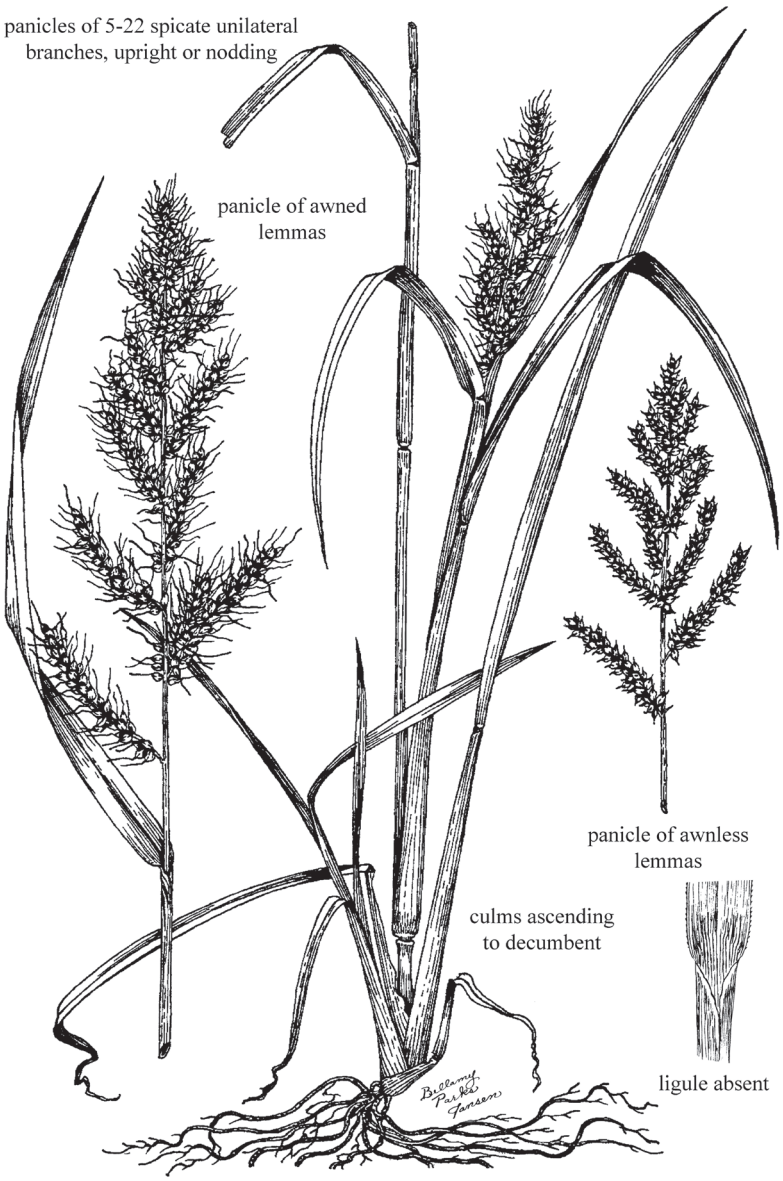
Inflorescence Characteristics

type: panicles (to 25 cm long) upright or nodding, consisting of 5–22 spicate primary unilateral branches (to 10 mm long), some rebranched; spikelets arranged on one side of each branch

spikelets: 2-flowered (one reduced to a sterile lemma); glumes unequal; first glume broad (to 2 mm long), clasping, sharply pointed, often with a short awn; second glume (to 4 mm long) pointed to awned; upper lemma broadly ovate, slightly flattened (to 3.8 mm long), pointed, indurate, 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 longer (to 1.5 mm long); lemmas awned (to 5 mm long) or awnless

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



Barnyardgrass

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Distribution and Habitat

Barnyardgrass was introduced from Europe and is classified as a weed. 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

Forage. This warm-season grass has fair to poor forage value. It furnishes fair forage when grazed during its early growth stages but becomes harsh and unpalatable as it nears maturity. It is occasionally a component of hay but is of low quality unless harvested before maturity. It produces abundant seeds and rapidly invades overflow and subirrigated ecological sites which have been disturbed. Its forage production is unreliable, and it is considered to be an undesirable grass.

Establishment. This weedy grass should not be seeded.

Restoration. Barnyardgrass is an introduced species and is not included in prairie restorations.

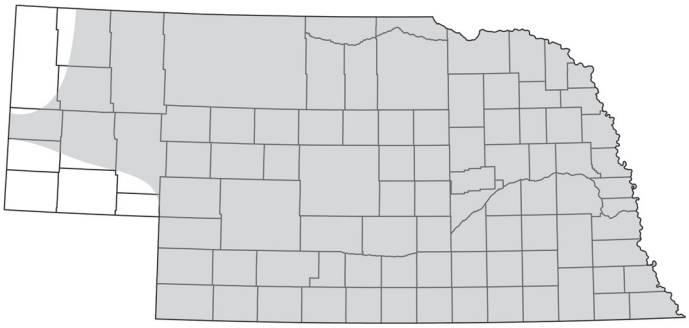
Wildlife. Barnyardgrass seeds are an important food source for waterfowl, upland game birds, and songbirds.

Ornamental. Barnyardgrass has no value as an ornamental.

Other

Rough barnyardgrass [*Echinochloa muricata* (P. Beauv.) Fernald] closely resembles barnyardgrass. The tip of the fertile lemma is obtuse to broadly ovate and is not set off from the body by a line of stiff hairs. It is most common in the eastern one-half of Nebraska where it grows in moist soils of abused pastures and disturbed areas.

Bearded sprangletop



COMMON NAME:	Bearded sprangletop
Species:	*Leptochloa fusca* (L.) Kunth
Life Span:	Annual
Origin:	Native
Season:	Warm
Flowering:	July to September

Vegetative Characteristics

culm:	erect to decumbent (to 80 cm tall), relatively stout, moderately branched
sheath:	slightly keeled, tapering from base upward; upper sheaths rounded in the back; glabrous to scabrous
ligule:	membranous (to 7 mm long), entire or lacerate with lateral lobes appearing like auricles
blade:	flat to involute (to 50 cm long, to 4.5 mm wide), slightly keeled near the base, glabrous to scabrous; midvein prominent and whitish
rhizomes:	none

Inflorescence Characteristics

type:	panicles (to 60 cm long) of 8–30 spicate primary unilateral branches, often partially enclosed in the uppermost sheath; branches erect (to 12 cm long), stiff, appressed to central axis
spikelets:	5–12 florets (to 11 mm long); glumes unequal; first glume shorter (to 3 mm long), second longest (to 4 mm long), 1-veined; lemmas overlapping each other, split into two teeth at the tip; 3-veined, lower portions of the nerves pubescent
awns:	lemmas often bearing awns (up to 1.5 mm long); midvein of second glume sometimes extending into a short awn (to 1.5 mm long)
other:	spikelets maturing with a bluish, grayish, or violet color

Distribution and Habitat

Bearded sprangletop grows in muddy or wet soils along lakes, streams, and ponds. It commonly grows on drying mud flats around ponds in grasslands. It may be found in gardens and disturbed areas.

Uses and Values

Forage. Bearded sprangletop produces poor forage for livestock.

Establishment. It is a weedy species and is not used in grassland seeding mixtures.

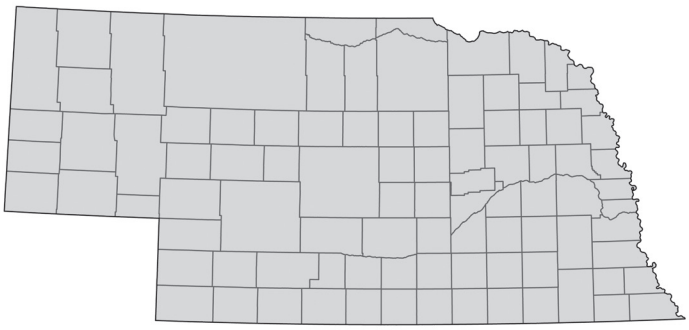
Restoration. Bearded sprangletop is an annual and is not used in prairie restorations.

Wildlife. It provides poor forage for big game. Upland game birds and songbirds eat the seeds.

Ornamental. Bearded sprangletop is not used as an ornamental.

Bearded sprangletop

Hairy crabgrass



COMMON NAME:	Hairy crabgrass
Species:	*Digitaria sanguinalis* (L.) Scop.
Life Span:	Annual
Origin:	Introduced
Season:	Warm
Flowering:	August to October

Vegetative Characteristics

culms:	ascending (to 1.2 m tall); geniculate to decumbent, branching, rooting at the nodes
sheaths:	keeled, covered with glandular-based hairs
ligules:	membranous (to 2.5 mm long), truncate, erose or irregularly lacerated
blades:	flat (to 15 cm long, to 12 mm wide); midvein prominent; usually both surfaces hairy with glandular-based hairs
rhizomes:	none

Inflorescence Characteristics

type:	panicle of 3–9 spicate primary unilateral branches; branches (to 15 cm long), flat, winged, digitate or in 1–2 whorls; spikelets arranged in two rows on one side of the branch
spikelets:	2-flowered; glumes unequal; first minute (less than 0.5 mm long), acute to obtuse; second lanceolate (to 2.5 mm long), 3-veined; lower floret sterile (to 2.9 mm long), 5-veined; upper floret fertile; lemmas equaling the spikelet in length (to 2.9 mm long), 7-veined, scabrous
awns:	none

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Hairy crabgrass

Distribution and Habitat

Hairy crabgrass grows throughout Nebraska in abused pastures, waste places, gardens, cultivated fields, and lawns. It is most common on bottomlands and overflow sites where moisture is less limiting. It is rarely found on uplands.

Uses and Values

Forage. Hairy crabgrass is palatable when it is actively growing, but it furnishes little forage for livestock.

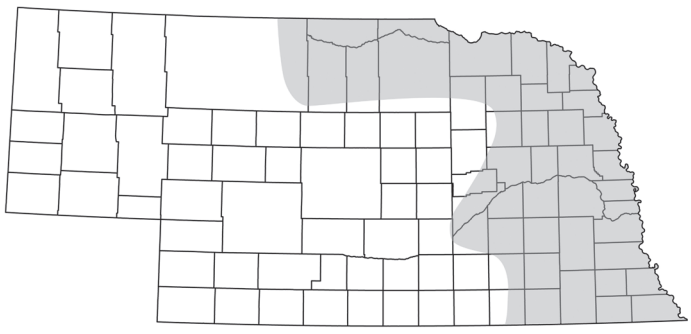
Establishment. It is a weedy species and is not used in grassland seedings.

Restoration. This annual, introduced grass is not used in prairie restorations, and it can be a serious weed in restorations.

Wildlife. Hairy crabgrass seeds and leaves are important food for wild turkeys. Seeds are an important food for ground-foraging birds.

Ornamental. It is not used as an ornamental and is considered a weed in lawns.

Smooth crabgrass



COMMON NAME:	Smooth crabgrass
Species:	*Digitaria ischaemum* (Schreb.) Muhl.
Life Span:	Annual
Origin:	Introduced
Season:	Warm
Flowering:	August to October

Vegetative Characteristics

culms:	erect to spreading (to 40 cm tall); branching above the base, usually geniculate to decumbent, rooting at the lower nodes, glabrous
sheaths:	keeled, pilose to glabrous
ligules:	membranous (to 1.5 mm long), truncate
blades:	flat (to 9 cm long, to 6 mm wide), glabrous to sparsely hairy; lower margins ciliate
rhizomes:	none

Inflorescence Characteristics

type:	panicles of 2–6 spicate primary unilateral branches; branches (to 9 cm long), winged, subdigitate or in 1–2 whorls; spikelets in threes
spikelets:	2-flowered; glumes unequal; first minute (less than 0.5 mm long) or absent; second (to 2.2 mm long), subglabrous to pubescent; lower floret sterile (to 2.3 mm long), 5–7-veined; upper floret fertile; lemmas smooth, dark at maturity
awns:	none

Distribution and Habitat

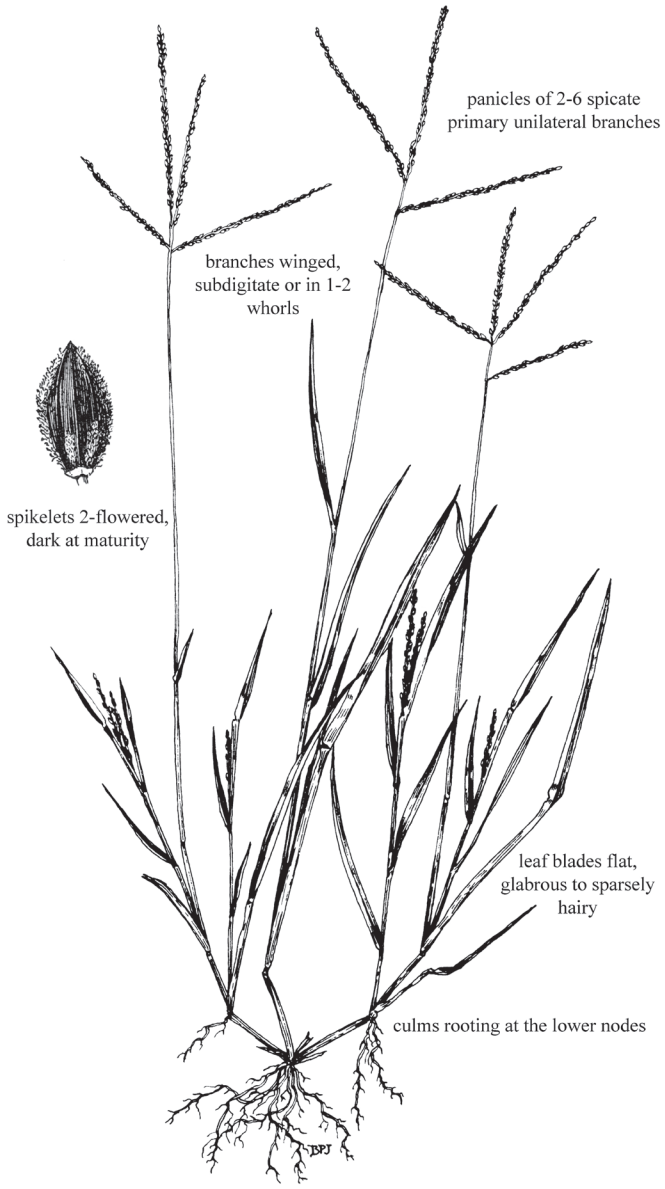
Smooth crabgrass grows in abused pastures, gardens, waste places, cultivated fields, and lawns. It is rarely found on uplands.

Uses and Values

Forage. Smooth crabgrass is palatable when it is actively growing, but it furnishes little forage for livestock.

Establishment. It is a weedy species and is not used in grassland seedings.

Restoration. This annual, introduced grass is not used in prairie restorations, and it can be a serious weed in restorations.

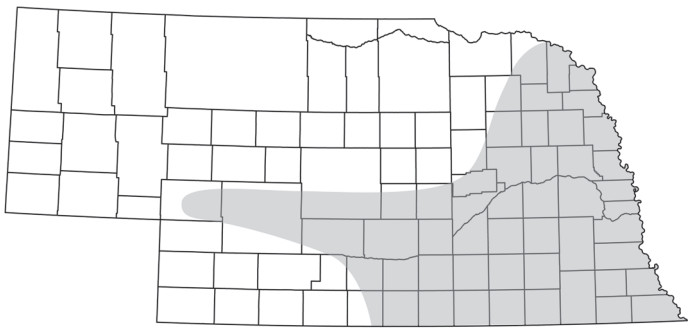


Smooth crabgrass

Wildlife. Smooth crabgrass seeds and leaves are important food for wild turkeys. Seeds are an important food for ground-foraging birds.

Ornamental. It is not used as an ornamental and is considered a weed in lawns.

Fall panicum



COMMON NAME:	Fall panicum
Species:	*Panicum dichotomiflorum* Michx.
Life Span:	Annual
Origin:	Native
Season:	Warm
Flowering:	July to October

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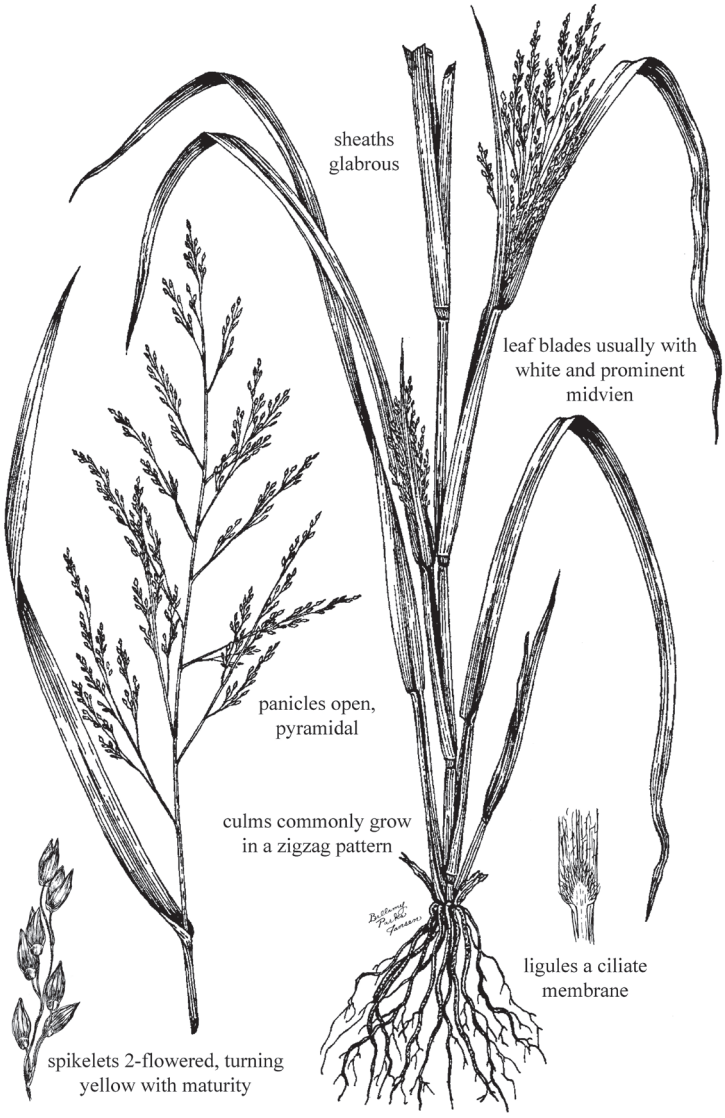
Vegetative Characteristics

culms:	erect to decumbent and geniculate below (to 1.2 m long), commonly grows in a zig-zag pattern, round to slightly flattened, generally glabrous, bright green in color; nodes constricted on robust plants
sheaths:	round or slightly keeled, usually glabrous
ligules:	ciliate membranes (to 1 mm long), truncate
blades:	flat (to 50 cm long, to 15 mm wide), usually glabrous or nearly so, midvein usually white and prominent
rhizomes:	none

Inflorescence Characteristics

type:	panicles (to 40 cm long, to 3 cm wide), open, pyramidal, terminal and axillary
spikelets:	2-flowered (to 3.6 mm long), gradually pointed, green, turning yellow with maturity; glumes unequal; first glume truncate to obtuse-tipped (to 1.2 mm long), several-veined, obscure; second glume (to 3.5 mm long) 5–9-veined; lower lemma sterile, similar to second glume in size, texture, and shape; upper lemma fertile (to 2.4 mm long), smooth, shiny; palea 2-veined
awns:	none



Fall panicum

Distribution and Habitat

Fall panicum is commonly found in abused pastures in eastern Nebraska. Also, it is found in roadsides, cultivated fields, ditches, waste areas, flood plains, receding land and pond shores, and disturbed areas in most types of soil.

Uses and Values

Forage. Fall panicum produces only fair quality forage for livestock when it is young and actively growing. Otherwise, forage quality is poor. It may be locally abundant and provide forage during a limited part of the year. Fall panicum is not highly palatable to livestock, and livestock will eat many other plants before grazing this weedy grass.

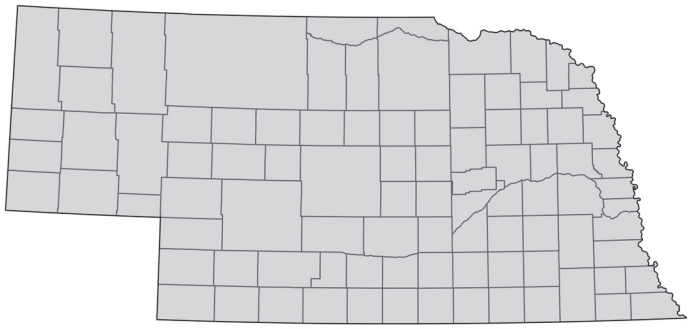
Establishment. Fall panicum is not used in grassland seedings.

Restoration. It is a weedy species that is not used in prairie restorations.

Wildlife. Seeds of fall panicum can be an important source of food for waterfowl, mourning doves, and ground-foraging birds.

Ornamental. Fall panicum is not used as an ornamental.

Green foxtail



COMMON NAME:	Green foxtail (green bristlegrass)
Species:	*Setaria viridis* (L.) P. Beauv.
Life Span:	Annual
Origin:	Introduced
Season:	Warm
Flowering:	July to September

Vegetative Characteristics

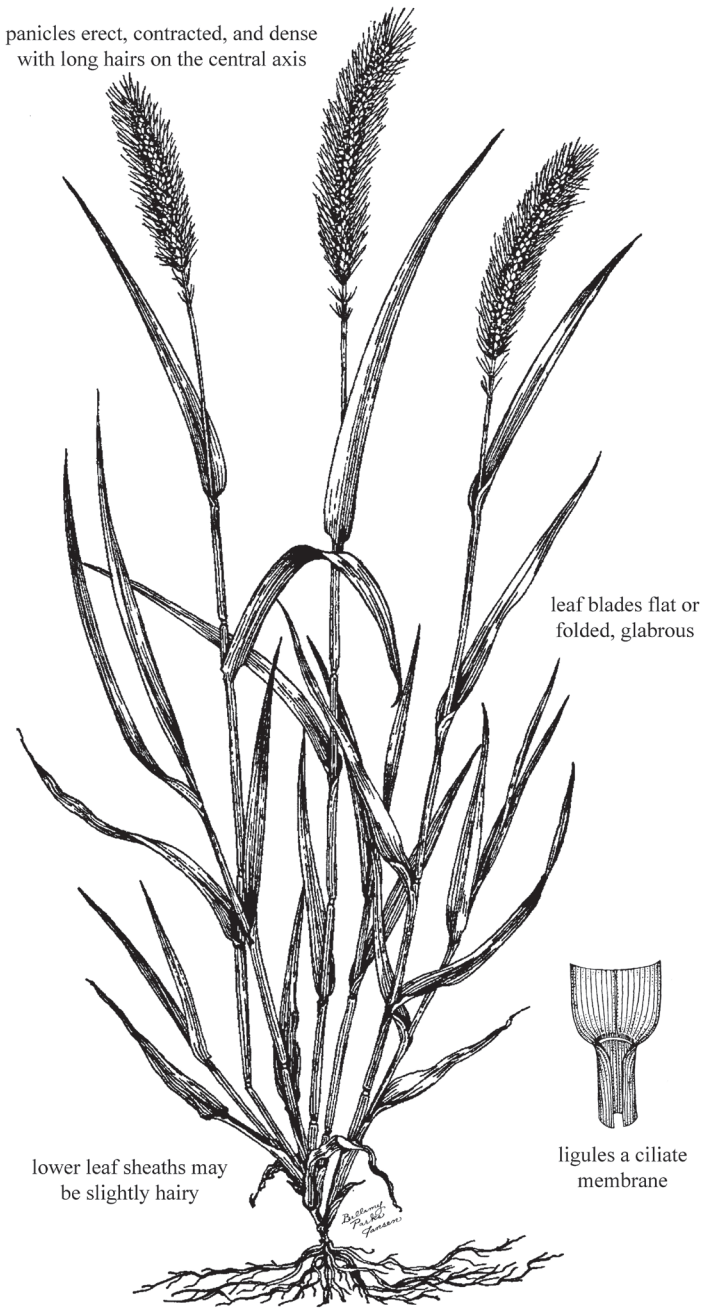
culms:	erect from a geniculate base (to 1 m tall), lower nodes may have long hairs
sheaths:	rounded to flattened; margins and collar hairy, may be slightly hairy on lower sheaths
ligules:	ciliate membranes (to 3 mm long)
blades:	flat or folded (to 20 cm long, to 10 mm wide), glabrous, may be scabrous
rhizomes:	none

Inflorescence Characteristics

type:	panicles (to 15 cm long, to 3 cm wide), contracted, dense, cylindrical, erect; central axis with long hairs; side branches short
spikelets:	2-flowered; glumes unequal; first glume small (to 1 mm long), sharply pointed, 3-veined; second glume larger (to 2.5 mm long), 5-veined; lower floret reduced to a sterile lemma (to 2.5 mm long); upper floret fertile (to 2.3 mm long), rounded, nearly flat on one side, finely rugose, shiny; subtended by 1–3 bristles (to 11 mm long) with tiny barbs
awns:	none, but the bristles may have the appearance of awns
other:	green foxtail usually flowers one or two weeks before yellow foxtail.

Distribution and Habitat

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



Green foxtail (green bristlegrass)

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Uses and Values

Forage. Green foxtail is moderately palatable when it is rapidly growing and is considered to be fair forage. It rapidly becomes unpalatable after inflorescences are produced. It is considered to be a weed on grazing lands and hay lands.

Establishment. Green foxtail is a weedy grass, and it is not used in seedings.

Restoration. It is an annual, introduced species and is not used in prairie restorations.

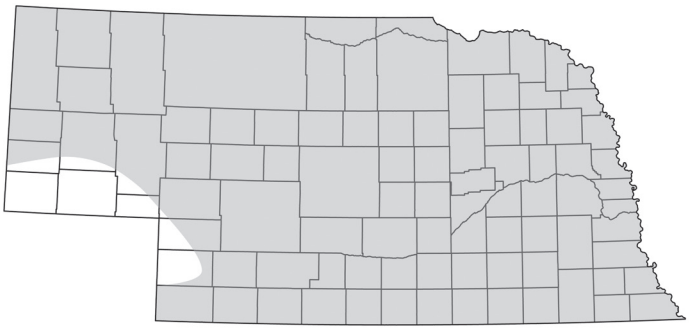
Wildlife. Its seeds provide food for birds and small mammals.

Ornamental. Green foxtail is not used as an ornamental.

Other

Chinese foxtail [*Setaria faberi* R.A.W. Herrm.] closely resembles green foxtail. However, its panicles are larger (to 22 cm long) and drooping when mature. It is larger, growing to 1.8 m tall with leaves up to 30 cm long. It was introduced from China and is most common in the southeastern one-quarter of Nebraska in cultivated fields, waste areas, ditches, and disturbed sites. It has little forage value.

Hooked foxtail



COMMON NAME:	Hooked foxtail (bristly foxtail)
Species:	*Setaria verticillata* (L.) P. Beauv.
Life Span:	Annual
Origin:	Introduced
Season:	Warm
Flowering:	July to September

Vegetative Characteristics

culms:	ascending (to 90 cm tall), often geniculate below, branching below, glabrous; rarely rooting at the nodes
sheaths:	round to keeled, glabrous; margins pubescent
ligules:	ciliate membranes (to 1.2 mm long)
blades:	flat (to 25 cm long, to 15 mm wide), glabrous or scabrous
rhizomes:	none

Inflorescence Characteristics

type:	panicles (to 18 cm long, to 20 mm wide), contracted, dense cylindrical, somewhat interrupted below, erect or nodding; branches arranged in whorls
spikelets:	2-flowered (to 2 mm long); glumes unequal; first glume smallest (to 1 mm long), 1–3-veined; second glume largest (to 2.3 mm long), 7-veined; lemmas equaling the spikelet in length; first lemma sterile, 5-veined, second lemma fertile and finely transversely wrinkled; subtended by 1 (or 2) bristles (to 8 mm long), pointing downward, scabrous
awns:	none; bristles may have the appearance of awns

Distribution and Habitat

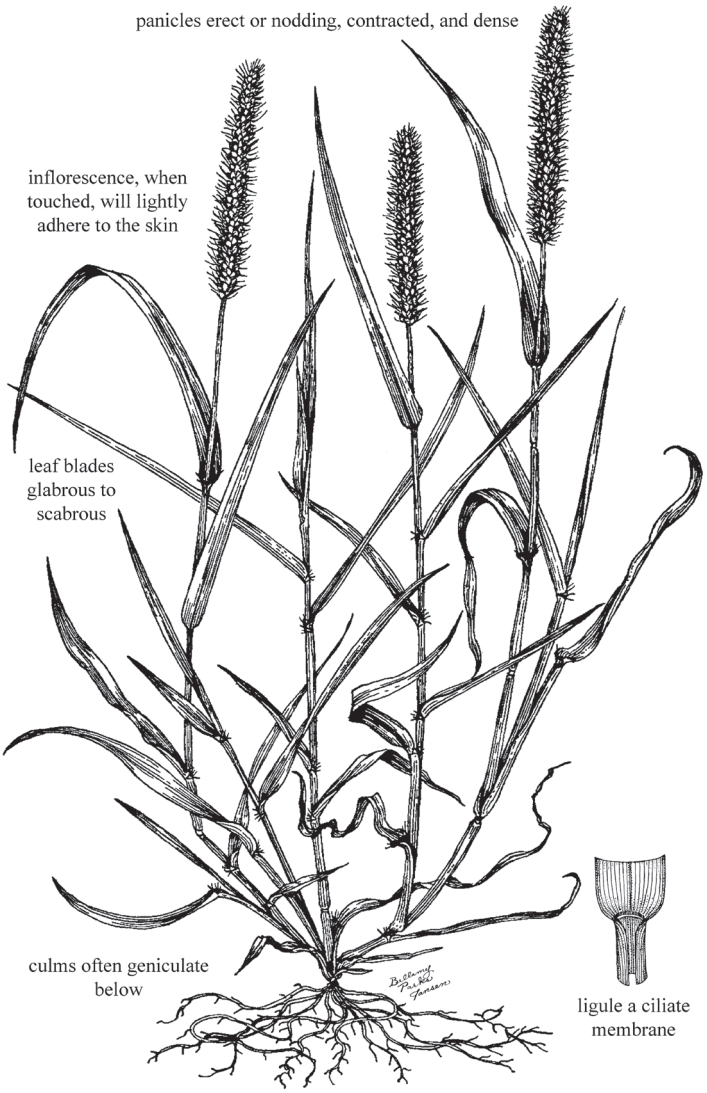
Hooked foxtail is native to Europe. It is found in abused pastures, waste places, gardens, disturbed sites, and cultivated fields. It grows in nearly all soil types. It thrives in moist soils, but does not withstand standing water.

Uses and Values

Forage. Hooked foxtail has little forage value for livestock or wildlife. It may be lightly grazed when it is immature. After inflorescences have appeared, it is nearly worthless for forage.

Establishment. Hooked foxtail is classified as a weed, and it is not used in grassland seedings.

Restoration. It is an annual, introduced grass and is not appropriate for prairie restorations.



Hooked foxtail (bristly foxtail)

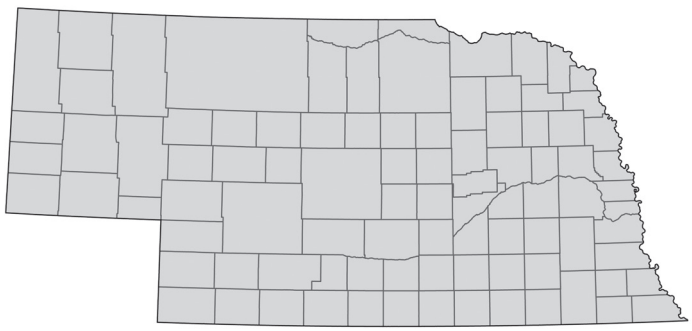
Wildlife. Its seeds are consumed by birds and small mammals. Plants provide roosting and escape cover for upland gamebirds.

Ornamental. It has no value as an ornamental.

Other

The bristles adhere to animals and to clothing allowing the seeds to be spread. Hooked foxtail can be identified from the other foxtails by firmly touching the inflorescence to determine if it will lightly adhere to the skin. It adheres because the bristles are downwardly barbed.

Yellow foxtail



COMMON NAME:	Yellow foxtail (yellow bristlegrass)
Species:	*Setaria pumila* (Poir.) Roem. & Shult.
Life Span:	Annual
Origin:	Introduced
Season:	Warm
Flowering:	July to September

Vegetative Characteristics

culms:	ascending to decumbent (to 1.2 m tall), branched from the base; nodes smooth
sheaths:	flattened, smooth, glabrous

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ligules:	ciliate membrane (to 1 mm long)
blades:	flat to folded (to 30 cm long, to 12 mm wide), twisted in a loose spiral, long hairs near throat
rhizomes:	none

Inflorescence Characteristics

type:	panicles (to 15 cm long, to 15 mm wide), contracted, dense, cylindrical; central axis with long hairs; branches short
spikelets:	2-flowered, spikelets rounded (to 3.5 mm long); glumes unequal; first glume shorter (to 1.8 mm long), 3-veined; second glume longer (to 3.5 mm long), 5-veined; lower floret staminate, 7-veined; upper floret fertile (to 3.4 mm long), indurate, rugose, shiny; 4–12 yellow bristles subtending the base of each spikelet, the bristles with tiny barbs and irregular in length (to 8 mm long), yellowish
awns:	none, but bristles may have the appearance of awns

Distribution and Habitat

This weedy grass is a native of Europe. It is common on cultivated ground, lawns, waste places, roadsides, and abused grazing land. Although widely distributed over the state, it is most abundant in central and eastern Nebraska. Yellow foxtail rapidly invades disturbed areas, and its abundance on rangeland or pastures indicates a deteriorated stand of forage plants. It is an early invader on abandoned farmland. It is very troublesome in rangeland seedings since it often produces dense stands which strongly compete with new seedlings of the desired grasses.

Yellow foxtail (yellow bristlegrass)

Uses and Values

Forage. 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.

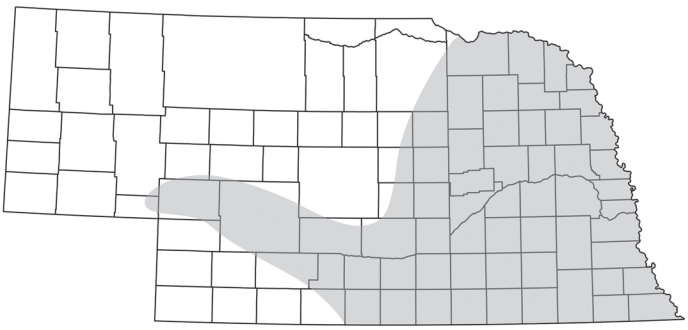
Establishment. Yellow foxtail is a weedy grass, and it is not used in grassland seedings.

Restoration. This annual, introduced grass is not used in prairie restorations.

Wildlife. Yellow foxtail seeds provide food and plants provide cover for upland game birds and songbirds.

Ornamental. It is not used as an ornamental.

Goosegrass



COMMON NAME:	Goosegrass
Species:	*Eleusine indica* (L.) Gaertn.
Life Span:	Annual
Origin:	Introduced
Season:	Warm
Flowering:	July to October

Vegetative Characteristics

culms: decumbent below, ascending above (to 80 cmlong), mat-forming, slightly flattened, glabrous

sheaths: flattened to keeled, loose, overlapping, glabrous or pubescent on the margin near the top

ligules: membranous (to 1.5 mm long), truncate, erose

blades: flat or folded (to 40 cm long, to 8 mm wide), tips blunt to rounded, mostly glabrous except sometimes with long hairs on the upper surface near the base, midveins white, margins frequently with glandular-based hairs

rhizomes: none

Inflorescence Characteristics

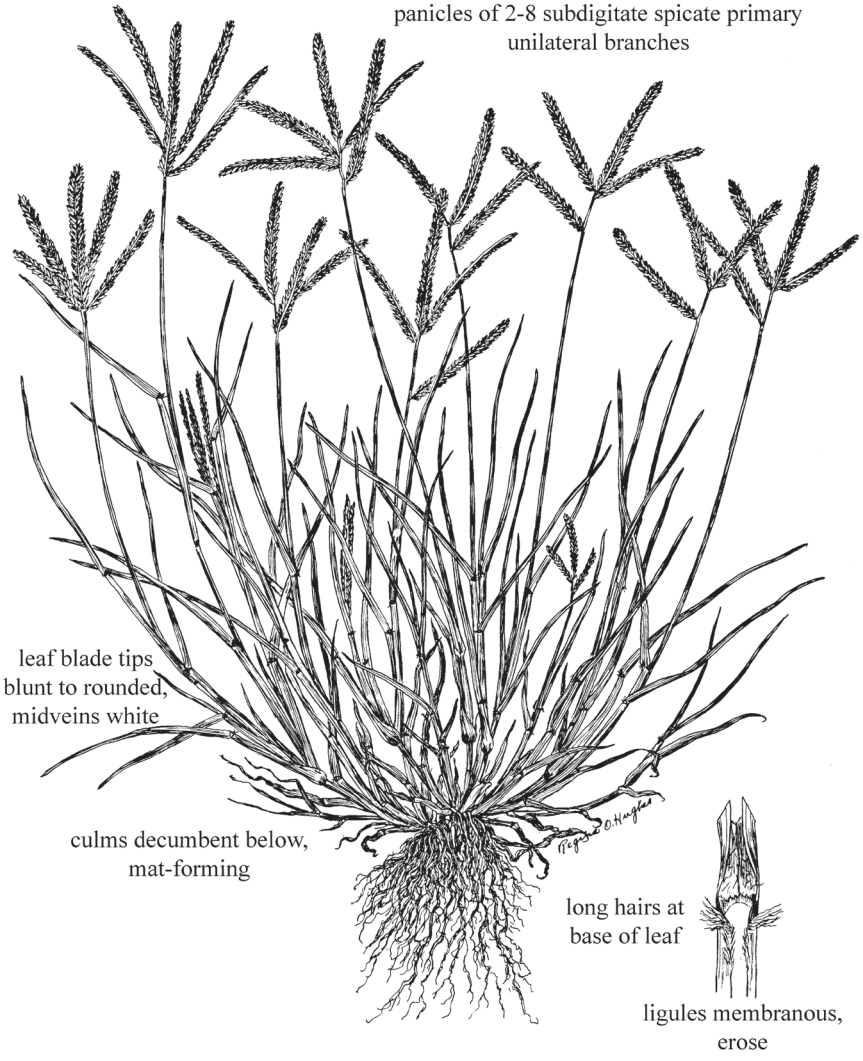
type: panicles of 2–8 subdigitate spicate primary unilateral branches (branches to 15 cm long), 1 or 2 attached slightly below terminal whorl, rachis flattened and slightly winged; wing margin white

spikelets: 2–8-flowered, arranged laterally in two rows on one side of the rachis, crowded; glumes unequal; first glume smallest (to 2.2 mm long), 1-veined; second glume larger (to 3 mm long), 3–7-veined, keel scabrous and winged; glabrous; lemmas flattened (to 4 mm long), 3-veined, glabrous, acute to obtuse; keels scabrous, whitish; paleas 2-veined; disarticulating above the glumes and between the florets

awns: none

Distribution and Habitat

Goosegrass was introduced from Eurasia. It is found in pastures, roadsides, ditches, lawns, gardens, and waste areas. Goosegrass is most common in sandy soils, and it frequently grows in compacted soils along roads and trails.



Goosegrass

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Uses and Values

Forage. Goosegrass is infrequently grazed by livestock or big game. It makes coarse, low quality hay.

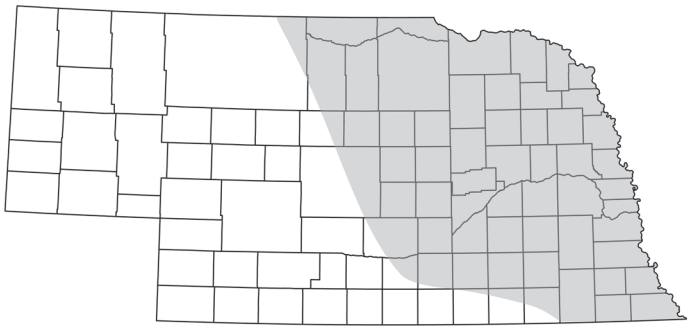
Establishment. Goosegrass is an introduced species with low productivity. It is not used in grassland seedings.

Restoration. It is an annual, introduced species and is not used in prairie restorations.

Wildlife. The seeds are eaten by small mammals and birds, but it has little value for forage for wildlife.

Ornamental. It is not used as an ornamental and can become a troublesome weed in lawns.

Poverty dropseed



COMMON NAME:	**Poverty dropseed (annual dropseed)**
Species:	*Sporobolus vaginiflorus* (Torr. *ex* A. Gray) Alph. Wood
Life Span:	Annual
Origin:	Native
Season:	Warm
Flowering:	September to October

Vegetative Characteristics

culms:	decumbent to erect (to 70 cm tall), slender, wiry, grooved or flattened on one side, glabrous or scabrous
sheaths:	round, mostly shorter than the nodes, glabrous but often with scattered hairs near the collar
ligules:	ciliate membranes (to 0.3 mm long)
blades:	flat to loosely rolled (to 15 cm long, to 2 mm wide), glabrous to papillose, sometimes with scattered hairs from pustules near the base
rhizomes:	none

Inflorescence Characteristics

type:	panicles (to 4 cm long, to 8 mm wide), contracted, terminal and lateral, exserted or mostly enclosed in the leaf sheath; branches ascending, lower branches single
spikelets:	1-flowered; glumes nearly equal (to 5 mm long), first glume shorter, 1-veined, membranous, glabrous; lemmas elongate (to 5.5 mm long), faintly 3-veined, sharply pointed, glabrous to strigose; hairs short, often mottled with dark purple
awns:	none
other:	mostly enclosed in the subtending leaf sheath to somewhat extended from the sheath

Distribution and Habitat

Poverty dropseed is most common in eastern Nebraska growing in abused pastures, waste areas, disturbed sites, lawns, and along trails and roads. It is most abundant in sandy and sandy clay soils.

Uses and Values

Forage. Poverty dropseed produces poor forage for livestock. It appears late in the summer and is grazed only when it is immature.

Establishment. It is an annual grass and is not used in seedings.

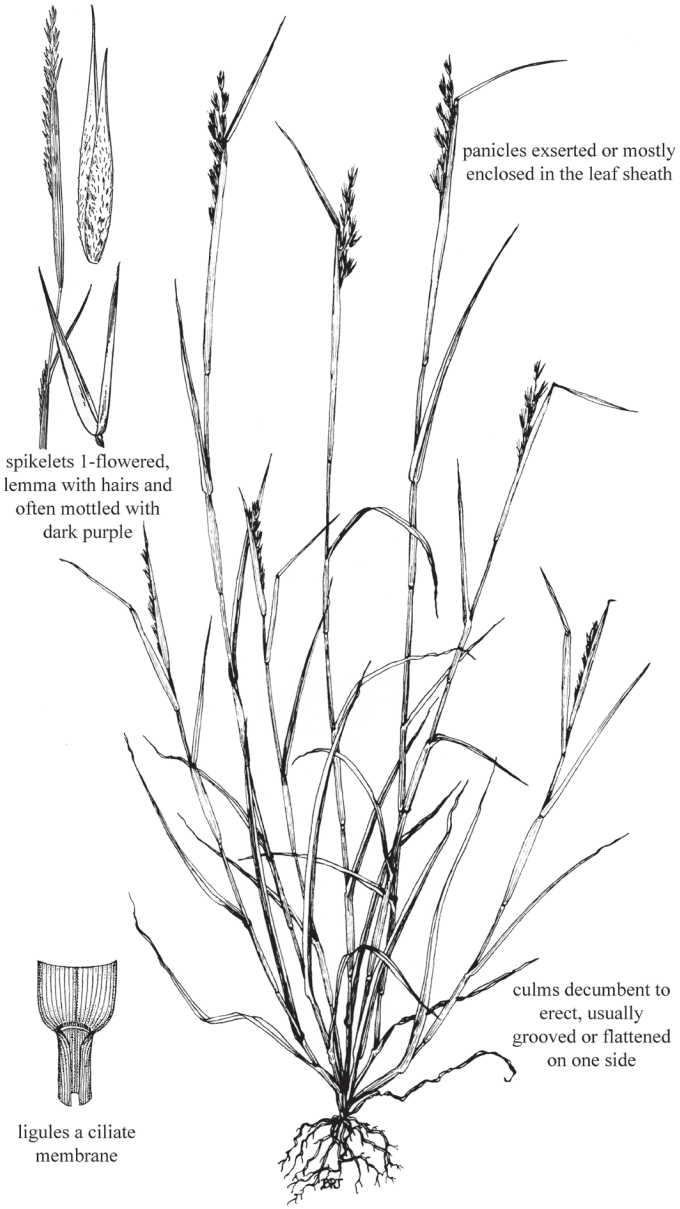
Restoration. Poverty dropseed is not included in prairie restorations.

Wildlife. Seeds of poverty dropseed are eaten by prairie chickens.

Ornamental. It is not used as an ornamental.

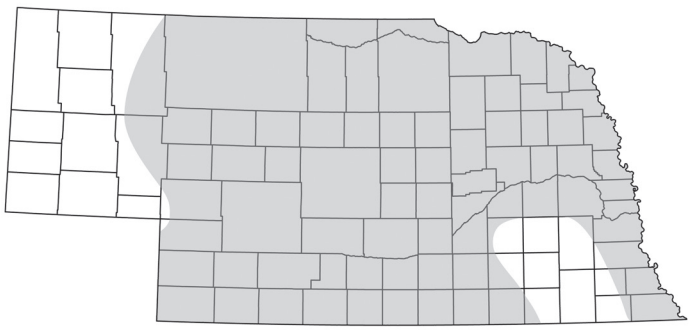
Other

Puffsheath dropseed [*Sporobolus neglectus* Nash] is similar to poverty dropseed in appearance, ecology, and growth; however sheaths below the panicles are inflated. Glumes of puffsheath dropseed are generally shorter (less than 2.5 mm long), and its lemmas do not have a covering of hair.



Poverty dropseed (annual dropseed)

Purple sandgrass



COMMON NAME:	Purple sandgrass
Species:	*Triplasis purpurea* (Walter) Chapm.
Life Span:	Annual
Origin:	Native
Season:	Warm
Flowering:	August to September

Vegetative Characteristics

culms:	ascending to erect (to 50 cm tall), flattened, concave; nodes pubescent
sheaths:	round to flattened, swollen near the base, pilose and scabrous
ligules:	line of hairs (to 1.5 mm long)
blades:	flat to loosely rolled (to 10 cm long, to 4 mm wide), with glandular-based hairs, margins scabrous
rhizomes:	none

Inflorescence Characteristics

type:	panicles (to 9 cm long, to 6 cm wide), terminal and axillary, few-branched, partially to mostly enclosed in the subtending leaf sheath; often purple; lower branches without spikelets on basal one-third to one-half
spikelets:	3–4-flowered; glumes unequal (first to 3 mm long, second longer), 1-veined; lemma blunt (to 4 mm long), 3-veined; veins and calluses (base of lemmas) densely pubescent; paleas silky-pubescent on the upper one-half
awns:	lemmas with a short awn (about 1 mm long)

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Distribution and Habitat

Purple sandgrass is scattered across Nebraska, but it is not common in the Panhandle. It grows in dry, sandy soils in pastures, rangeland, and roadsides. It is abundant in sandy accretion land along rivers and tributaries where perennial grasses are absent.

Uses and Values

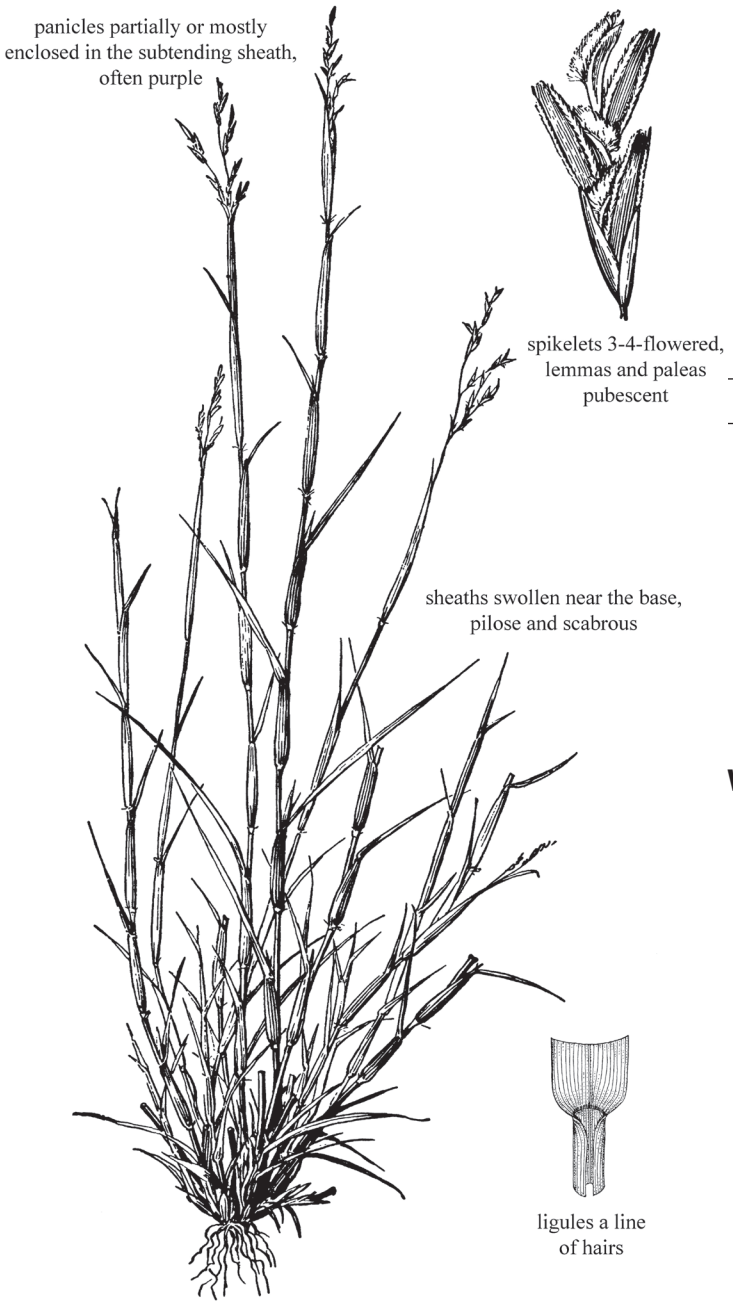
Forage. Forage production of purple sandgrass is very low. It is grazed occasionally when it is immature in mid-summer. It has a shallow root system, and livestock frequently pull the plant out of the dry sand as they graze it.

Establishment. Purple sandgrass is an annual and is not used in grassland seedings.

Restoration. It is not used in prairie restorations.

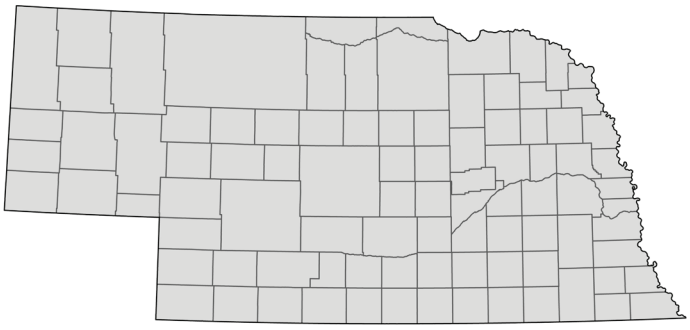
Wildlife. Ground-foraging birds and small mammals eat the seeds.

Ornamental. Purple sandgrass is not used as an ornamental.



Purple sandgrass

Sandbur



COMMON NAME:	Sandbur
Species:	*Cenchrus longispinus* (Hack.) Fernald
Life Span:	Annual (rarely a short-lived perennial)
Origin:	Native
Season:	Warm
Flowering:	July to September

Vegetative Characteristics

culms:	ascending to decumbent (to 90 cm long), may grow flat on the ground forming a mat; flattened, nodes glabrous
sheaths:	flattened, compressed, mostly glabrous, slightly hairy at the collar on the margins
ligules:	ciliate membranes (to 1.8 mm long)
blades:	flat (to 19 cm long, to 6 mm wide), sometimes folded, tapering to a point; scabrous to pilose
rhizomes:	none
other:	occasionally rooting at the lower nodes of the stems forming a mat

Inflorescence Characteristics

type:	spike-like panicles (to 10 cm long) of 6–20 spiny burs (to 12 mm long); usually terminal, sometimes partially enclosed in the upper leaf
spikelets:	2-flowered; 1 fertile floret (to 7.5 mm long), 1 sterile floret (to 6.5 mm long); glumes unequal; first glume less than one-third the length of spikelet (to 3 mm long), narrow, pointed; second glume wider, pointed (to 6 mm long); lemmas narrow, pointed, smooth; each spikelet surrounded by a bur; bur round or oval, densely hairy (to 8 mm wide), covered with 45–65 upward pointing spines (to 7 mm long)
awns:	none, numerous spines
other:	1 to several inflorescences per plant, inflorescences may be close to the ground or extending above the leafy base

Distribution and Habitat

This native weedy grass is common throughout Nebraska on abused rangeland, building sites, roads, waste places, cultivated fields, and dry lawns. It grows particularly well on sandy soils, as its name implies, but also occurs on heavier soils.

Uses and Values

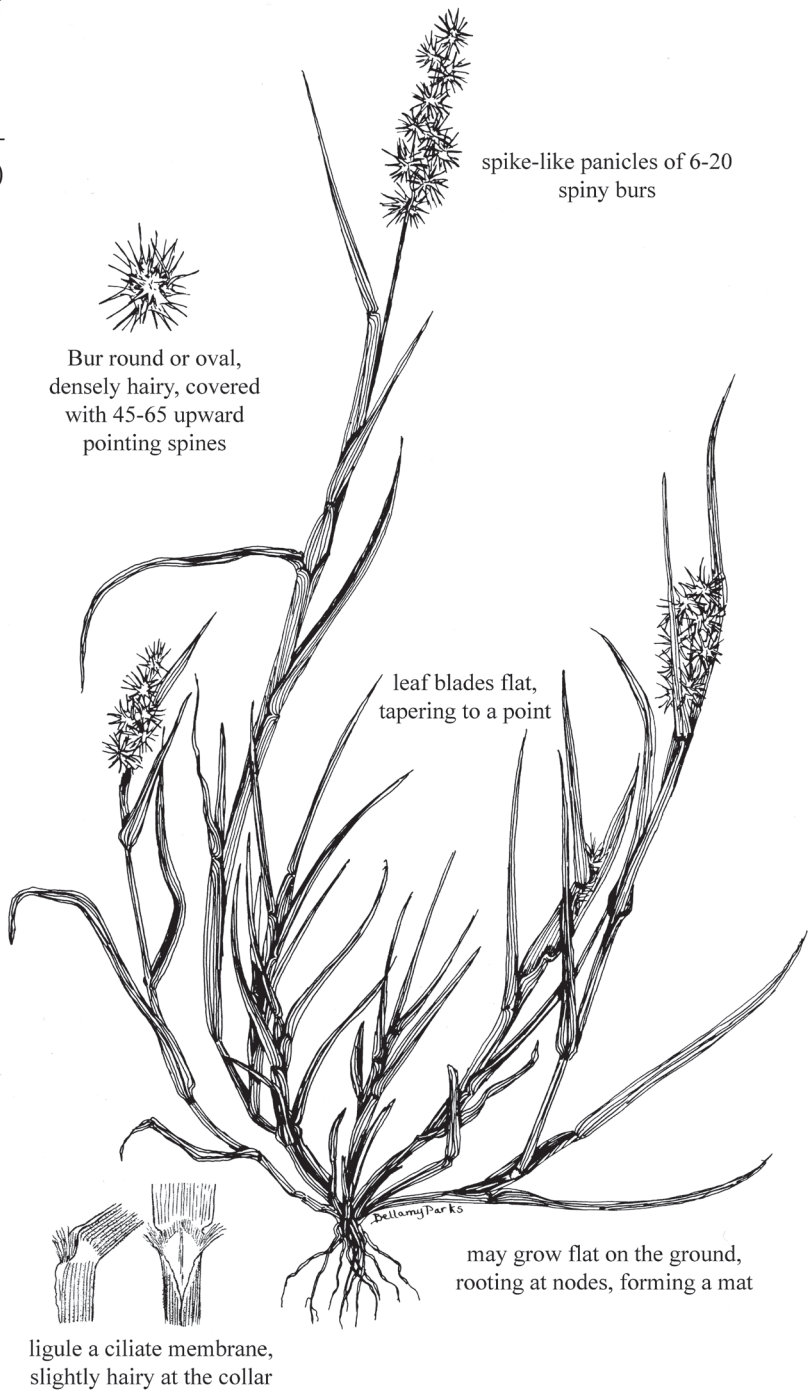
Forage. During early growth stages and before the burs are produced, sandbur plants are grazed to some extent, particularly if other forage is not available in quantity. However, once the burs begin to appear the plants are avoided and become worthless for forage. Hay quality is sharply lowered if it contains sandburs. 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 increases on abused rangeland and other disturbed or denuded sites, particularly on dry, sandy soils. This grass is often troublesome when establishing new grass seedings. Seeds are easily transported by animals and machinery because of the spiny burs. Competition from adapted, perennial grasses is the best control. Mowing is not an effective control measure because of its low growth profile and its ability to readily initiate new inflorescences after clipping.

Establishment. This weedy, annual grass is never used in grassland seedings. Proper seedbed preparation including use of a cover crop and timely seeding helps to control sandburs in seedings.

Restoration. Sandbur is never included in prairie restorations.

Wildlife. Small mammals occasionally eat the seeds.

Ornamental. Sandbur is undesirable as an ornamental.



Sandbur

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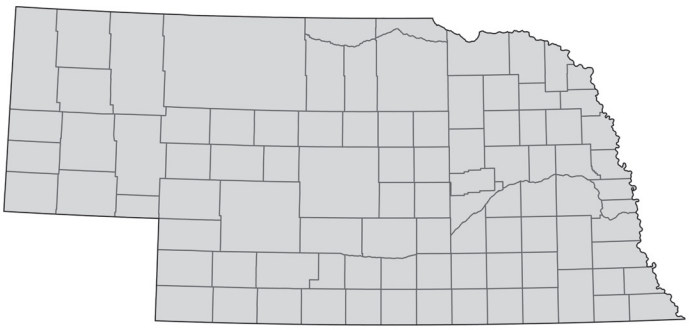
Stinkgrass



COMMON NAME:	Stinkgrass
Species:	*Eragrostis cilianensis* (All.) Vignolo *ex* Janch.
Life Span:	Annual
Origin:	Introduced
Season:	Warm
Flowering:	July to October

Vegetative Characteristics

culms: geniculate to ascending (to 60 cm tall), much-branched above the basal nodes, usually with a ring of hairs and glands below the nodes

sheaths: round to somewhat flattened, overlapping, hairs (to 3 mm long) at the throat, glandular pits on the keel

ligules: line of hairs (to 0.9 mm long), hairs dense

blades: flat to somewhat rolled (to 20 cm long, to 7 mm wide); glands on the margins and backside; conspicuous veins, rarely hairy

rhizomes: none

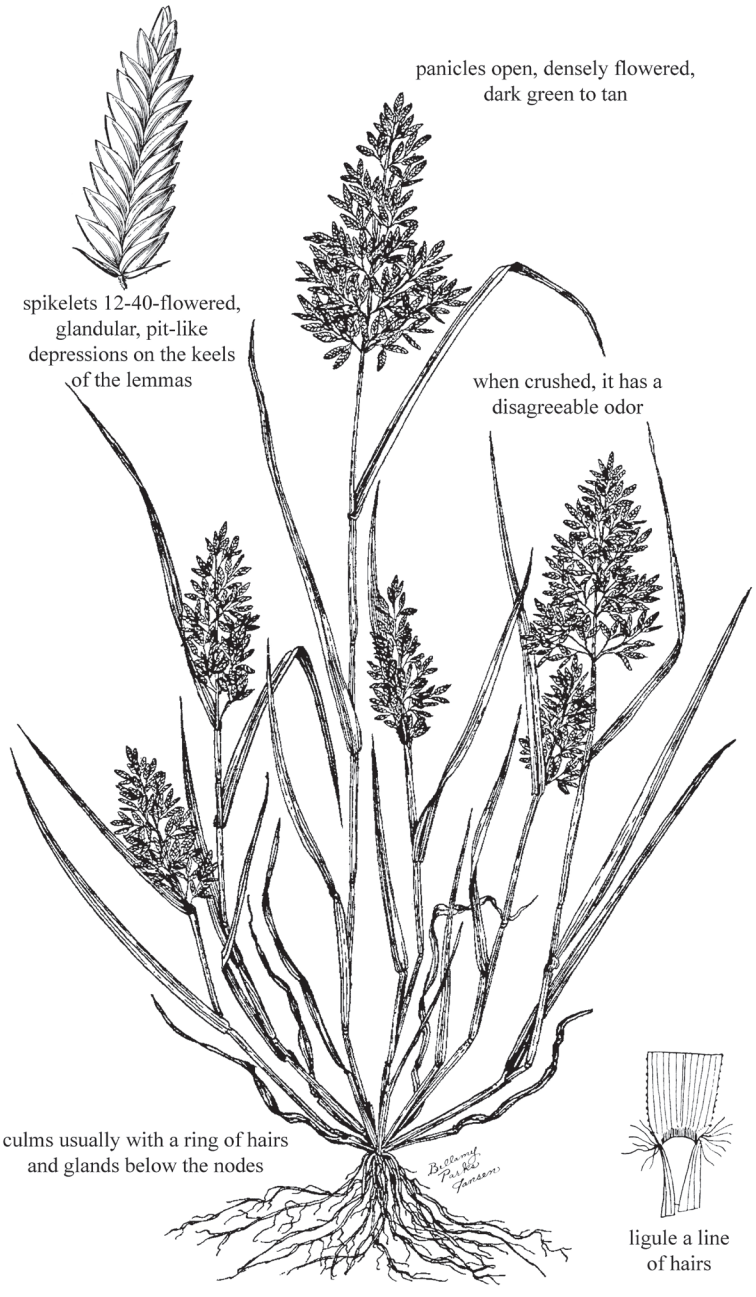
Inflorescence Characteristics

type: panicles (to 18 cm long, to 8 cm wide), open, densely flowered, oblong to ovate; branches erect to spreading; dark green to tan; pedicels shorter than spikelets

spikelets: 12–40-flowered, flattened, oblong to egg-shaped (to 20 mm long, to 4 mm wide); at the ends of panicle branches; glumes unequal (first glume to 2.4 mm long), 1-veined; second glume slightly longer (to 2.5 mm long), membranous, ovate, may be pointed; lemmas strongly overlapping, broad and rounded at the tip, (to 2.8 mm long, to 1 mm wide); 3-veined; lateral veins prominent

awns: none

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



Stinkgrass

Distribution and Habitat

Stinkgrass was introduced from Europe and is a common weed in waste places, fields, roadsides, and abused rangeland and pastures. It grows in most soils.

Uses and Values

Forage. This warm-season, weedy invader is worthless for forage. When crushed it has a disagreeable odor, which may contribute to its being unpalatable. Cattle will avoid it in hay. Since it is unable to compete with native forage grasses, it is found on rangeland only where the native cover has been removed or damaged. Abundant stands often follow tillage and may reduce soil moisture otherwise available to young grass seedlings.

Establishment. Stinkgrass is not included in grassland seedings.

Restoration. This weedy, introduced grass is not used in prairie restorations.

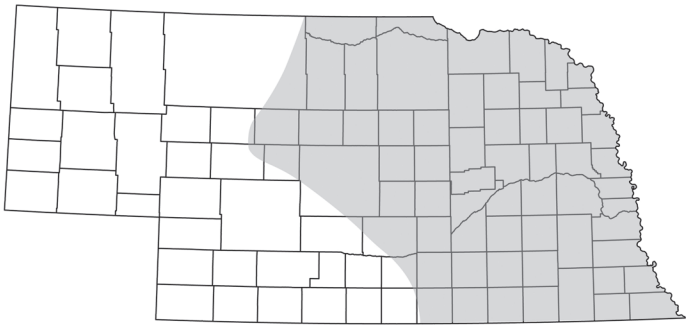
Wildlife. Stinkgrass is considered to be worthless for wildlife.

Ornamental. Stinkgrass is not used as an ornamental.

Other

Tufted lovegrass [*Eragrostis pectinacea* (Michx.) Nees] is a native, annual that is common across Nebraska in abused pastures, roadsides, disturbed areas, and waste places. It does not have glandular depressions on the panicle branches or lemmas. Its spikelets are usually smaller (to 7 mm long) and have fewer florets (4–12-flowered).

Forktip threeawn



COMMON NAME:	**Forktip threeawn**
Species:	*Aristida basiramea* Engelm. *ex* Vasey
Life Span:	Annual
Origin:	Native
Season:	Warm
Flowering:	August to September

Vegetative Characteristics

culms:	erect (to 50 cm tall); much branched throughout, internodes scabrous to pubescent
sheaths:	rounded, shorter than internodes, glabrous to pilose
ligules:	line of hairs (to 0.4 mm long)
blades:	loosely rolled to flat (to 8 cm long, to 1.7 mm wide)

Inflorescence Characteristics

type:	panicles or racemes (to 10 cm long, to 2 cm wide), contracted, purplish to tan; pedicels shorter than spikelets
spikelets:	1-flowered (to 12 mm long); first glume (to 11 mm long), 1-veined, awned (to 2 mm long): second glume (to 16 mm long), 1-veined, awned (to 2 mm long); lemmas 3-veined (to 13 mm long), 3-veined, glabrous
awns:	lemma awn column branches into 3 awns (to 3.5 cm long), subequal, circular coil at base; awn column short

Distribution and Habitat

This native grass occurs on sandy and somewhat sterile soils of prairies, pastures, roadsides, and waste places. It is abundant only on deteriorated rangeland or on abandoned fields and waste places. It is considered to be a disturbance species on prairies.

Uses and Values

Forage. Except for a brief period of fair to poor forage value in very early growth stages, this warm-season grass is worthless for forage. Since it is seldom eaten, continued heavy grazing removes the perennial grasses, thereby allowing forktip threeawn to thrive. Sound management is the best control, since a vigorous stand of the better

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grasses will crowd out forktip threeawn or prevent it from becoming established.

Establishment. Forktip threeawn is an annual grass, and it is not used in grassland seedings.

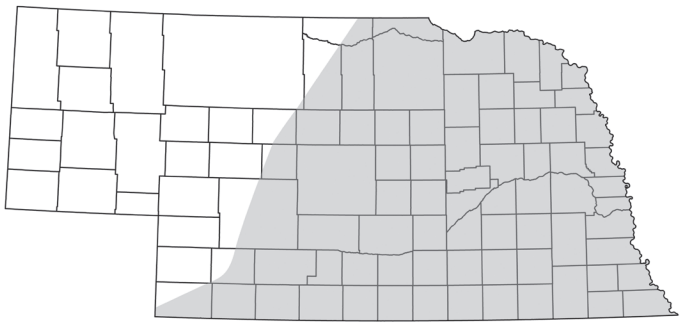
Restoration. This undesirable grass is not used in prairie restorations.

Wildlife. It is not grazed by wildlife and does not provide effective cover.

Ornamental. Forktip threeawn is not used as an ornamental.

Forktip threeawn

Prairie threeawn



COMMON NAME:	Prairie threeawn
Species:	*Aristida oligantha* Michx.
Life Span:	Annual
Origin:	Native
Season:	Warm
Flowering:	August to September

Vegetative Characteristics

culms:	ascending or geniculate (to 70 cm tall); much branched at lower nodes, freely branching above, wiry, internodes glabrous, base often purplish
sheaths:	rounded, shorter than internodes, sometimes with scattered hairs, hairy at collar
ligules:	ciliate membrane (to 0.5 mm long)
blades:	loosely rolled (to 20 cm long, to 3 mm wide), reduced above

Inflorescence Characteristics

type:	racemes (to 20 cm long, to 4 cm wide), rarely a panicle, loose, purplish; pedicels shorter than spikelets
spikelets:	1-flowered, widely spaced; glumes nearly equal; first glume (to 24 mm long), 3–7-veined: second glume (to 25 mm long), usually 1-veined, awn-tipped; lemmas firm (to 25 mm long, excluding awns), 3-veined, tan and mottled, glabrous except base hairy
awns:	lemma awn column branches into 3 awns (to 7 cm long), nearly equal or center awn longest, spreading; awn column poorly defined

Distribution and Habitat

This native grass occurs on dry soils and is most common on sandy and sandy calcareous soils. Generally, it becomes abundant only on deteriorated rangeland or on abandoned fields and waste places. It is considered to be a disturbance species on prairies.

Uses and Values

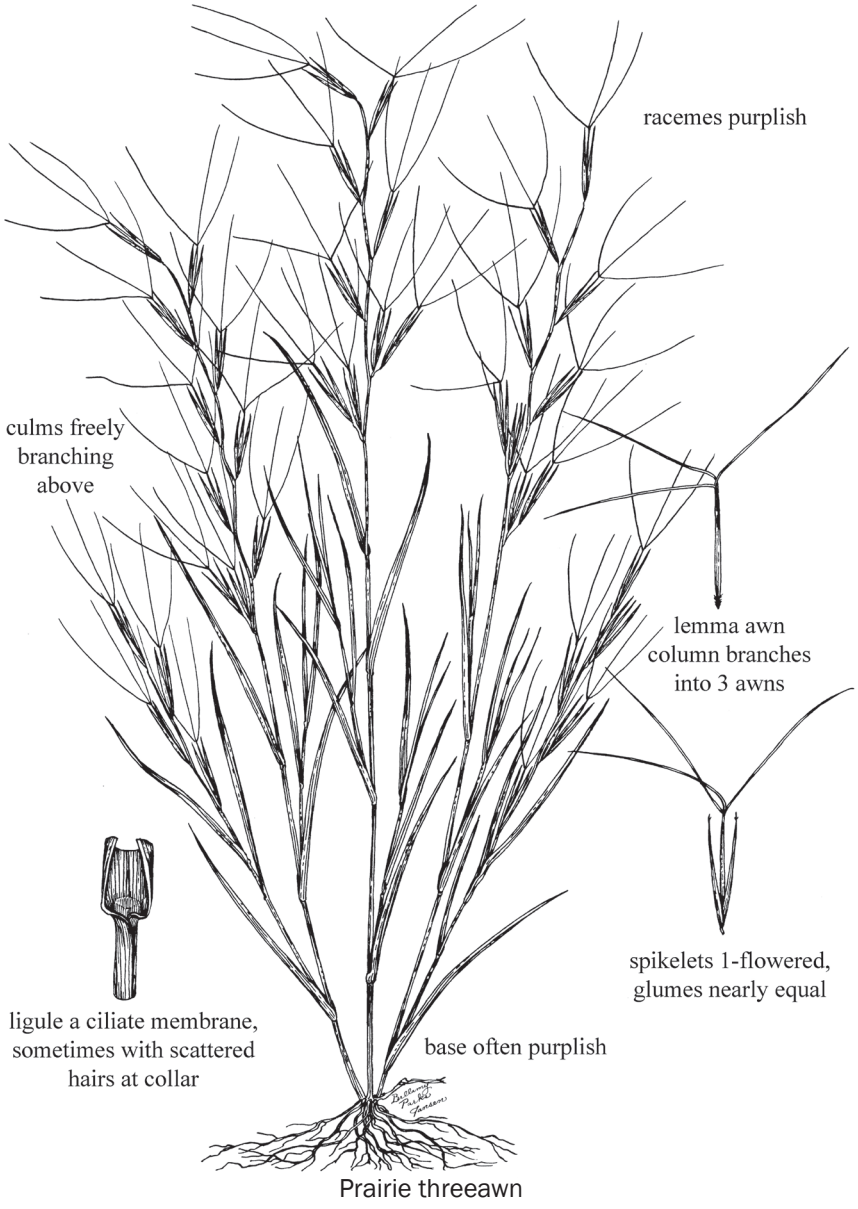
Forage. Except for a brief period of fair to poor forage value in very early growth stages, this warm-season grass is worthless for forage. The long awns are tough, brittle, and can cause injury to livestock from grazing or eating it in contaminated hay. Prairie threeawn in hay sharply reduces hay quality, and the tough, fine stems interfere with mowing. This undesirable grass commonly spreads on abused rangeland and rundown, heavily grazed pastures. Since it is seldom eaten, continued heavy grazing removes the perennial grasses, thereby allowing prairie threeawn to thrive. Sound management is the best control, since a vigorous stand of the better grasses will crowd out prairie threeawn or prevent it from becoming established.

Establishment. Prairie threeawn is an annual grass, and it is not used in grassland seedings.

Restoration. This undesirable grass is not used in prairie restorations.

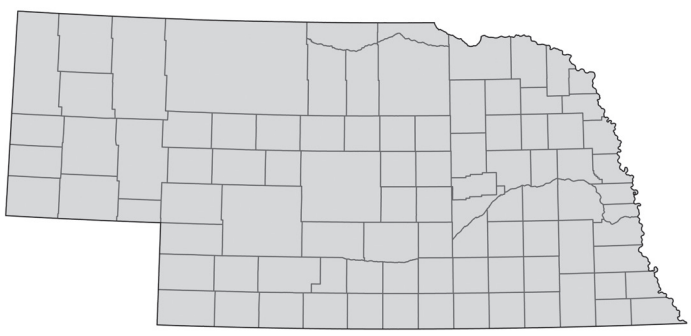
Wildlife. It is not grazed by wildlife and does not provide effective cover.

Ornamental. Prairie threeawn is not used as an ornamental.



Prairie threeawn

Witchgrass



COMMON NAME:	Witchgrass
Species:	*Panicum capillare* L.
Life Span:	Annual
Origin:	Native
Season:	Warm
Flowering:	July to October

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Vegetative Characteristics

culms:	erect to decumbent (to 80 cm tall), sparingly branching above the base at lower nodes; may be pubescent, especially at the nodes; often rooting at the lower nodes of curved base, forming mats
sheaths:	round, with long hairs
ligules:	line of hairs or ciliate membranes (to 2.2 mm long)
blades:	flat or folded (to 40 cm long, to 18 mm wide), sparingly hairy with long soft hairs
rhizomes:	none

Inflorescence Characteristics

type:	panicles (to 40 cm long), open, spreading, often one-half the length of the entire plant; densely flowered; many-branched; terminal and axillary, often partially enclosed in the upper sheath
spikelets:	2-flowered (to 3.1 mm long); glumes unequal; first glume broad (to 1.4 mm long), one-third to two-thirds spikelet length; second glume narrow (to 3.4 mm long); both acute to acuminate; veins with fine teeth, especially near tip; lower floret a sterile lemma, upper floret fertile; fertile lemma (to 2.2 mm long) indurate, shiny
awns:	none
other:	inflorescence breaks off at maturity and may be tumbled along the ground by the wind.

Distribution and Habitat

This native weedy grass is common on nearly all ecological sites. It grows on abused pastures and rangeland, as well as on cultivated land, waste places, and roadsides. It is particularly abundant where the soil is sandy. Witchgrass quickly spreads into areas where competition from perennial plants is at a minimum. It is often common for one or two years on abandoned farmland but is soon replaced by more competitive plants.

Uses and Values

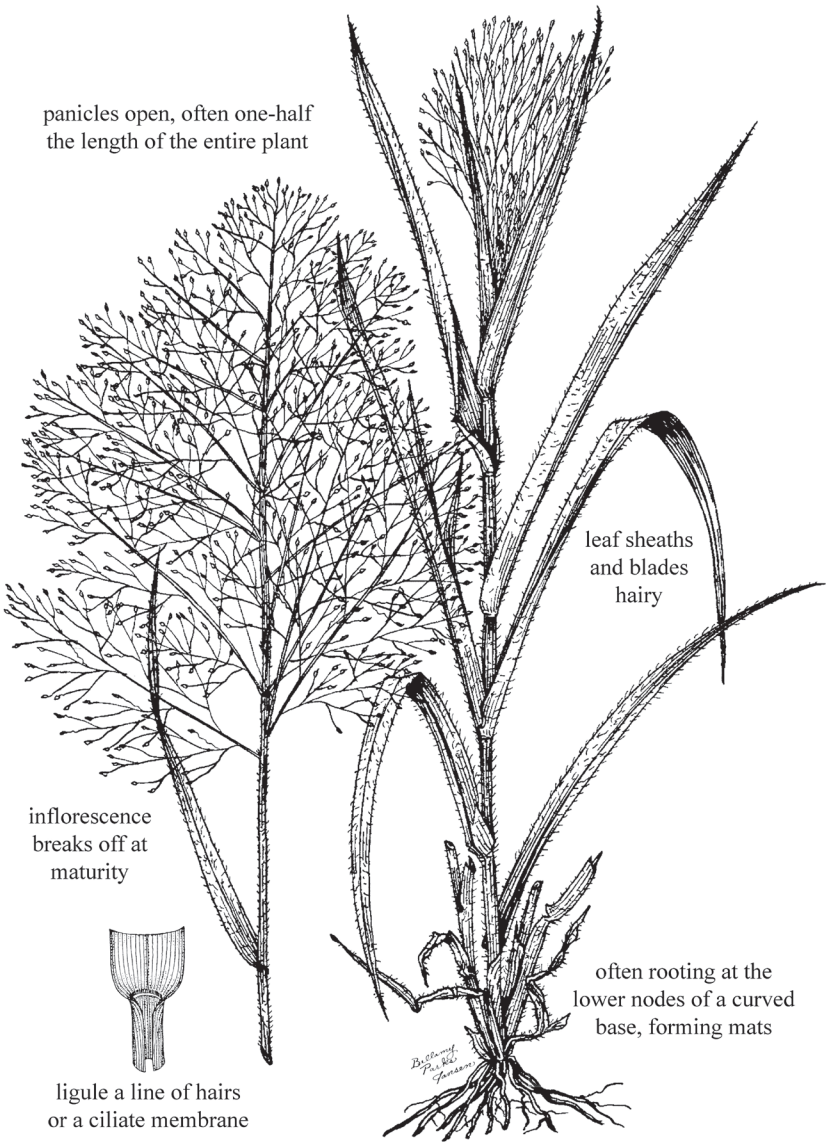
Forage. This undesirable warm-season grass has poor forage value. Plants in early growth stages may be lightly grazed, but it is ignored after the inflorescences begin to develop. Livestock may utilize these plants for only two or three weeks in the summer.

Establishment. This weedy grass is not used in grassland seedings. When abundant in new seedings, witchgrass may reduce establishment of the desirable grasses by reducing available soil moisture.

Restoration. This weedy annual is not used in prairie restorations.

Wildlife. Witchgrass seeds are an important source of food for ground-foraging birds such as mourning doves and quail.

Ornamental. This coarsely-textured grass is not used as an ornamental.

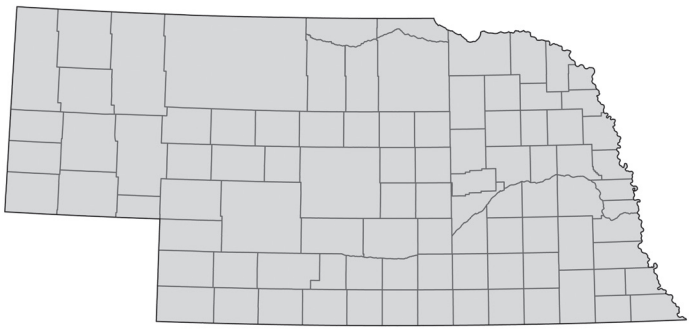


Witchgrass

Cool-Season Perennial Grasses

Redtop bent
Spike bentgrass
Winter bentgrass
Bulbous bluegrass
Canada bluegrass
Kentucky bluegrass
Mutton bluegrass
Plains bluegrass
Sandberg bluegrass
Bluejoint reedgrass
Meadow brome
Smooth brome
Creeping foxtail
Fowl mannagrass
Foxtail barley
Green needlegrass
Indian ricegrass
Needleandthread
Orchardgrass
Perennial ryegrass
Porcupinegrass
Prairie junegrass
Prairie wedgescale
Quackgrass
Reed canarygrass
Scribner rosettegrass
Wilcox rosettegrass
Squirreltail
Tall fescue
Timothy
Weeping alkaligrass
Crested wheatgrass
Intermediate wheatgrass
Slender wheatgrass
Tall wheatgrass
Western wheatgrass
Canada wildrye
Russian wildrye

Redtop bent



COMMON NAME:	Redtop bent
Species:	*Agrostis stolonifera* L.
Life Span:	Perennial
Origin:	Introduced
Season:	Cool
Growth Form:	Sod-forming
Flowering:	June to August

Vegetative Characteristics

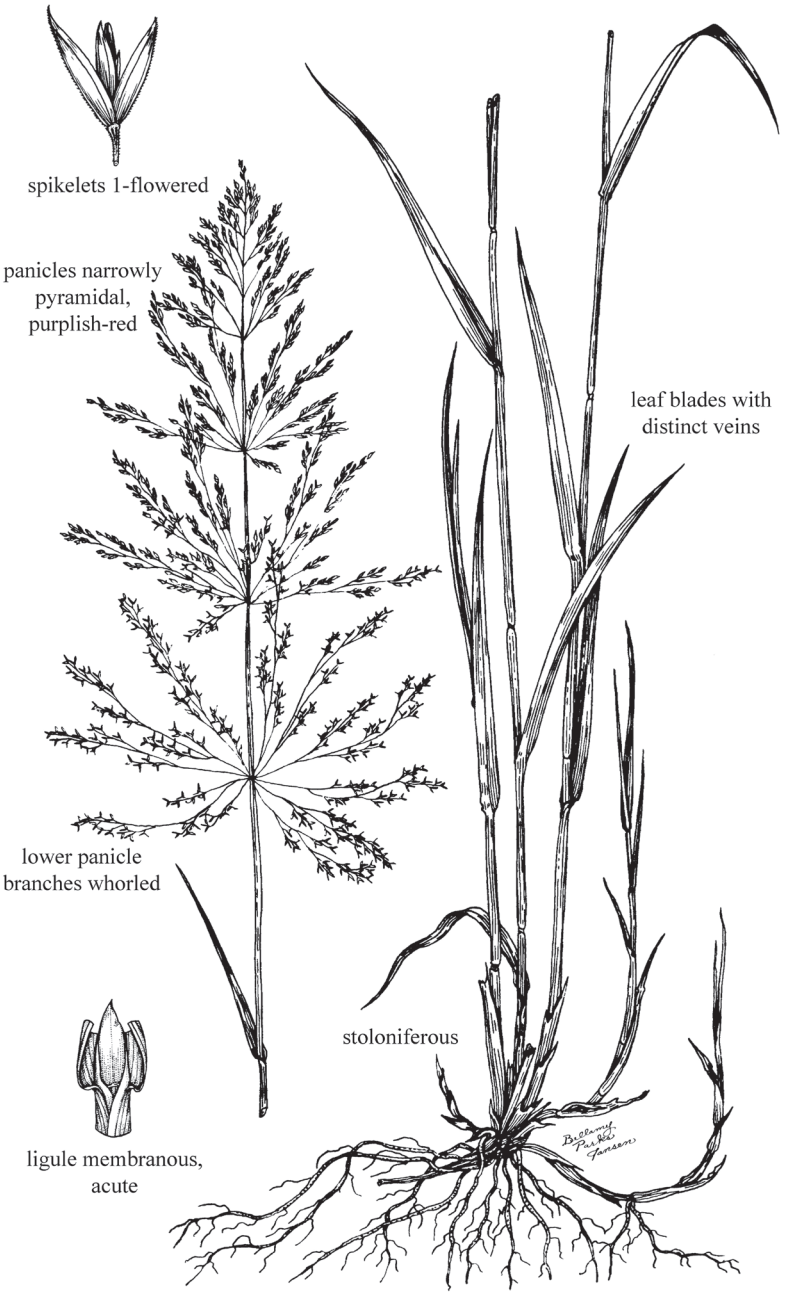
culms:	erect or ascending from a geniculate base (to 1.5 m tall), rarely decumbent
sheaths:	round, glabrous, frequently purplish to reddish
ligules:	membranous (to 7 mm long), acute, entire to erose
blades:	flat (to 25 cm long, to 10 mm wide), pointed at the tip; with distinct veins on the upper surface; margins finely barbed
rhizomes:	none
other:	stoloniferous

Inflorescence Characteristics

type:	panicles (to 30 cm long, to 15 cm wide), narrowly pyramidal, open to contracted, densely flowered; branches spreading, bearing spikelets to near the base; lower panicle branches whorled; purplish-red when flowering
spikelets:	1-flowered; glumes nearly equal (to 3.1 mm long), longer than lemma, 1-veined, pointed, scabrous; lemmas (to 2 mm long) 5-veined, blunt-tipped; palea one-half to two-thirds as long as the lemma
awns:	none

Distribution and Habitat

Redtop bent was introduced from Europe by early colonists for pasture and hay. Today, it is common in hay meadows in the Sandhills and in the Elkhorn, Platte, and Loup River valleys. It produces well and spreads rapidly on low, poorly drained meadows subject to frequent flooding where few other grasses will persist. It will grow on acidic soil and poor, clayey soil with low fertility. It is moderately salt tolerant.



Redtop bent

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Uses and Values

Forage. 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.

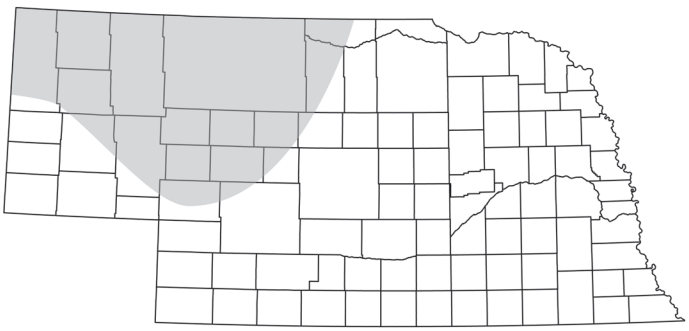
Establishment. Redtop bent is adapted for seeding on wetland and subirrigated ecological sites. Interseeding redtop bent on wet hay meadows with a reduced grass stand often increases yields. However, where a good stand of native grasses is present, introduction of redtop bent will not always increase hay yield and may reduce quality. Redtop bent can withstand heavy trampling and close grazing. Also, it is cold tolerant.

Restoration. Redtop is an introduced species and is not used in prairie restorations.

Wildlife. Redtop bent produces fair forage for elk, deer, and small mammals. It provides good nesting, brood rearing, and concealment cover for waterfowl and upland game birds. Its seeds are eaten by birds.

Ornamental. Redtop bent is used as a turf species. It flourishes with frequent, close mowing forming a dense sod which provides good surface erosion control. The leaves of redtop bent are wider than those of most of the other bentgrasses.

Spike bentgrass



COMMON NAME:	Spike bentgrass
Species:	*Agrostis exarata Trin.*
Life Span:	Perennial
Origin:	Native
Season:	Cool
Growth Form:	Bunchgass
Flowering:	June to August

Vegetative Characteristics

culms:	erect to decumbent at the base (to 70 cm tall)
sheaths:	round, glabrous, finely scabrous
ligules:	membranous (to 6 mm long), erose
blades:	flat (to 15 cm long, to 7 mm wide), scabrous
rhizomes:	none

Spike bentgrass

Inflorescence Characteristics

type:	panicles (to 25 cm long, to 25 mm wide), contracted, densely flowered; branches ascending, in whorls, spikelet-bearing to near the base
spikelets:	1-flowered, pedicellate; glumes nearly equal (to 3.5 mm long), longer than lemma, 1-veined, pointed, glabrous; lemma (to 2.2 mm long) 5-veined, glabrous (some long hairs at the base); palea absent
awns:	lemmas are occasionally awned; awns (to 3 mm long), straight or geniculate

Distribution and Habitat

Spike bent occurs in meadows, marshes, disturbed sites, ditches, and along streams and lakes. It grows well in moderately acidic soils. It has replaced native warm-season grasses in many meadows.

Uses and Values

Forage. Spike bent produces relatively high quantities of forage. Palatability is rated as good for cattle and horses. It makes acceptable hay on subirrigated meadows if cut in the early flowering stage but palatability quickly declines if cutting is delayed.

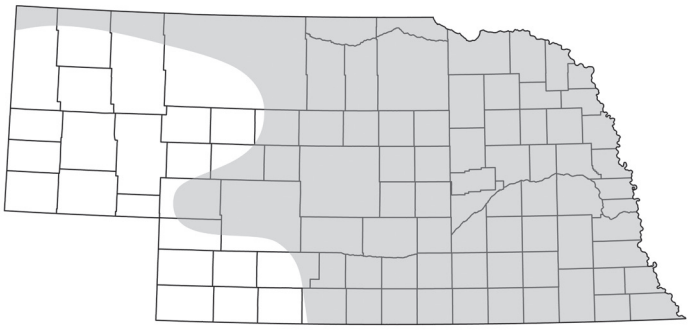
Establishment. Spike bent is adapted for seeding on wetland and subirrigated ecological sites.

Restoration. Spike bent can be included in seed mixtures for restoration of wetland and subirrigated sites.

Wildlife. Spike bent produces good forage for elk and fair forage for deer. It provides good nesting, brood rearing, and concealment cover for waterfowl and upland game birds. Its seeds are eaten by birds.

Ornamental. Spike bent is not used as an ornamental.

Winter bentgrass



COMMON NAME:	Winter bentgrass
Species:	*Agrostis hyemalis* (Walter) Britton, Sterns & Poggenb.
Life Span:	Perennial
Origin:	Native
Season:	Cool
Growth Form:	Bunchgrass
Flowering:	April to August

Vegetative Characteristics

culms:	ascending to stiffly erect (to 65 cm tall), slender
sheaths:	round, glabrous
ligules:	membranous (to 4 mm long), erose
blades:	flat, becoming involute with maturity (to 10 cm long, to 4 mm wide), finely scabrous
rhizomes:	none

Inflorescence Characteristics

type:	panicles (to 35 cm long, to 30 cm wide), open and diffuse at maturity, densely flowered; branches slender, in whorls, free of spikelets on lower one-half, primary branches rebranching near the tips
spikelets:	1-flowered, pedicellate; glumes nearly equal (to 3 mm long), 1-veined, pointed, glabrous to scabrous; lemmas (to 2 mm long) 5-veined, glabrous, awnless; palea absent
awns:	none

Distribution and Habitat

Winter bentgrass grows in prairies, pastures, ditch banks, and along streams and lakes. It is most abundant in sandy soils, but it will grow in soils with a finer texture.

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Uses and Values

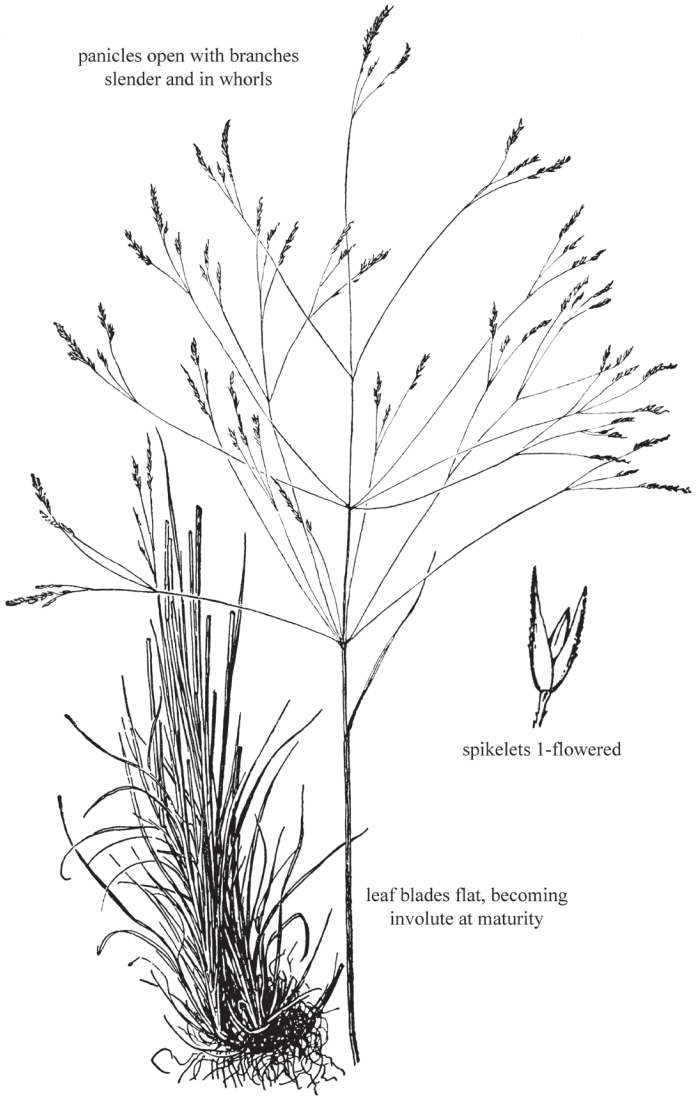
Forage. Winter bentgrass produces little forage. Palatability is rated as fair for cattle and horses. It makes acceptable hay, but yields are low

Establishment. Winter bentgrass is not used for seedings.

Restoration. Winter bentgrass is not used for restorations.

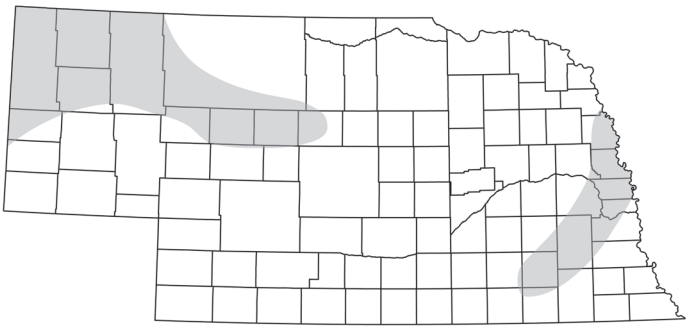
Wildlife. Winter bentgrass produces fair forage for elk and poor to fair forage for deer. It produces relatively large quantities of seeds that are eaten by birds.

Ornamental. Winter bentgrass is not used as an ornamental.



Winter bentgrass

Bulbous bluegrass



COMMON NAME:	Bulbous bluegrass
Species:	*Poa bulbosa* L.
Life Span:	Perennial
Origin:	Introduced
Season:	Cool
Growth Form:	Bunchgrass
Flowering:	April to June

Vegetative Characteristics

culms:	erect (to 50 cm tall), weak, bases bulbous
sheaths:	terete, open three-fourths of their length
ligules:	membranous (1–5 mm long), truncate to acuminate
blades:	folded to rarely flat or involute (to 15 cm long, to 4 mm wide), apices keeled
rhizomes:	none

Inflorescence Characteristics

type:	panicles (to 10 cm long, to 6 cm wide), contracted; branches paired at lowermost node
spikelets:	viviparous and perfect spikelets; perfect spikelets 2–8-flowered (3–6 mm long), crowded; glumes unequal; first 1-veined (2.3–2.7 mm long), second 3-veined (2.5–2.9 mm long); lemmas 2-veined (3–3.4 mm long), veins glabrous to sparsely villous, seldom with cobwebby hairs at the base of lemma; viviparous spikelets bulblike with spikelets parts becoming foliaceous; basal part dark purple, tips green
awns:	none
other:	bulblets capable of rooting immediately after falling to the ground

Distribution and Habitat

This grass is a native of Europe. It grows in open forests, grasslands, disturbed areas. It is becoming a weed in disturbed areas, roadsides, and lawns. It tends to increase with heavy grazing.

Uses and Values

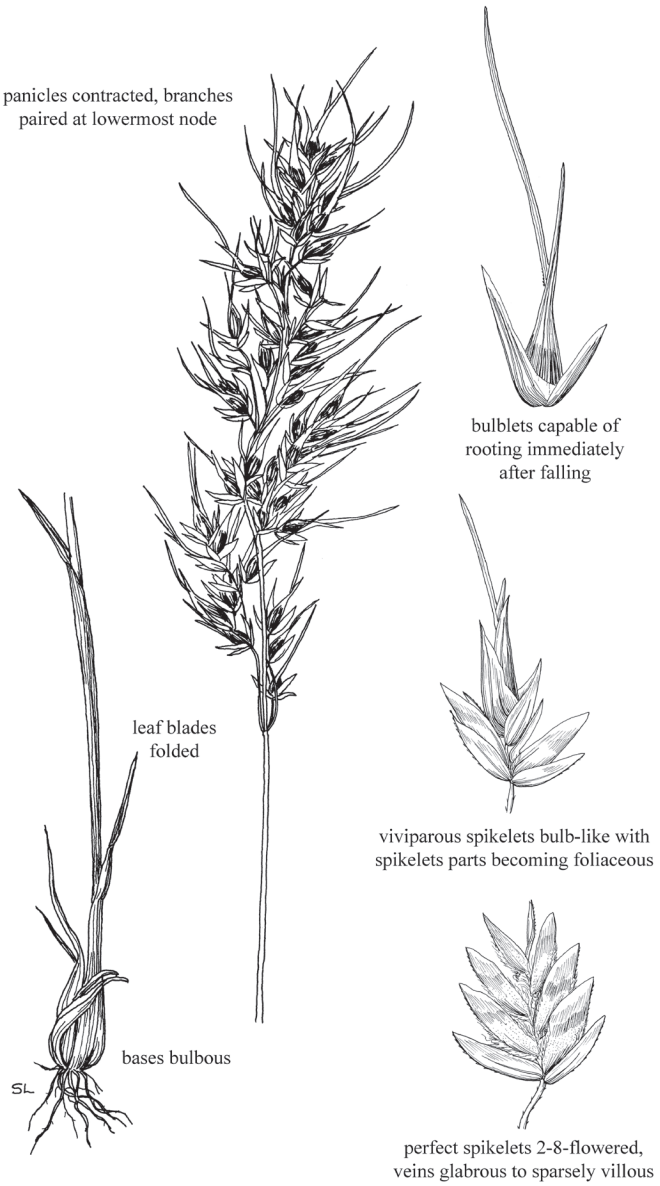
Forage. Bulbous bluegrass is palatable, but low yields make it nearly worthless as forage.

Establishment. Bulbous bluegrass is not seeded.

Restoration. Bulbous bluegrass is an introduced grass and is not used in prairie restorations.

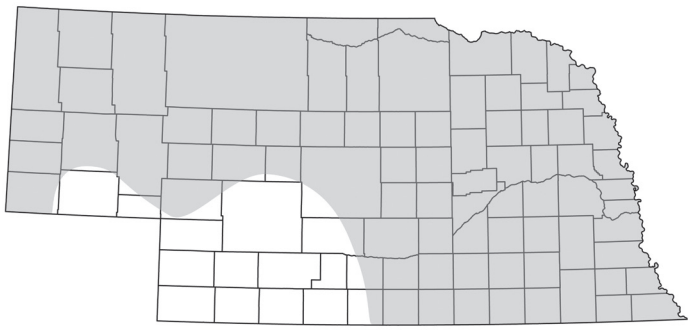
Wildlife. It is nearly worthless as forage. The bulblets are eaten by small mammals.

Ornamental. It is not used as an ornamental or for turf.



Bulbous bluegrass

Canada bluegrass



COMMON NAME:	Canada bluegrass
Species:	*Poa compressa* L.
Life Span:	Perennial
Origin:	Introduced
Season:	Cool
Growth Form:	Sod-forming
Flowering:	May to August

Vegetative Characteristics

culms:	ascending or bases decumbent (to 80 cm tall), not bulb-like, solitary or few, strongly flattened, 2-edged; bluish-green
sheaths:	strongly flattened and sharply keeled, open, glabrous; margins hyaline
ligules:	membranous (to 2 mm long), rounded to truncate
blades:	folded or flat (to 15 cm long, to 4 mm wide), boat-shaped tips
rhizomes:	slender, creeping
other:	Canada bluegrass can be easily distinguished from Kentucky bluegrass by its flat culms. Culms of Canada bluegrass cannot be rolled between the thumb and index finger.

Inflorescence Characteristics

type:	panicles (to 8 cm long, to 20 mm wide), contracted to somewhat open; branches usually short and close together, branches paired at lowermost node.

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spikelets:	2–7-flowered (to 6 mm long), crowded; glumes nearly equal; first 1–3-veined (to 2.6 mm long), narrow; second 3-veined (to 8 mm long), broad, usually strongly keeled; lemmas 5-veined (to 3 mm long), pubescent on the mid- and marginal veins, seldom with cobwebby hairs at the base of lemma
awns:	none

Distribution and Habitat

This grass is a native of eastern Europe, and was introduced to North America in the late 1700s. It is widely distributed and has become naturalized on native hay meadows, bottomland pastures, open timber, waste areas, and roadsides. It is also commonly found in lawns. It requires more moisture for successful growth than is available on upland sites of central and western Nebraska. Canada bluegrass will grow on moderately acidic soils, soils with low fertility, and those having poor drainage, but it is only slightly more drought tolerant than Kentucky bluegrass.

Uses and Values

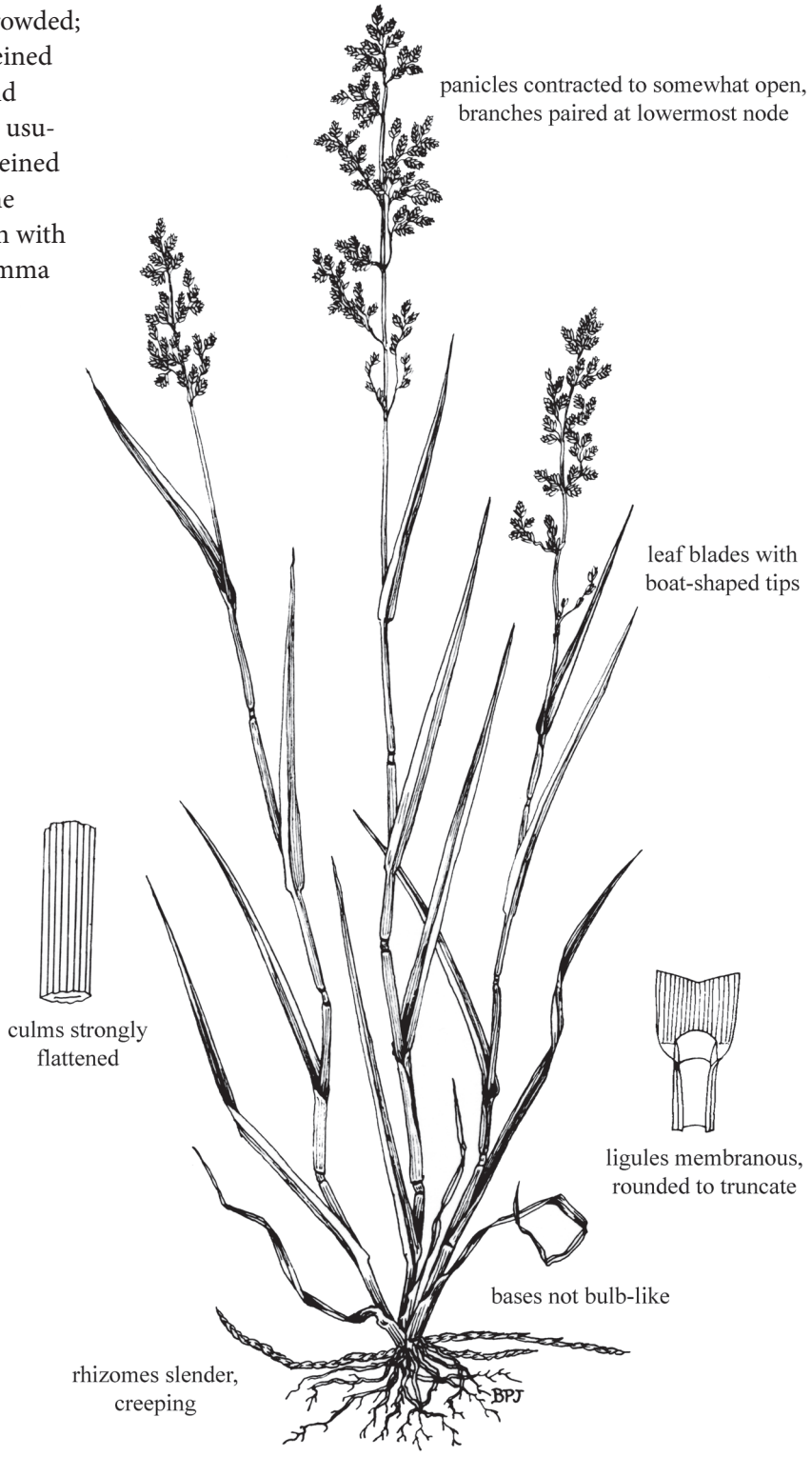
Forage. Canada bluegrass is a cool-season grass which grows rapidly early in the spring. It is palatable and nutritious in the spring. Since it matures later than Kentucky bluegrass, Canada bluegrass remains more palatable through most of the summer. It is resistant to grazing and trampling but recovers slowly after grazing.

Establishment. Because of low productivity, Canada bluegrass is not recommended for seeding as a forage grass.

Restoration. Canada bluegrass is an introduced grass and is not used in prairie restorations.

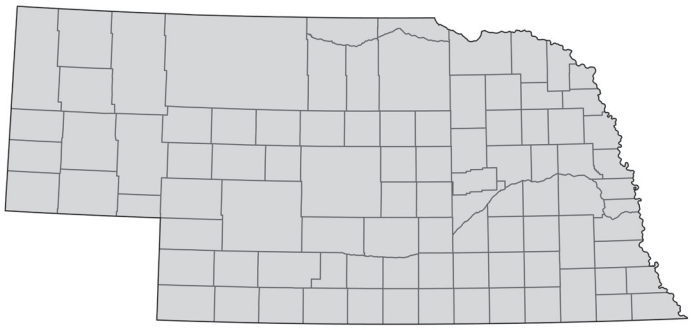
Wildlife. Big game animals graze Canada bluegrass when it is immature. Its seeds are eaten by birds and small mammals.

Ornamental. It is not used as an ornamental or for turf.



Canada bluegrass

Kentucky bluegrass



COMMON NAME:	Kentucky bluegrass
Species:	*Poa pratensis* L.
Life Span:	Perennial
Origin:	Native/Introduced
Season:	Cool
Growth Form:	Sod-forming
Flowering:	May to September

Vegetative Characteristics

culms: erect to ascending from a decumbent base (to 1 m tall), sometimes curving upward from the base, round, slender, wiry, base not bulb-like

sheaths: round, closed about one-half of the length, smooth to slightly scabrous, distinctly veined, not keeled

ligules: membranous (to 2 mm long), truncate, minutely erose

blades: folded or flat (to 25 cm long, to 5 mm wide), soft and smooth or nearly so, ending in a boat-shaped tip, midveins double

rhizomes: numerous, extensively creeping

Inflorescence Characteristics

type: panicle (to 13 cm long, to 8 cm wide), pyramidal, open; branches long, branches at base in whorls of 3–5; spikelets along upper one-half of branches

spikelets: 3–6-flowered (to 6 mm long), flattened, nearly as wide as long; glumes nearly equal, strongly keeled very small barbs on margin; first glume 1-veined (to 2.7 mm long), second glume 3-veined (to 3.3 mm long); lemmas 5-veined (to 4 mm long), keeled, pointed, with a tuft of long, silky hairs at the base; palea shorter than the lemma

awns: none

Distribution and Habitat:

Kentucky bluegrass was reported to have been introduced from Europe as a pasture grass before 1700. However, it was likely in North America originally and should be classified as a native species. If it was introduced, its spread was so rapid, and its naturalization was so complete, that it commonly preceded settlers into new areas. It is found on most ecological 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, pastures in eastern Nebraska, and Tallgrass Prairies where it replaces more productive and desirable grasses.

Uses and Values

Forage. When green and growing, Kentucky bluegrass is highly palatable and nutritious to all classes of livestock. This cool-season grass is often one of the earliest grasses to begin growth in the spring. It goes into semi-dormancy in the summer, but is revived by late summer and fall rains. Inflorescences begin appearing in early May. Few grasses are able to withstand continued heavy grazing as well as Kentucky bluegrass. For this reason, it increases rapidly on heavily grazed pastures and meadows. Prescribed burning in late spring is an effective means of reducing Kentucky bluegrass when it is growing in Tallgrass Prairie. 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.

Establishment. Kentucky bluegrass should not be included in grassland seeding mixtures. Higher producing species are available for seeding mixtures.

Restoration. It is not used in prairie restorations. It can become a serious weed in Tallgrass and Mixed Grass Prairies.

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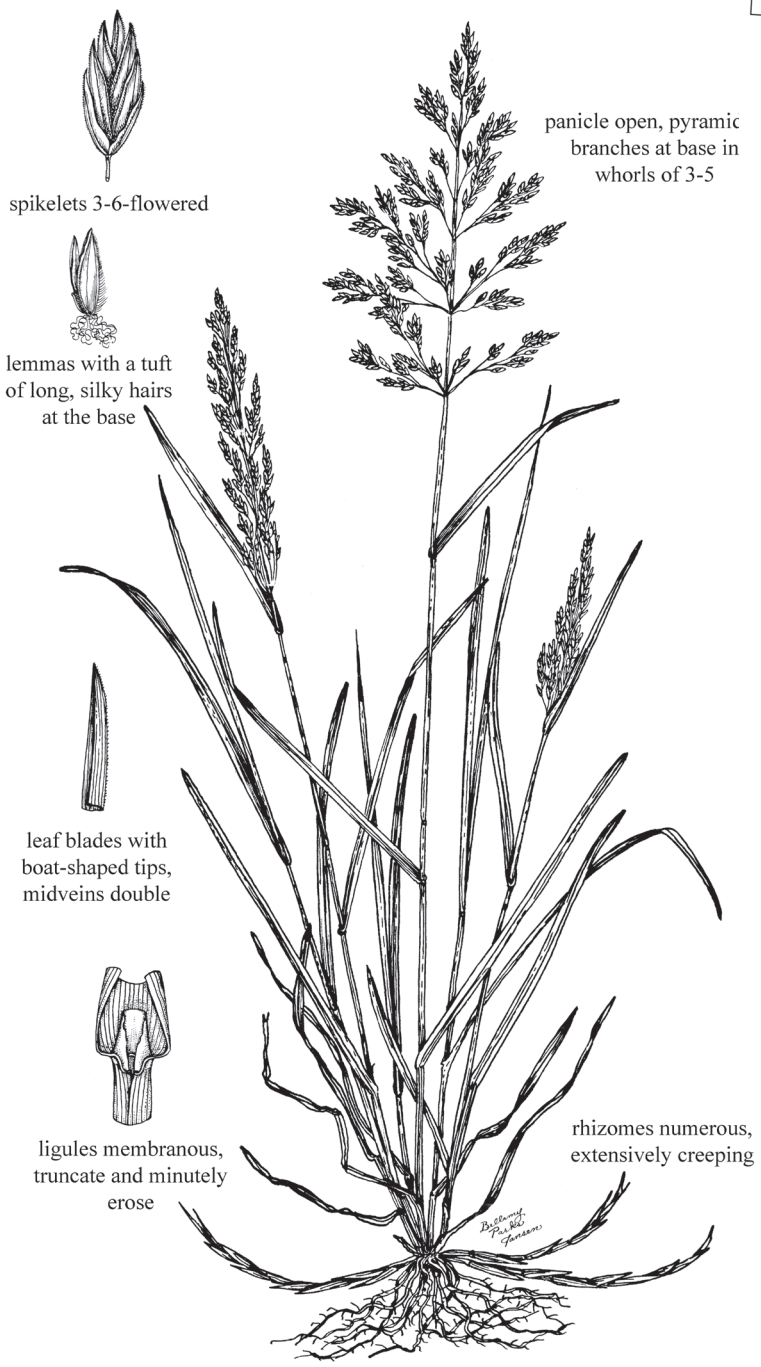
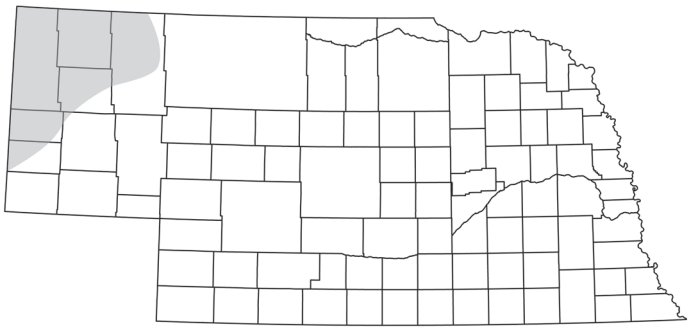
Wildlife. Kentucky bluegrass is grazed by deer, elk, and pronghorn. It provides nesting and roosting cover for quail. Its seeds are eaten by wild turkeys, several species of songbirds, and small mammals.

Ornamental. Kentucky bluegrass is the principal turf grass in Nebraska. It requires supplemental water and fertilizer to maintain its stand and appearance.



Kentucky bluegrass

Mutton bluegrass



COMMON NAME:	Mutton bluegrass
Species:	*Poa fendleriana* (Steud.) Vasey
Life Span:	Perennial
Origin:	Native
Season:	Cool
Growth Form:	Bunchgrass
Flowering:	May to August

Vegetative Characteristics

culms:	erect to ascending, bases decumbent (to 65 cm tall), tufted, glabrous, scabrous below inflorescence
sheaths:	round, short, margins transparent, closed one-third of their length, bases white and expanded, persistent for several years
ligules:	membranous, variable (to 4 mm long), rounded or truncate or acute, erose
blades:	folded or rolled (to 28 cm long, to 4 mm wide), stiff, glabrous to scabrous, midvein double; bluish-green color, often remaining green in winter
rhizomes:	rarely has slender rhizomes and generally has the appearance of a bunchgrass

Inflorescence Characteristics

type:	panicles (to 12 cm long, to 25 mm wide), contracted, narrow, densely flowered, 2–3 branches at lowermost node; branches erect or erect-spreading, spikelets distributed along entire branch

spikelets:	2–8-flowered (to 10 mm long, 1.8–3 mm wide), usually at least twice as long as wide; flat, papery; unequal; first 1-veined (to 4.5 mm long), second 3-veined (to 5.5 mm long), strongly keeled; lemmas compressed (to 6 mm long), 5-veined, marginal veins glabrous to long-villous (usually short-villous)
awns:	none

Distribution and Habitat

Mutton bluegrass grows most commonly on dry, infertile, shallow, gravelly, or sandy soils on open hillsides.

Uses and Values

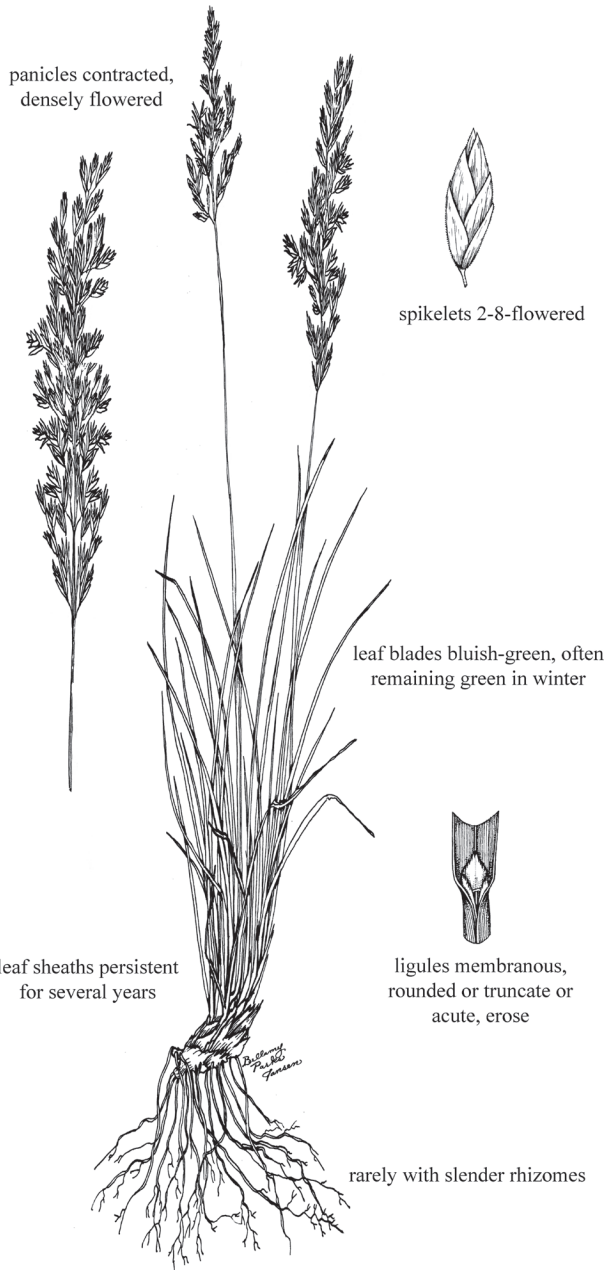
Forage. Growth begins in early spring, and it is important for early grazing in areas where it is abundant. In early spring, forage value is excellent for cattle and horses and good for sheep. Forage quality declines rapidly with maturity. This species is one of the most drought tolerant of the bluegrasses. Mutton bluegrass is an effective barrier against erosion because of its deep fibrous root system.

Establishment. It is not used frequently in grass seedings because other higher producing grasses are available.

Restoration. Mutton bluegrass is rarely used in restorations.

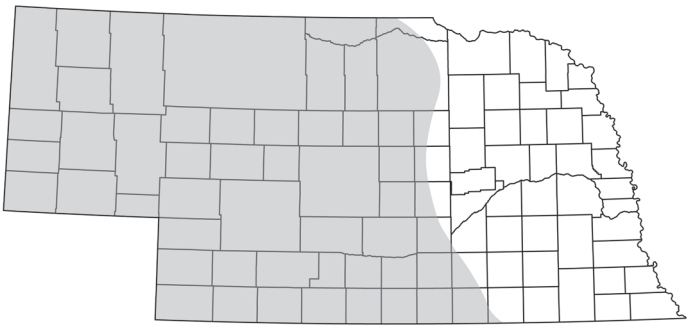
Wildlife. It provides good forage for deer, bighorn sheep, elk, and pronghorn, and the seeds are eaten by birds and small mammals.

Ornamental. Mutton bluegrass is occasionally used as border plantings.



Mutton bluegrass

Plains bluegrass



COMMON NAME:	Plains bluegrass
Species:	*Poa arida* Vasey
Life Span:	Perennial
Origin:	Native
Season:	Cool
Growth Form:	Sod-forming
Flowering:	May to July

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Vegetative Characteristics

culms:	erect, bases decumbent (to 60 cm tall), tufted
sheaths:	round, margins closed less than one-fourth of their length, glabrous or scabrous
ligules:	membranous (to 3 mm long), acute
blades:	folded or rolled (to 15 cm long, to 3 mm wide), stiff, glabrous to scabrous; flag leaf blades usually 2–10 times sheath length
rhizomes:	well-developed

Inflorescence Characteristics

type:	panicles (to 12 cm long, to 20 mm wide), tightly to loosely contracted, 2–3 branches at lowermost node; branches erect or erect-spreading, spikelets distributed along entire branch
spikelets:	4–8-flowered (to 7 mm long); glumes unequal; first 1-veined (to 4 mm long), second 3-veined (to 4.8 mm long); lemmas keeled (to 4 mm long), 5-veined, midveins and lateral veins short- to long-villous below the middle
awns:	none

Distribution and Habitat

Plains bluegrass grows best in meadows, riparian areas, disturbed sites, and other areas with damp soils. However, it will also grow in drier soils.

Uses and Values

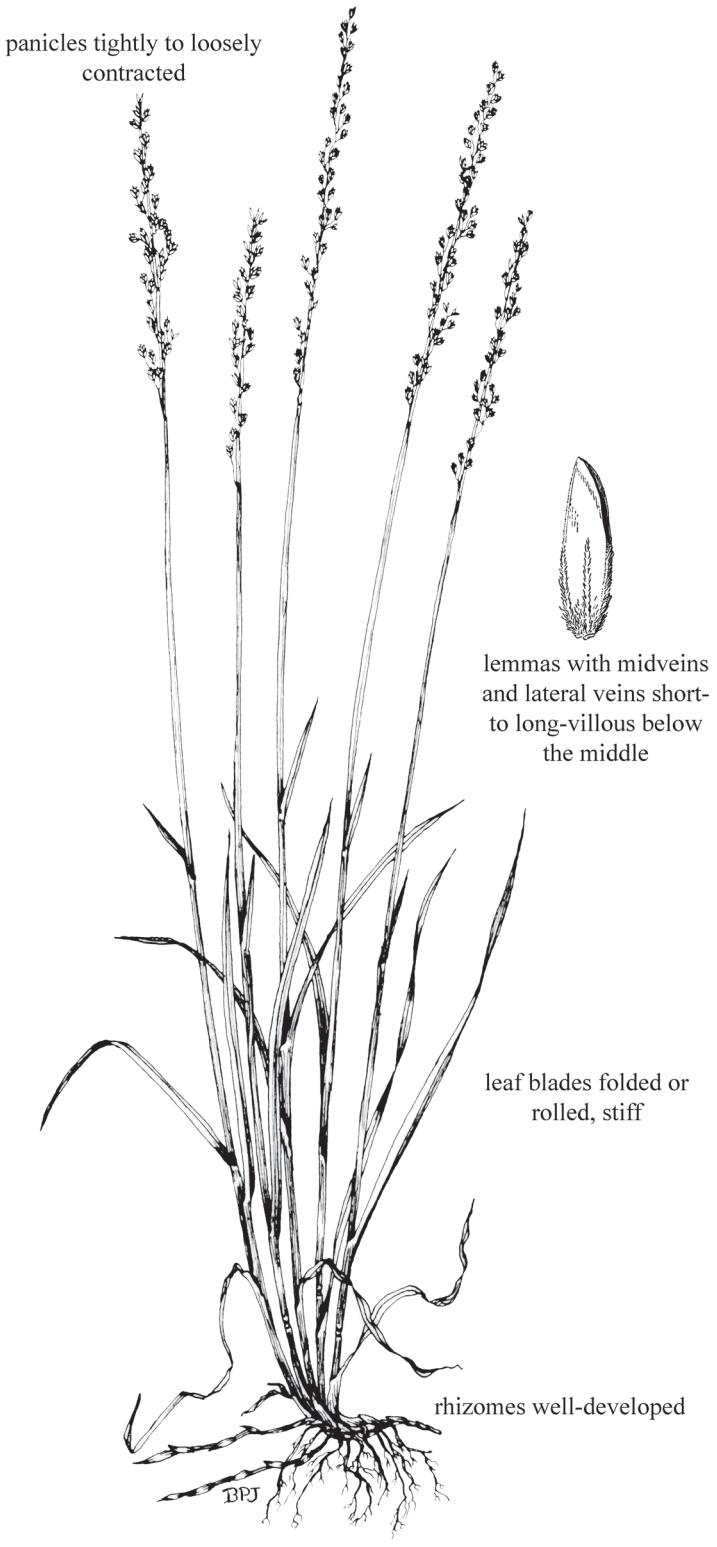
Forage. Plains bluegrass is palatable to livestock. Some of its grazing value is because it begins growth earlier than many other species. Forage quality declines rapidly with maturity.

Establishment. It is not used frequently in grass seedings because other higher producing grasses are available.

Restoration. Plains bluegrass is rarely used in restorations.

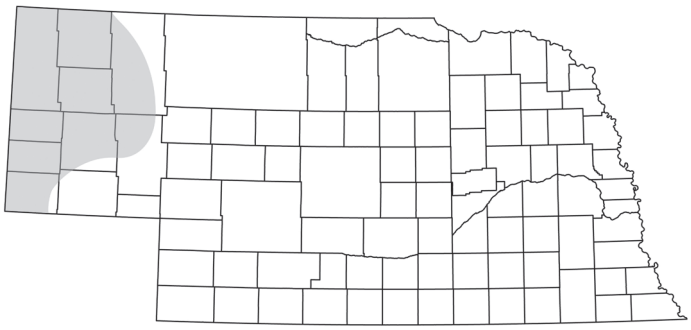
Wildlife. It provides good forage for deer, bighorn sheep, elk, and pronghorn, and the seeds are eaten by birds and small mammals.

Ornamental. Plains bluegrass is rarely used as an ornamental.



Plains bluegrass

Sandberg bluegrass



COMMON NAME:	Sandberg bluegrass
Species:	*Poa secunda* J. Presl [= *Poa sandbergii* Vasey]
Life Span:	Perennial
Origin:	Native
Season:	Cool
Growth Form:	Bunchgrass
Flowering:	May to July

Vegetative Characteristics

culms:	erect to decumbent at the base (to 90 cm tall), slender or stout, wiry, glabrous, nodes occasionally reddish
sheaths:	round or slightly keeled, glabrous, veins prominent; margins overlapping transparent, closed from one-half to three-fourths of their length
ligules	membranous (to 6 mm long), obtuse to acute, usually entire
blades:	flat or folded or rolled (to 16 cm long, to 3 mm wide); glabrous, midvein double, margins slightly barbed, tips slightly boat-shaped
rhizomes:	rarely with short rhizomes

Inflorescence Characteristics

type:	panicles (to 20 cm long, to 3 cm wide); contracted, erect, 2–3 branches per node; branches unequal in length, yellowish; lateral branches lying against center branch; spikelets along most of branch length
spikelets:	2–5-flowered (to 9 mm long, to 2 mm wide), slender; glumes unequal, papery; first 1(-3)-veined (to 2.5 mm long) second 3-veined (to 5 mm long), shorter than lemma of lowermost floret; lower lemmas (to 6 mm long) rounded on back to weakly keeled, short hairs on back, tips pointed, 5-veined; purplish
awns:	none

Distribution and Habitat

This grass is found on upland ecological sites with medium to heavy textured soils. It is particularly abundant on infertile shallow, dry, rocky soils of slopes and tops of ridges. It is tolerant of drought and moderately saline soils. It may become prominent on upland silty and clayey sites under heavy grazing.

Uses and Values

Forage. Sandberg bluegrass is a cool-season grass which begins growth very early in the spring, usually before needleandthread and western wheatgrass. It furnishes limited forage by mid-April. Sandberg bluegrass is palatable to livestock when green and growing, but nutritive content drops sharply as it matures. 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 many plants are present. 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 replaces the more desirable perennial grasses under heavy grazing.

Establishment. Sandberg bluegrass is rarely included in grassland seeding mixtures.

Restoration. It can be used in upland prairie restorations in the Nebraska Panhandle.

Wildlife. Deer, pronghorn, and bighorn sheep use the forage during the growing season, and elk graze Sandberg bluegrass in the winter. Upland game birds nest in it, and birds and small mammals eat the seeds.

Ornamental. Sandberg bluegrass has been used as a border planting and in rock gardens.

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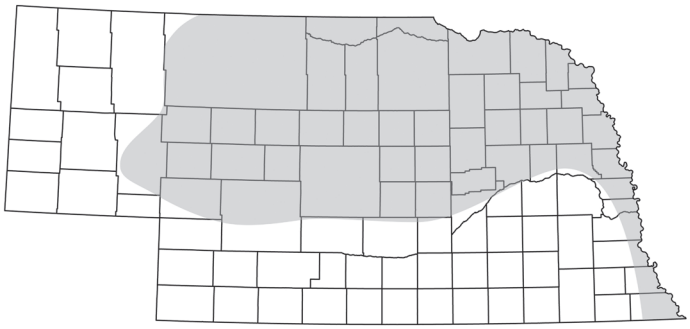
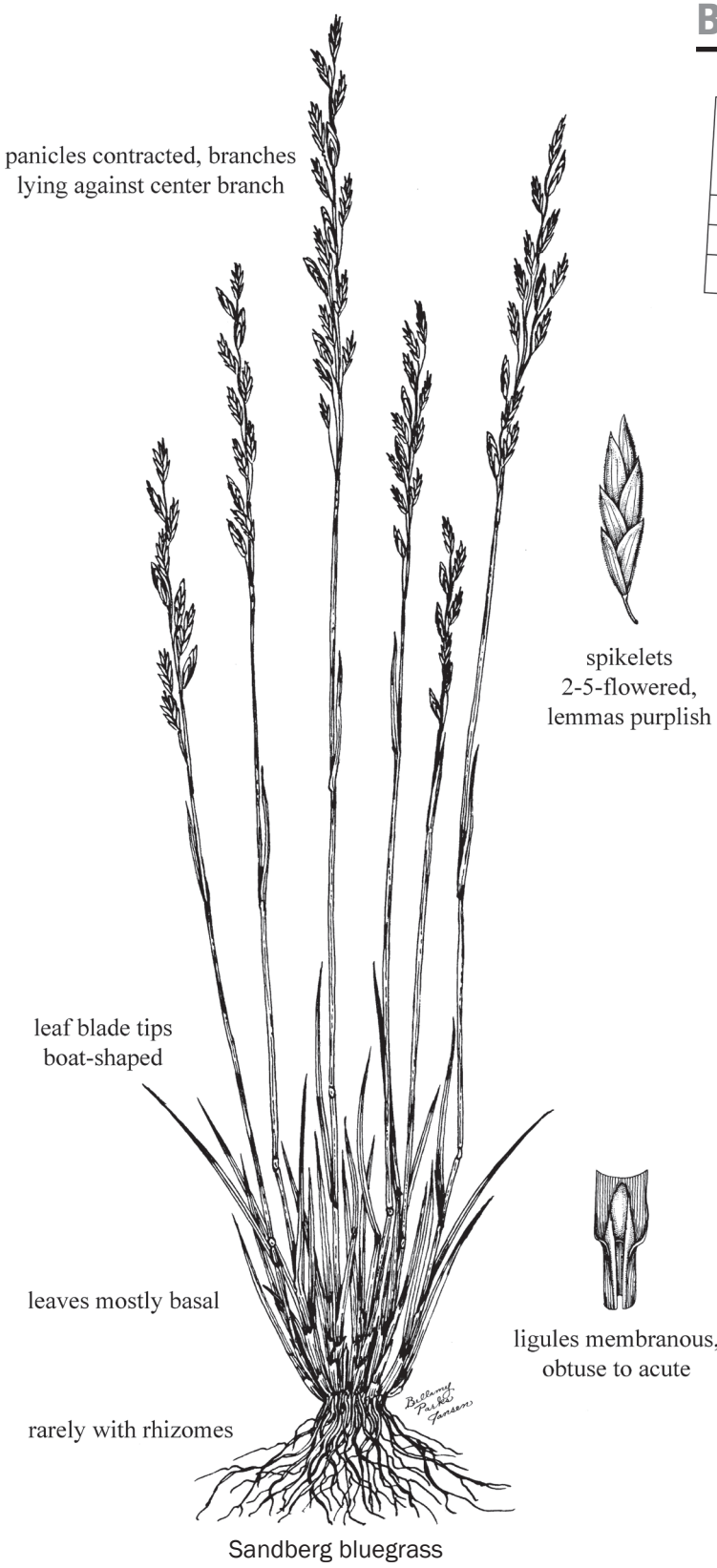
Bluejoint reedgrass





Sandberg bluegrass

COMMON NAME:	Bluejoint reedgrass
Species:	*Calamagrostis canadensis* (Michx.) P. Beauv.
Life Span:	Perennial
Origin:	Native
Season:	Cool
Growth Form:	Sod-forming
Flowering:	June to August

Vegetative Characteristics

culms:	erect (to 1.5 m tall), solitary, often branching above the base
sheaths:	round or slightly flattened, open, glabrous to scabrous
ligules:	membranous (to 8 mm), acute to truncate, slightly toothed or lacerate
blades:	flat to slightly rolled (to 40 cm long, to 8 mm wide), numerous; lax or drooping, glabrous, may be scabrous
rhizomes:	creeping (to 15 cm long)

Inflorescence Characteristics

type:	panicles (to 20 cm long, to 8 cm wide), contracted when immature, open when mature, primary branches ascending; bearing spikelets on upper two-thirds; purplish, sometimes greenish or straw-colored

spikelets:	1-flowered (to 5 mm long); glumes nearly equal (to 5 mm long), 1-veined, sharply pointed, glabrous to scabrous with minute teeth especially on the keel; lemmas 3-veined (to 3.4 mm long) may have teeth at the tip, long hairs (to 2.5 mm long) from the calluses (bases of the lemmas)
awns:	lemma awned from the middle of the back; awn single (to 2 mm long), fine, usually straight

Distribution and Habitat

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

Uses and Values

Forage. Forage value of this cool-season grass is fair to good in the spring for cattle and horses. Best grazing use is made when the plants are immature, and 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 soils. Excessive trampling under these conditions is undesirable. Since bluejoint reedgrass is common only on wetland ecological 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.

Establishment. Bluejoint reedgrass is used in seeding mixtures for wetland ecological sites.

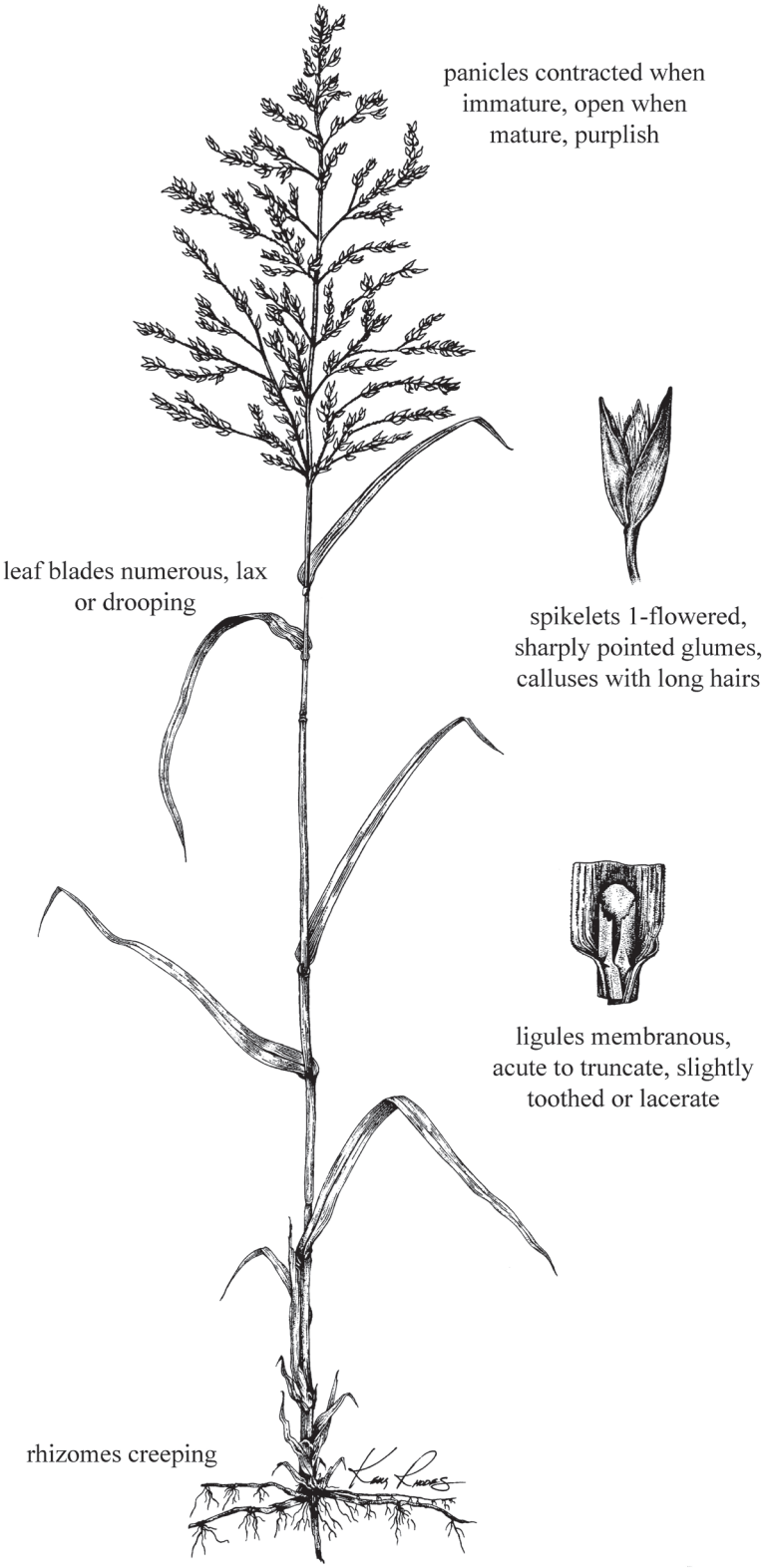
Restoration. It may be used in prairie restorations on lowland sites with wet soils.

Wildlife. It provides nesting cover for upland game birds and waterfowl. It stands up well in winter providing valuable cover for upland game birds. Bluejoint reedgrass is grazed by pronghorn, deer, elk, and bighorn sheep.

Ornamental. Bluejoint reedgrass can be used around ponds, along waterways, and as a background planting. It spreads rapidly by rhizomes, so caution must be used.

Other

Northern reedgrass [*Calamagrostis stricta* (Timm) Koeler], also called ponygrass, is a closely related reedgrass species which occurs in Nebraska. It resembles bluejoint reedgrass, but has more compact, dense, and erect panicles. It is shorter stature (less than 90 cm tall) and has narrower and more erect leaf blades. It is similar in forage value, growth habits, and distribution to bluejoint reedgrass but is less common in the state.



Bluejoint reedgrass

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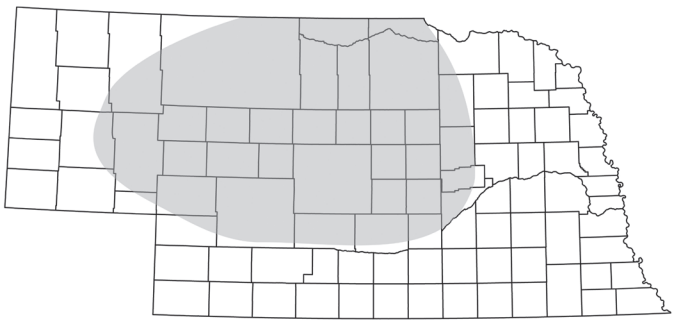
Meadow brome



COMMON NAME:	Meadow brome
Species:	*Bromus riparius* Rehman [= *Bromus biebersteinii* Roem. & Schult.]
Life Span:	Perennial
Origin:	Introduced
Season:	Cool
Growth Form:	Bunchgrass
Flowering:	May to June

Vegetative Characteristics

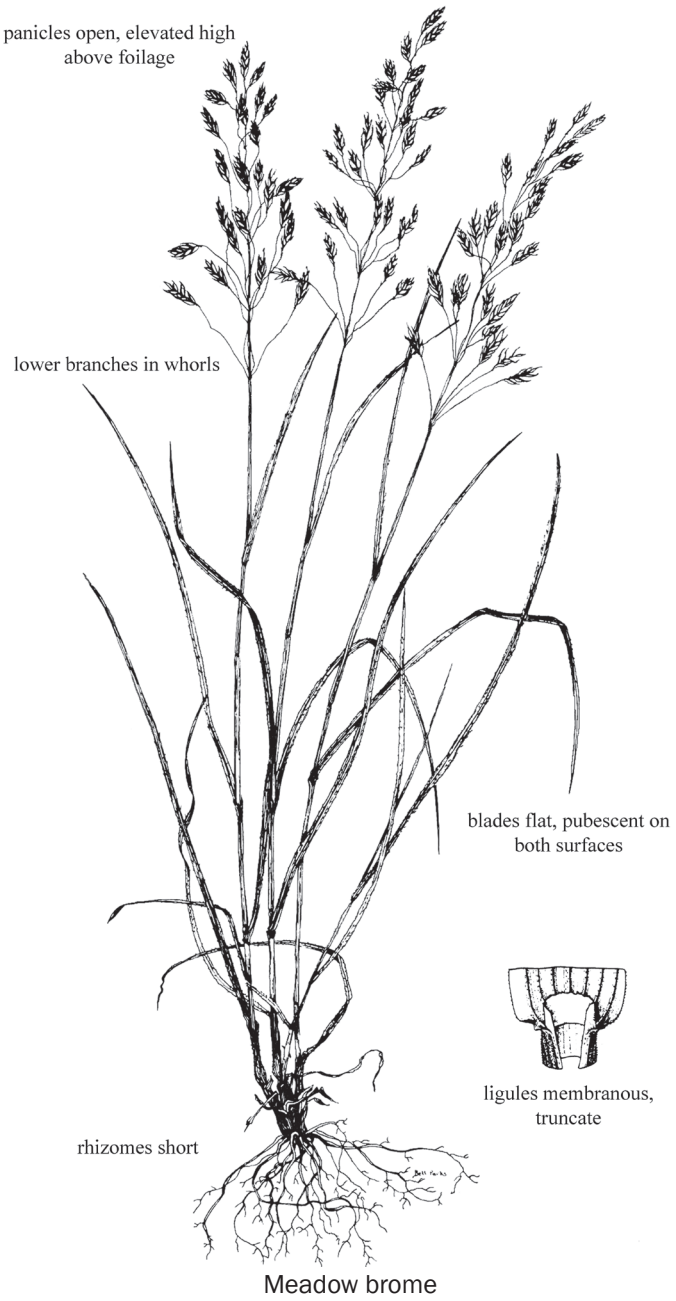
culms:	erect (to 1.2 m tall), numerous
sheaths:	round, closed, very pubescent when young, with transparent margins
ligules:	membranous (to 2 mm long), truncate
blades:	flat (to 40 cm long, to 12 mm wide), lax, both surfaces pubescent; upper surface grooved; lower surface with a prominent midvein
rhizomes:	short

Inflorescence Characteristics

type:	panicles (to 20 cm long), erect, open, elevated high above foliage; branches whorled at base of the inflorescence; drooping at maturity
spikelets:	5–13-flowered (to 3 cm long), rounded to flattened, pointed; glumes unequal (to 15 mm long), glabrous; midveins prominent, with tiny barbs and extending into a short awn; lemmas rounded, slightly toothed at the tip
awns:	lemmas awned (to 10 mm long) from between the teeth; glumes awn-tipped to short-awned

Distribution and Habitat

Meadow brome was introduced from Turkey in 1949, 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 used as a component of irrigated pasture mixtures or planted in areas where smooth brome is well adapted.



Meadow brome

Under dryland conditions, it is planted only in the eastern one-half of the state. It responds well to nitrogen fertilizer.

Uses and Values

Forage. 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 seasonal distribution of forage much like that of orchardgrass. 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 compatible with alfalfa and is not as aggressive as smooth brome in competing with alfalfa. Forage quality is excellent both for grazing and when cut as hay. It responds well to deferred rotation grazing systems.

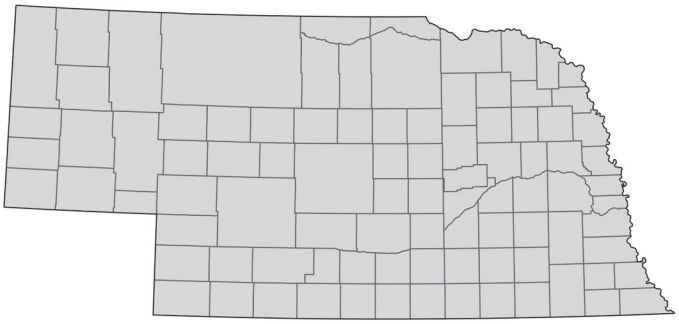
Establishment. Meadow brome has excellent seedling vigor and stands are easy to establish. Several cultivars have been developed. It is winter hardy and long-lived. With time, it may become a more important grass in Nebraska as more emphasis is placed on special use grasses in forage systems.

Restoration. Meadow brome is an introduced species and is not used in prairie restorations.

Wildlife. Deer, elk, and pronghorn graze the foliage of meadow brome.

Ornamental. Meadow brome has been used in border plantings.

Smooth brome



COMMON NAME:	Smooth brome
Species:	*Bromus inermis* Leyss.
Life Span:	Perennial
Origin:	Introduced
Season:	Cool
Growth Form:	Sod-forming
Flowering:	May to July

Vegetative Characteristics

culms:	erect to rarely decumbent (to 1.2 m tall), glabrous
sheaths:	round, closed; glabrous to slightly scabrous, may have long hairs; prominently veined; margins fused
ligules:	membranous (to 2.5 mm long), obtuse, erose
blades:	flat (to 40 cm long, to 15 mm wide), folded below, occasionally with hairs; margins with tiny barbs; with a conspicuous "W" or "M" constriction on upper portion
rhizomes:	strongly rhizomatous, extensively creeping

Inflorescence Characteristics

type:	panicles (to 24 cm long), narrow to somewhat open; branches ascending; lower branches in whorls; becoming purplish or brownish with maturity
spikelets:	5–13-flowered (to 4 cm long, to 20 mm wide long), lemmas rounded on the back (to 14 mm long), pointed, 2-lobed (to 1.5 mm long) at tip
awns:	lemmas awnless or with a short awn (to 2 mm)
glumes:	glumes unequal; first glume 1- or 3-veined (to 8 mm long), second 3-veined (to 10 mm long), glabrous to puberulent

Distribution and Habitat

Smooth brome was introduced from Europe in the 1880s. It has long been seeded as a cultivated pasture grass in Nebraska. It is common throughout the state. It grows along roadsides and ditches, in pastures, disturbed areas, and waste places. It is common in irrigated pastures in central and western Nebraska.

Uses and Values

Forage. Smooth brome is a cool-season grass which produces abundant forage in the spring and late summer

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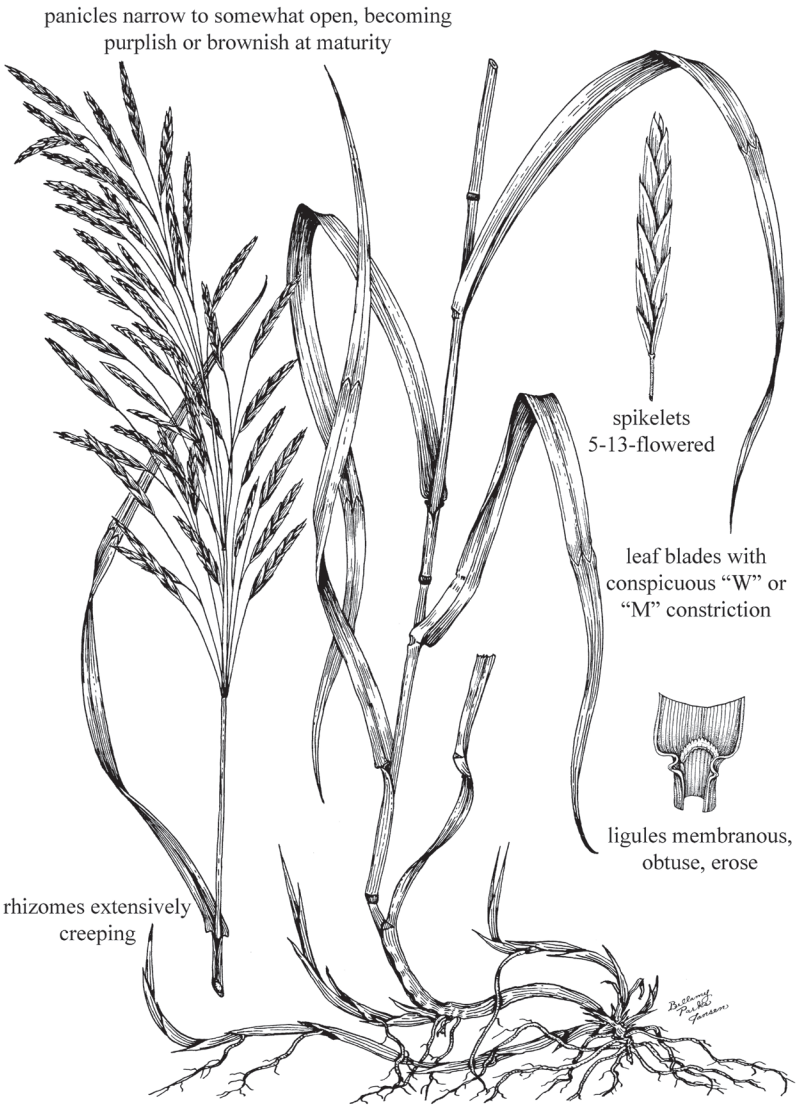
for hay or pasture. Growth is normally sufficient to allow grazing by late April or early May. It is quite palatable for all classes of livestock. When mature, palatability and forage quality drop sharply. Nitrogen fertilization is usually required to maintain high yield even when seeded with a legume. 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.

Establishment. 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, it is limited to more favorable conditions such as on subirrigated and overflow ecological sites. Under irrigation smooth brome is 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.

Restoration. Smooth brome is an introduced species and is not used in prairie restorations. In eastern Nebraska, it can invade prairies and become a major weedy species. It is difficult to control, but late spring prescribed burning can reduce smooth brome in prairies.

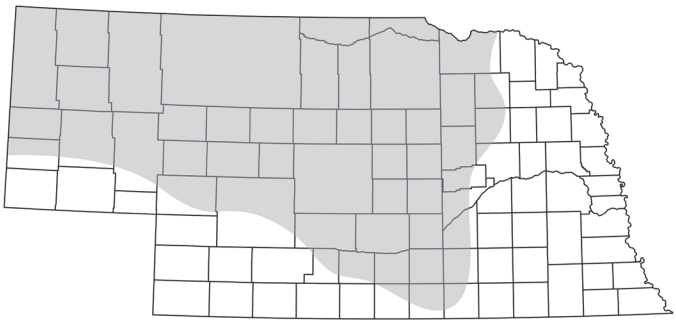
Wildlife. Smooth brome provides good forage for big game. While it is no longer seeded on Nebraska roadsides, it is common in older roadside seedings where it provides nesting cover for pheasants. It is sometimes mixed with other grasses and planted for wildlife habitat.

Ornamental. Smooth brome is an aggressive, invasive species and is not used as an ornamental.



Smooth brome

Creeping foxtail



COMMON NAME:	Creeping foxtail
Species:	*Alopecurus arundinaceus* Poir.
Life Span:	Perennial
Origin:	Introduced
Season:	Cool
Growth Form:	Sod-forming
Flowering:	May to August

Vegetative Characteristics

culms:	erect (to 1.2 m tall), straight, stout
sheaths:	round, open, margins overlapping, upper portion somewhat inflated, finely hairy, purple-tinged at base, sometimes strongly angled away from culm; collar broad, divided
ligules:	membranous (to 5 mm long), rounded to acuminate
blades:	flat (to 40 cm long, to 12 mm wide), reduced above, upper surface smooth or scabrous
rhizomes:	dense, extensively creeping

Inflorescence Characteristics

type:	panicles (to 10 cm long, to 10 mm wide), dense, cylindrical, spike-like
spikelets:	1-flowered, oblong to long and narrow; glumes nearly equal (to 5.5 mm long), keeled, 3-veined, strong midvein, veins densely hairy; lemmas small (to 4 mm long), glabrous (3-)5-veined
awns:	lemma may have a short awn (to 6 mm long), straight or slightly geniculate

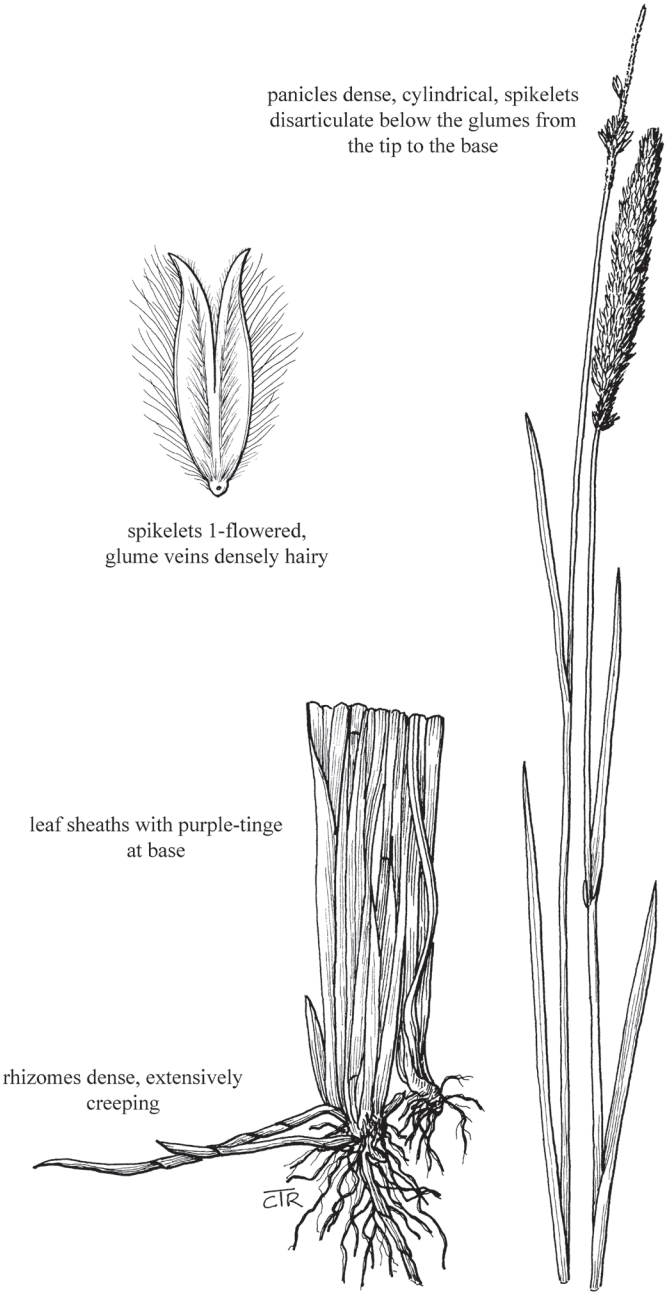
Distribution and Habitat

Creeping foxtail is native to Eurasia. The precise date of introduction into the United States is unknown, but it arrived in North Dakota in the early 1900s. In its native Eurasia, it grows on wet, saline soils and flood plains along rivers and streams. Because of its adaptation to wet sites, cold environments, and tolerance to saline 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. One common cultivar is Garrison, leading to the commonly used name of Garrison creeping foxtail. Areas that frequently flood and subirrigated ecological sites in the Sandhills are locations where this grass grows well.

Uses and Values

Forage. 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 acidic 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 strands are highly productive when they are well fertilized. It has been used in irrigated pasture mixtures for nearly 50 years because of its high forage quality, regrowth ability, and ability to spread rapidly into open areas within the stand.

Establishment. The light fluffy seed of creeping foxtail requires special equipment for both harvesting seed and planting. A few cultivars are available. Seedlings are



Creeping foxtail

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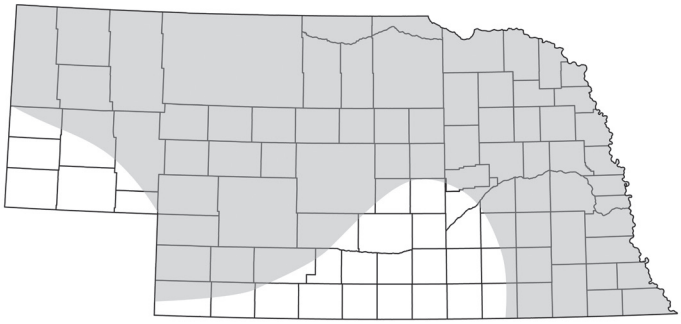
small and weak during the first four to six weeks after emergence, but grow rapidly thereafter, often producing rhizomes within two months. Once established, creeping foxtail is very competitive, forming a dense mat of roots near the soil surface.

Restoration. Creeping foxtail is an introduced species and is not used in prairie restorations.

Wildlife. Creeping foxtail provides nesting cover for waterfowl and upland game birds. Deer, elk, and pronghorn graze the foliage.

Ornamental. Creeping foxtail can be planted on wet sites and along streams and ponds. Caution must be used because it can spread rapidly.

Fowl mannagrass



COMMON NAME:	Fowl mannagrass
Species:	*Glyceria striata* (Lam.) Hitchc.
Life Span:	Perennial
Origin:	Native
Season:	Cool
Growth Form:	Sod-forming
Flowering:	May to July

Vegetative Characteristics

culms:	ascending (to 1.2 m tall), bases decumbent, stout to slender, glabrous, sometimes rooting at the nodes
sheaths:	slightly keeled, closed near the throat, scabrous
ligules:	membranous (to 5 mm long), obtuse or acute, sometimes closed in front
blades:	flat or folded (to 45 cm long, to 6 mm wide), smooth or scabrous
rhizomes:	creeping

Inflorescence Characteristics

type:	panicles (to 25 cm long), open; branches ascending from the base, then drooping
spikelets:	3–8-flowered (to 4 mm long); glumes unequal (first to 0.9 mm long, second to 2 mm long): both obtuse, margins hyaline, apices not erose, midveins terminate below apices, papery; lemmas obtuse (to 2 mm long), 7-veined, pubescent
awns:	none

Distribution and Habitat

Fowl mannagrass grows in wet meadows, along streams and ponds, and in other wet places. It can be the most abundant grass in wet habitats.

Uses and Values

Forage. Fowl mannagrass produces good forage for livestock. Palatability is good to very good for cattle and horses. It is a common component of hay harvested from the wetter areas of meadows. Its quality in hay is good if it is harvested before it reaches maturity.

Establishment. It is an important component of seeding mixtures for wet habitats.

Restoration. Fowl mannagrass should be a small component of seed mixtures used for restoration of wet sites in Nebraska.

Wildlife. Fowl mannagrass palatability is fair for deer, pronghorn, and elk. Its seeds are an important source of food for waterfowl. Geese eat the young shoots. It provides nesting cover for waterfowl and upland game birds.

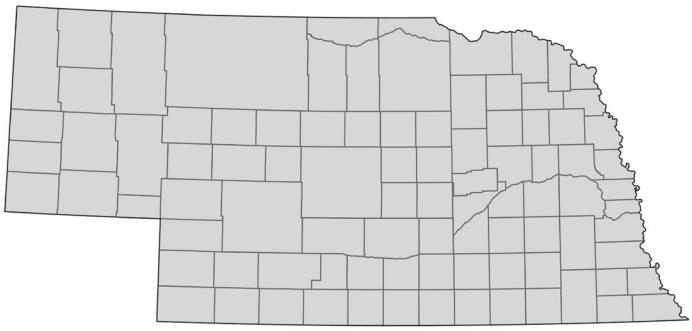
Ornamental. It is not used as an ornamental.

Other

American mannagrass [*Glyceria grandis* S. Watson] grows in the northern one-half of Nebraska. While it is similar in height to fowl mannagrass, American mannagrass has wider leaves (to 14 mm wide), a larger panicle (to 40 cm long), and the first glume is longer than 1 mm long. Its glumes are white, and its lemmas and leaf sheaths are purplish. American mannagrass grows in somewhat drier habitats than fowl mannagrass. Its uses and values are similar to those of fowl mannagrass.

Fowl mannagrass

Foxtail barley



COMMON NAME:	Foxtail barley
Species:	*Hordeum jubatum* L.
Life Span:	Perennial
Origin:	Native
Season:	Cool
Growth Form:	Bunchgrass
Flowering:	June to August

Vegetative Characteristics

culms:	ascending to erect (to 70 cm tall), decumbent below, tufted, slender, without hairs to softly pubescent; nodes dark
sheaths:	round, open, shorter than the internodes, glabrous to lightly pubescent
auricles:	absent or small (to 0.5 mm long), sometimes present on some leaves of a plant and not on other leaves
ligules:	membranous (up to 1 mm long), truncate, fringed with fine hairs
blades:	flat (to 15 cm long, to 5 mm wide), tapering to a fine point
rhizomes:	none

Inflorescence Characteristics

type:	spicate raceme (to 15 cm long, to 8 cm wide, including awns), nodding; 3 spikelets per node; center spikelet fertile; 2 lateral spikelets sterile and on pedicels; rachis readily breaking apart at maturity, often purple, turning pale with age

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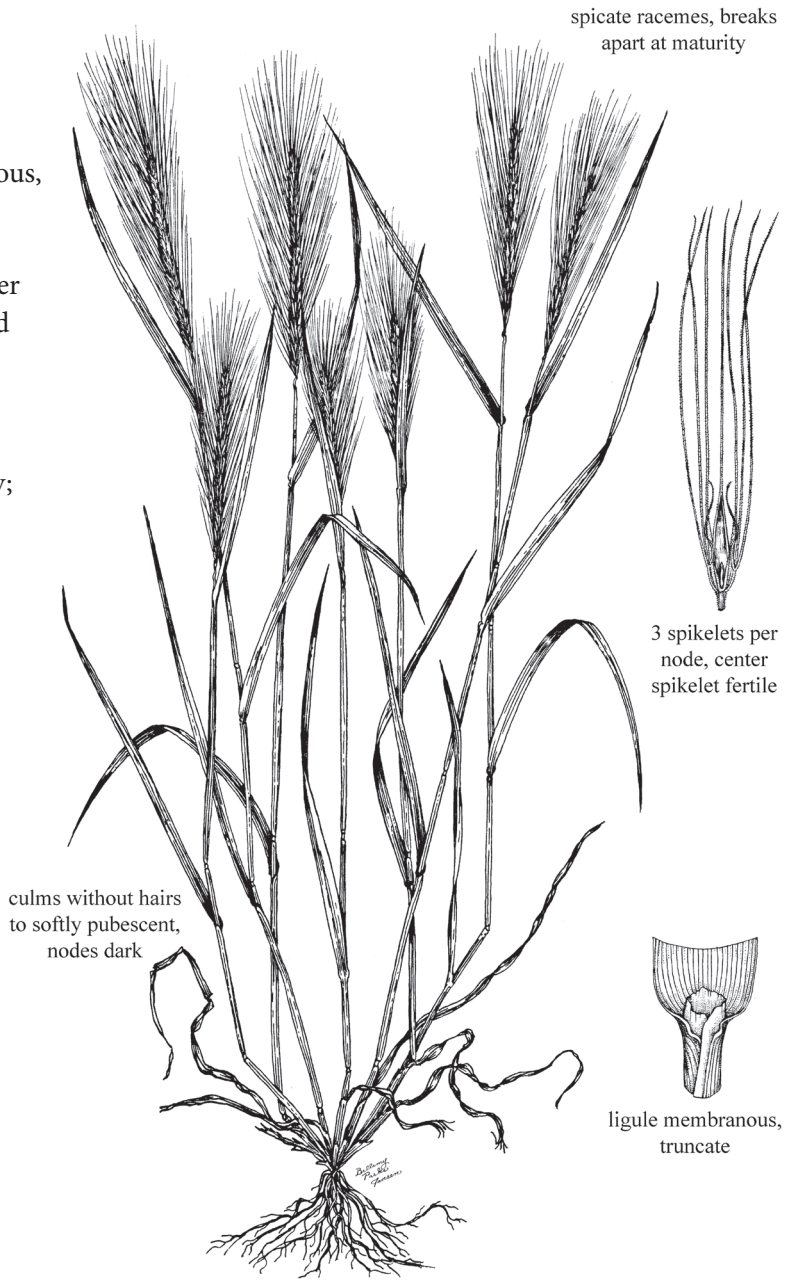
spikelets:	central spikelets 1-flowered; glumes setaceous (to 15 cm long including awns), spreading or straight, not becoming flattened toward base; fertile lemma narrow (to 8 mm long), glabrous, awned (awns to 8 cm long) delicate; lateral spikelets 1-flowered, sterile; glumes setaceous (to 8 cm long), wider and flatter at the base: lemma reduced (to 1.2 mm long), often appearing as little more than a series of 3 awns
awns:	lemma and glumes awned
other:	inflorescence breaks apart at maturity; may be enclosed in upper leaf sheath

Distribution and Habitat

This undesirable native grass is particularly abundant on saline subirrigated ecological sites but is also common on subirrigated, overflow, and wetland sites. It occurs in waste places, roadsides, ditches, and along streams. On upland silty and clayey sites in western Nebraska, foxtail barley grows only in areas where extra water accumulates such as seeps and around stock water developments. Foxtail barley 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. An abundance of foxtail barley in either native or seeded meadows usually indicates improper management. Dense stands are usually associated with disturbance by improper grazing or close mowing. Since foxtail barley is a short-lived perennial and new seedlings come primarily from the current year's seed crop, mowing to prevent seed production is a potential control measure. Chemical control in pastures is impractical, except when used in conjunction with seeding to more desirable grasses.



Foxtail barley

Uses and Values

Forage. This cool-season grass is usually rated as poor forage for both cattle and sheep, but it occasionally is lightly grazed by cattle before inflorescence development. Inflorescences are not only unpalatable but may be 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.

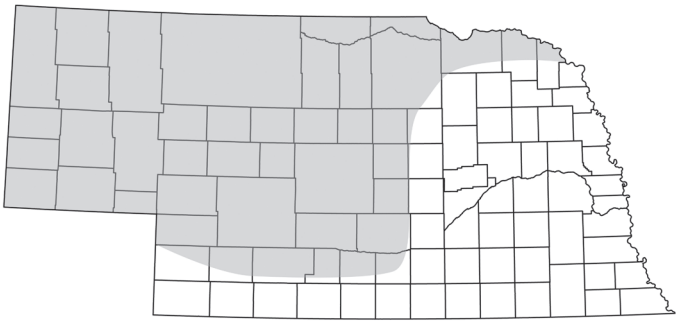
Establishment. Foxtail barley is a weedy species and should not be used in grassland seedings.

Restoration. It is not a desirable species for prairie restorations.

Wildlife. Foxtail barley seeds are eaten by small mammals.

Ornamental. The silky inflorescences make foxtail barley an attractive plant. It has been used in fresh cut and dried flower arrangements. It should be planted with caution because it is a weedy species and can spread rapidly.

Green needlegrass



COMMON NAME:	Green needlegrass
Species:	*Nassella viridula* (Trin.) Barkworth [= *Stipa viridula* Trin.]
Life Span:	Perennial
Origin:	Native
Season:	Cool
Growth Form:	Bunchgrass
Flowering:	June to July

Vegetative Characteristics

culms: erect or from a geniculate base (to 1.2 m tall), straight, nodes may be purple; glabrous or with very short hairs below the nodes

sheaths: round to slightly flattened, prominently veined, overlapping, may have long hairs; collars hairy, especially on margins

ligules: membranous (upper ones to 1.1 mm long, lower ones under 1 mm long), firm, rounded to truncate, may be erose

blades: flat (to 48 cm long, to 4 mm wide), rolled at maturity, glabrous but pubescent near the collar, margins scabrous

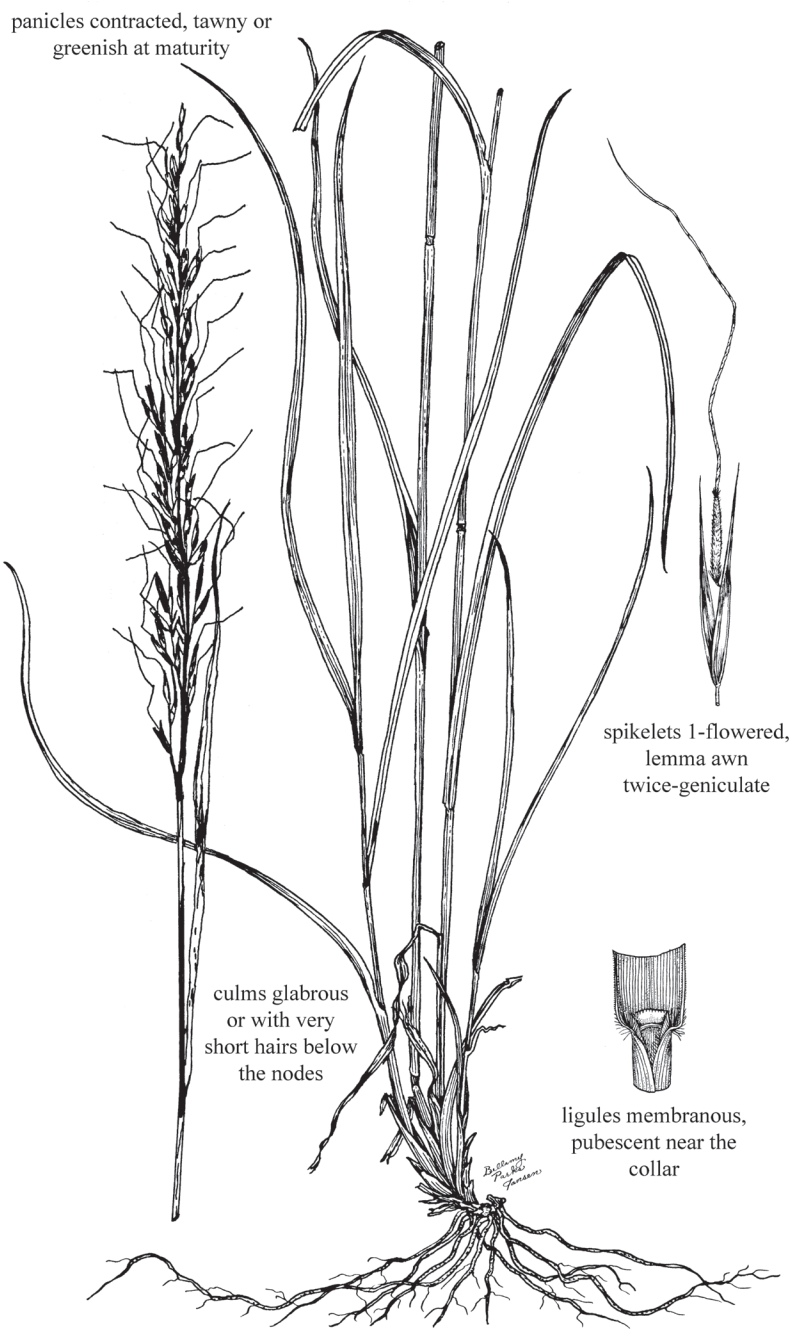
rhizomes: none

Inflorescence Characteristics

type: panicles (to 25 cm long, to 3 cm wide), contracted; branches in pairs, short; lower nodes of the panicle villous; tawny or greenish at maturity

spikelets: 1-flowered (to 14 mm long); glumes nearly equal (to 14 mm long), exceed the lemma; narrow, with transparent pointed tip; glabrous; 3-veined; lemmas narrow (to 7 mm long), brownish and plump (more than 1 mm wide) at maturity, indurate, slightly pubescent, 5-veined; callus broad and short; crown with a tuft of hairs (longest to 1 mm)

awns: lemma awned; awn twice-geniculate (to 3.5 mm long), spirally twisted below bend; upper segment not twisted (often 1.5 cm or longer)



Green needlegrass

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Distribution and Habitat

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

Uses and Values

Forage. This cool-season grass starts growth early in the spring. Except in dry years, it remains green through the summer. It regrows in the fall if soil moisture is sufficient. Forage value is good, and plants are grazed throughout the year. It stands up well to winter grazing. Green needlegrass responds well to spring grazing deferment. Awns are not troublesome as in other needlegrasses. On favorable sites, it may furnish a considerable quantity of good quality hay.

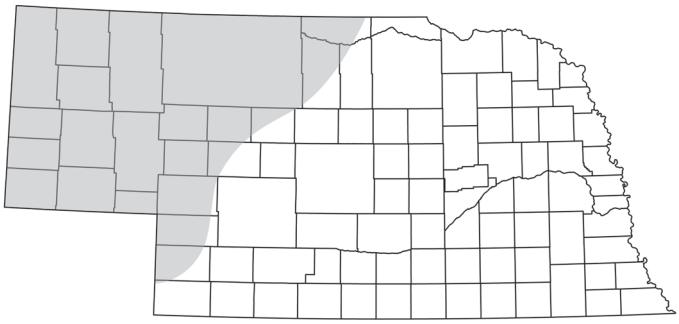
Establishment. Green needlegrass is used extensively in upland restorations and rangeland seedings because of its early spring growth, long green period, high cold tolerance, and good seedling vigor. However, western wheatgrass has been more successful than green needlegrass in native grass seedings in central and western Nebraska. The major difficulty in establishing stands of green needlegrass has been high seed dormancy, particularly in new seed.

Restoration. Green needlegrass should be an important component of prairie restorations in the northern portion of the Nebraska Panhandle.

Wildlife. Green needlegrass is readily grazed by deer, bighorn sheep, and elk. It is used to a lesser extent by pronghorn. Big game do not graze it after it reaches maturity. It is valuable for upland game bird cover and nesting. Birds and small mammals eat the seeds.

Ornamental. Green needlegrass has had limited use as a specimen planting.

Indian ricegrass



COMMON NAME:	Indian ricegrass
Species:	*Stipa hymenoides* Roem. & Schult. [= *Oryzopsis hymenoides* Roem. & Schult], [= *Achnatherum hymenoides* (Roem. & Schult.) Barkworth]
Life Span:	Perennial
Origin:	Native
Season:	Cool
Growth Form:	Bunchgrass
Flowering:	May to July

Vegetative Characteristics

culms:	erect to ascending (to 80 cm tall), slender, stiff, densely tufted
sheaths:	round, open, glabrous or slightly scabrous, shorter than the internodes, overlapping below; fringed with hairs on collar and on one margin
ligules:	membranous (to 9 mm long), acuminate, entire or lacerate
blades:	rolled (to 40 cm long, to 2 mm wide), slender; midrib prominent below
rhizomes:	none

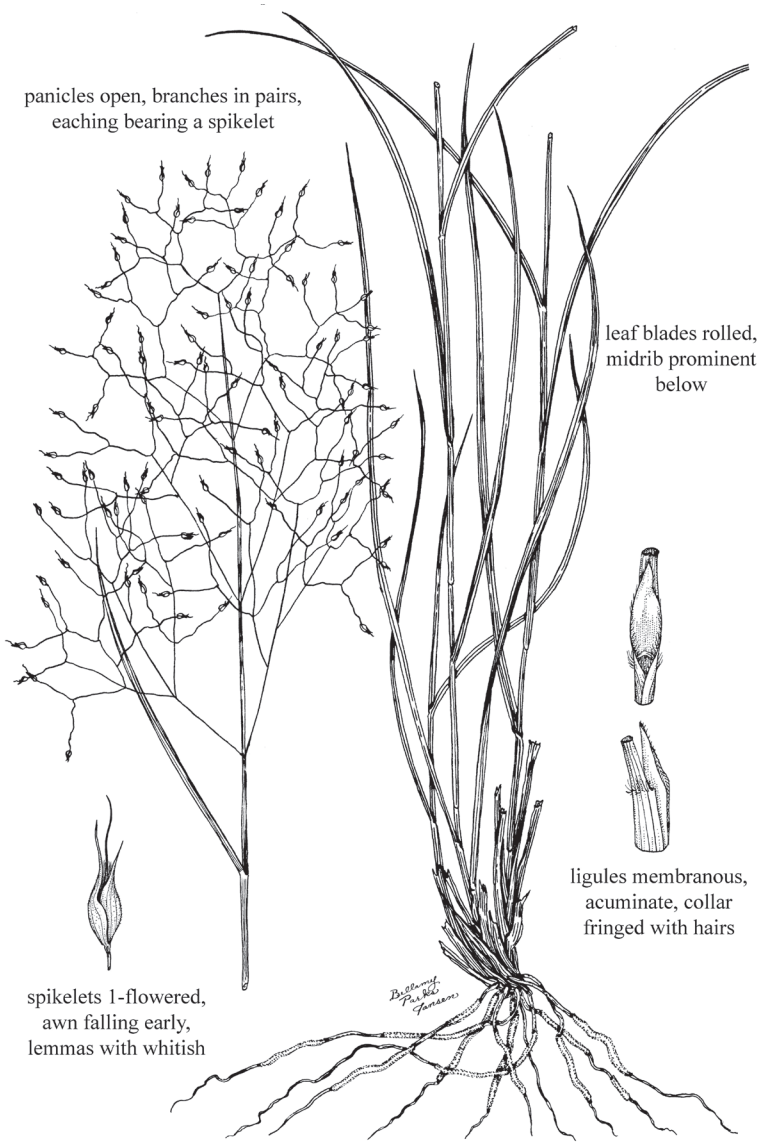
Inflorescence Characteristics

type:	panicles (to 25 cm long, to 10 cm wide) open; branches spreading, curved, in pairs, each bearing one spikelet

spikelets:	1-flowered (to 8 mm long); glumes nearly equal; first longest (to 8 mm long), second shorter (to 7.5 mm long), broad, thin, may be slightly hairy; 3-veined, veins prominent; lemmas brown to black at maturity (to 5 mm long), indurate, margins not or slightly overlapping, whitish hairs (to 4.5 mm long) on lemmas; dark brown to black at maturity, awned apically
awns:	lemmas awned (to 8 mm), stout, straight to wavy, falling early; glumes sometimes short-awned

Distribution and Habitat

This native grass is most common on choppy sands, sands, and sandy ecological sites, and it also occurs on silty, limy upland, thin loess, and shallow sites in western and northern Nebraska. It is also found on moderately saline but rather well-drained soils.



Indian ricegrass

Uses and Values

Forage. 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 grazing deferment. The old stubble gives some protection against close grazing. Where Indian ricegrass plants are locally abundant in western Nebraska, it makes up a substantial portion of the forage production.

Establishment. Indian ricegrass should be included in seeding mixtures for rangeland restoration in central and western Nebraska. Indian ricegrass withstands dry conditions, is somewhat tolerant of alkaline areas, and is adapted to soils of low fertility. Its major limitation has been high seed dormancy which results in poor first year stands. Seeds can be treated to reduce dormancy. Several cultivars are available.

Restoration. Indian ricegrass should be a component of prairie restorations in the Sandhills and western Nebraska.

Wildlife. Indian ricegrass produces an abundance of plump seeds with protein levels of 15 to 17%. The seed is excellent food for upland game birds, songbirds, and small mammals. Its high quality forage is utilized by big game animals, and it is especially valuable for winter grazing.

Ornamental. The large, open inflorescences are attractive additions to the landscape in borders and rock gardens. The inflorescences are used in fresh and dried flower arrangements.

Other

Littleseed ricegrass [*Piptatherum micranthum* (Trin. & Rupr.) Barkworth], [= *Oryzopis micrantha* (Trin. & Rupr.) Thurb.] is found over much of the same area of Nebraska. Its lemmas have no hair, are shiny, and are small (less than 3 mm long). Also, its glumes are smaller (less than 4 mm long).

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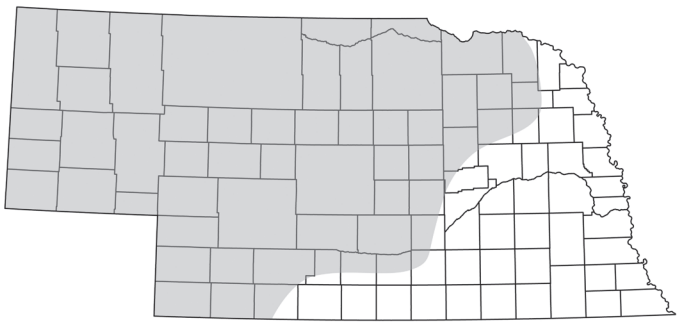
Needleandthread



COMMON NAME:	Needleandthread
Species:	*Hesperostipa comata* (Trin. & Rupr.) Barkworth [= *Stipa comata* Trin. & Rupr.]
Life Span:	Perennial
Origin:	Native
Season:	Cool
Growth Form:	Bunchgrass

Vegetative Characteristics

culms:	erect to ascending (to 1.2 m tall), densely tufted; nodes sometimes with hairs, otherwise culm is without hair
sheaths:	round, open, usually longer than the internodes, smooth to slightly scabrous, prominently veined
ligules:	membranous (to 6 mm long); acuminate, split or widely notched at top, becoming lacerate
blades:	flat or folded or rolled (to 40 cm long, to 3 mm wide), slightly scabrous on the upper surface
rhizomes:	none

Inflorescence Characteristics

type:	panicles (to 30 cm long), contracted to open, loose, partially enclosed in uppermost leaf sheath; branches slender, scabrous; spikelets few
spikelets:	1-flowered; glumes slightly unequal (to 3 cm long), first longest; narrowing to slender tips, 3–7-veined, persistent; lemmas relatively large (to 15 mm long), pale to brown at maturity, indurate, base of spikelet covered with stiff hairs (to 0.5 mm long); calluses (base of the lemma) sharply pointed
awns:	lemmas awned; awns flexuous (to 20 cm long), curling when dry; lowest segment twisted and with short hairs; terminal segment not twisted, smooth to slightly scabrous
other:	lower part of inflorescence enclosed in a loose, inflated sheath

Distribution and Habitat

This native grass is common to abundant on most upland sites in central and western Nebraska. In the Sandhills, it is most common on sands and sandy ecological 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 rangelands.

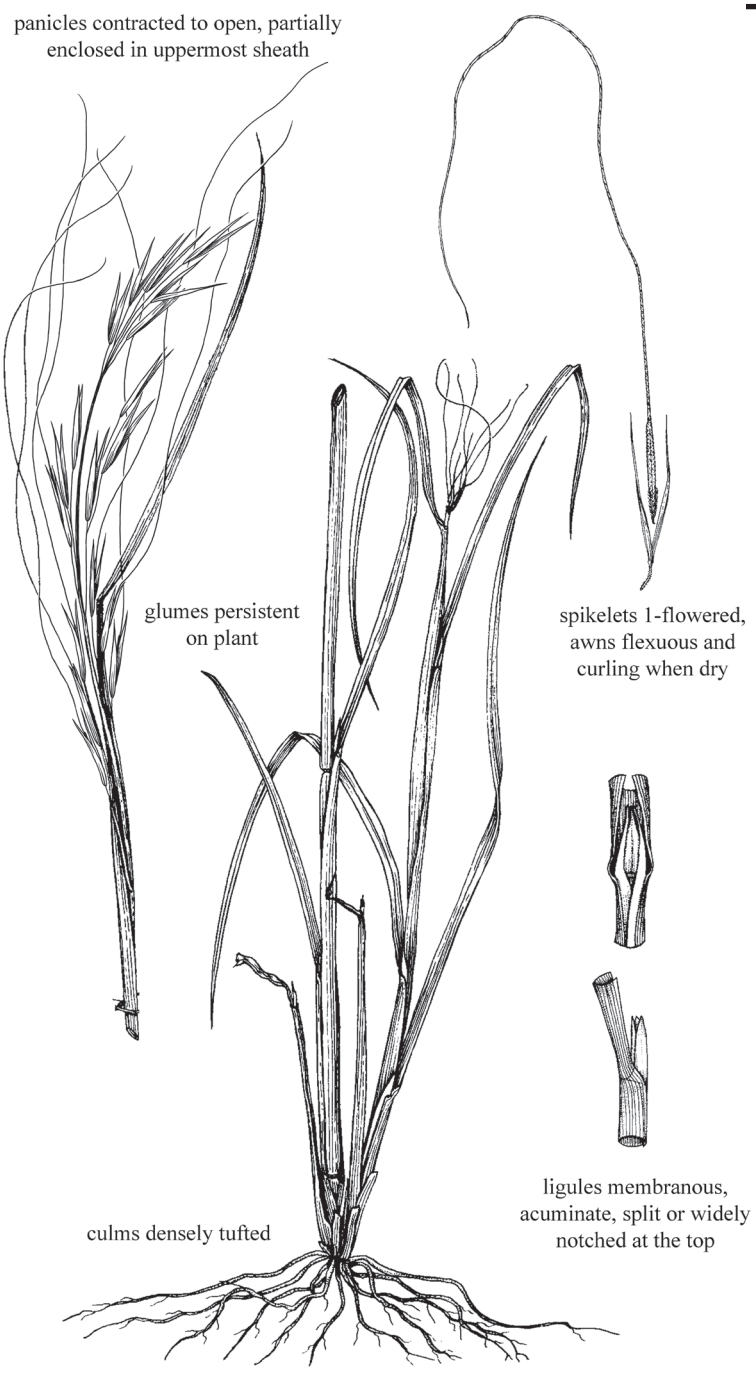
Uses and Values

Forage. This cool-season grass produces early spring forage and remains actively growing until about mid-June. During this period and until the inflorescences begin to form, needleandthread is very palatable and nutritious. During midsummer, it 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 is an important grass because of its widespread distribution and abundance in the rangeland regions of Nebraska. Continued heavy, early spring grazing is harmful to needleandthread. The awns may be troublesome and cause mechanical injury to grazing animals,

but they 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.

Establishment. Seeding of needleandthread is more common in states to the west and southwest of Nebraska. In Nebraska, it can be an important species for upland seedings. The awns make seed harvest and handling difficult, and they must be removed in order for the seeds to pass through a drill.



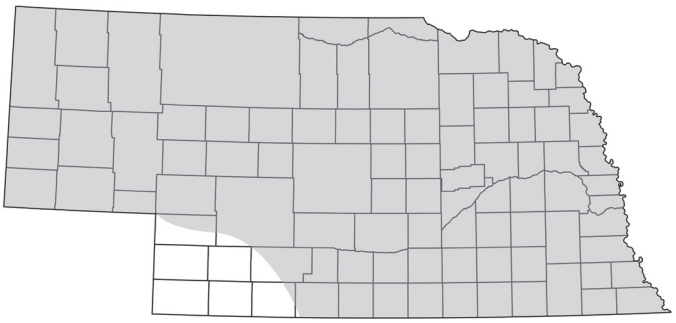
Needleandthread

Restoration. Needleandthread should be an important component of prairie restorations in central and western Nebraska.

Wildlife. Needleandthread produces poor to fair forage for big game. It may be extensively utilized by elk, bighorn sheep, and pronghorn in winter and by deer in spring. Seeds provide food for small mammals and birds.

Ornamental. Its use as an ornamental plant is infrequent.

Orchardgrass



COMMON NAME:	Orchardgrass
Species:	*Dactylis glomerata* L.
Life Span:	Perennial
Origin:	Introduced
Season:	Cool
Growth Form:	Bunchgrass
Flowering:	May to September

Vegetative Characteristics

culms:	erect (to 1.1 m tall), glabrous
sheaths:	flattened or keeled; closed for one-half of their length, may be scabrous, shorter than the internodes
ligules:	membranous (to 9 mm long), obtuse to acute, erose to lacerate
blades:	flat or folded (to 40 cm long, to 11 mm wide), smooth to scabrous on both surfaces, glabrous; midveins prominent, white
rhizomes:	rarely with short rhizomes, but it has the appearance of a bunchgrass

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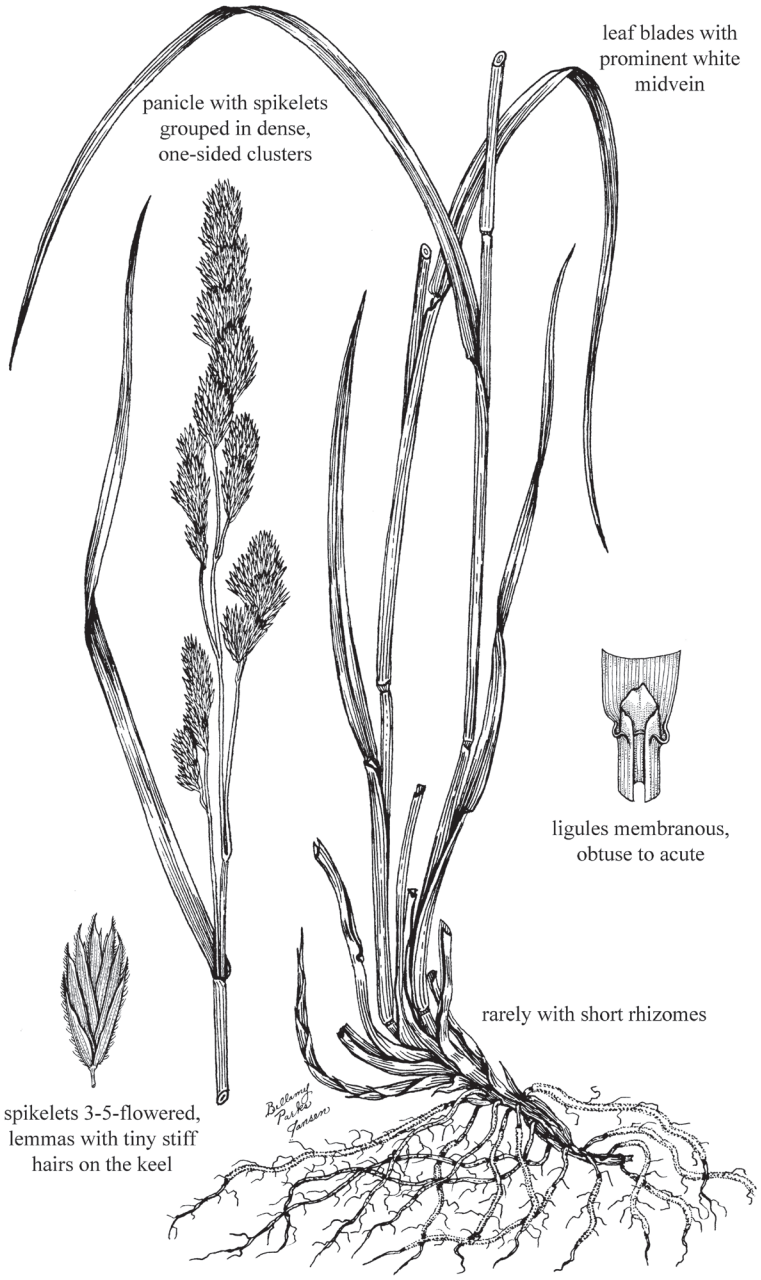
Inflorescence Characteristics

type:	panicles (to 20 cm long, to 15 cm wide); with spikelets grouped together in dense, one-sided clusters at the end of panicle branches; lower 2–3 panicle branches long; upper branches very short
spikelets:	3–5-flowered (to 9 mm long); glumes about equal (to 7 mm long), flattened, pointed, 1-veined, hairs on the vein; lemmas flattened (to 7 mm long), 5-veined, the keel with tiny stiff hairs, margins transparent
awns:	glumes and lemmas sharply pointed to awn-tipped (to 1 mm long)



Orchardgrass

Distribution and Habitat

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

Uses and Values

Forage. 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 colonies from forming, it should be grazed or hayed while it is actively growing. Periodic grazing in a rotation system is the most effective way of maintaining a continuous yield of palatable forage. Orchardgrass recovers from grazing or mowing more rapidly than smooth brome and continues growth during midsummer when smooth brome becomes somewhat dormant. Rapid recovery from defoliation and its ability to grow in midsummer results in a more uniform yield during the growing season.

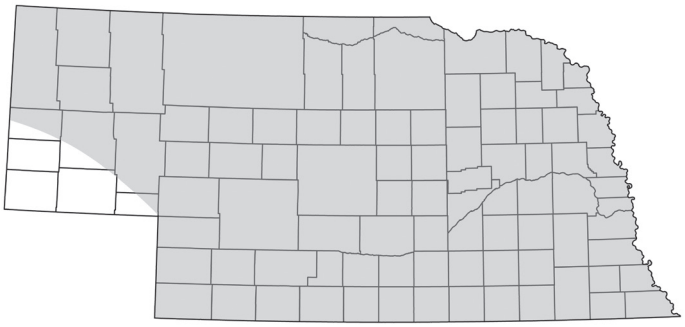
Establishment. Orchardgrass is valuable as an irrigated or subirrigated hay or pasture grass in Nebraska. It is shade tolerant, moderately heat and cold resistant, and establishes rapidly. It is sometimes injured if it starts to grow during a warm period in February and then is subjected to a period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

Restoration. Orchardgrass is an introduced species and is not used in prairie restorations.

Wildlife. Orchardgrass is excellent for big game, especially deer and elk. Geese graze the foliage. It provides nesting, brood rearing, escape cover, and winter cover for pheasants and other upland game birds. Small mammals and birds eat the seeds.

Ornamental. Orchardgrass is considered to be a weed in lawns, but it is occasionally seeded alone for use as a low maintenance turf. It grows relatively well in shady areas.

Perennial ryegrass



COMMON NAME:	Perennial ryegrass
Species:	*Lolium perenne* L.
Life Span:	Perennial
Origin:	Introduced
Season:	Cool
Growth Form:	Bunchgrass
Flowering:	May to July

Vegetative Characteristics

culms:	erect or from a decumbent base (to 1 m tall), glabrous, internodes hollow
sheaths:	round to slightly keeled, margins open
auricles:	slender (to 2 mm long), sometimes absent
ligules:	membranous (to 1.5 mm long)
blades:	flat to slightly involute (to 25 cm long, to 10 mm wide), glabrous to scabrous
rhizomes:	none

Inflorescence Characteristics

type:	spikes (to 30 cm long), erect, 1 spikelet per node, oriented edgewise to the rachis; rachis not readily disarticulating
spikelets:	5–12-flowered (to 20 mm long, to 8 mm wide); first glumes absent on all except the terminal spikelet; 3–5-veined; second glumes to 10 mm long, one-third to one-half spikelet length, 5–9-nerved; lemmas crowded (to 8 mm long), 5-veined, minutely bifid, awnless to short-awned
awns:	upper lemmas sometimes awned (to 8 mm long), attached between bifid lobes

Distribution and Habitat

Perennial ryegrass is a short-lived perennial and is most common in dark, rich soils of lawns, pastures, roadsides, fields, ditches, and waste areas. It does not withstand severe winters or hot, dry weather. It is the predominant forage grass in Europe and has been seeded for pasture, hay, and turf in the United States. In Nebraska, it has occasionally been planted for hay but most of the plants found have escaped from turf seedings.

Perennial ryegrass

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Uses and Values

Forage. This cool-season grass is rated as good forage for cattle, horses, and sheep if grazed before inflorescence development.

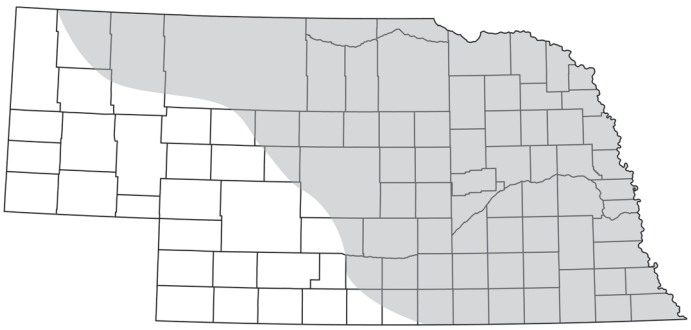
Establishment. Perennial ryegrass is an introduced species and should not be used in grassland seedings.

Restoration. It should not be used for prairie restorations.

Wildlife. Perennial ryegrass seeds are eaten by small mammals.

Ornamental. It is used for turf but not as an ornamental. It can quickly spread in lawns and gardens.

Porcupinegrass



COMMON NAME:	Porcupinegrass
Species:	*Hesperostipa spartea* (Trin.) Barkworth [= *Stipa spartea* Trin.]
Life Span:	Perennial
Origin:	Native
Season:	Cool
Growth Form:	Bunchgrass
Flowering:	June to July

Vegetative Characteristics

culms:	erect to ascending (to 1.4 m tall), tufted
sheaths:	round, open, mostly overlapping, prominently veined, margins ciliate
ligules:	membranous, rather firm (3–7 mm long), truncate to acute, usually entire, sometimes split
blades:	flat or rolled (to 45 cm long, to 5 mm wide), scabrous on upper surface and margins, prominently veined, may have short stiff hairs on upper surface, smooth and shiny below
rhizomes:	none

Inflorescence Characteristics

type:	panicles (to 35 cm long), open, lax, nodding; branches few, slender, each with 1 or 2 spikelets
spikelets:	1-flowered, pedicellate; glumes unequal (to 4.5 cm long), first glume longest, 7–9-veined, tapering to a point; lemmas narrow (to 25 mm long), brown, rigid, with long hairs, calluses (bases of lemmas) sharply pointed
awns:	lemmas awned; awns twice geniculate (to 20 cm long), spirally twisted on lower segment, top segment is straight and not twisted
other:	panicle not partially enclosed in the sheath

Distribution and Habitat

This native grass 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 scattered on Sandhill uplands, especially the eastern Sandhills. Its range overlaps that of needleandthread in the Sandhills and on clayey sites along the northern boundary of Nebraska.

Uses and Values

Forage. 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. Continuous, heavy spring grazing can be damaging to porcupinegrass. The awned seeds are very coarse and may cause serious mechanical injury to livestock. Porcupinegrass is largely avoided from the time the inflorescences 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 before inflorescence development.

Establishment. Porcupinegrass is an important species for grassland seedings in eastern Nebraska. Awns make seed harvesting and handling difficult, and they

must be removed in order for the seeds to pass through a drill. Commercial seed is not always available.

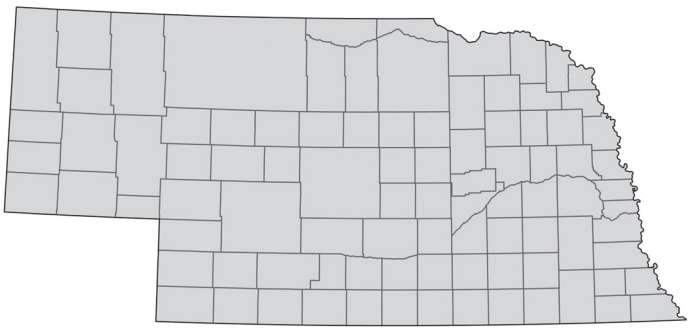
Restoration. Porcupinegrass should be used in Tallgrass Prairie restorations in eastern Nebraska.

Wildlife. Porcupinegrass provides fair to poor forage for big game. The seeds are important food for birds and small mammals.

Ornamental. Porcupinegrass has been used as a specimen planting, but its use as an ornamental is infrequent.

Porcupinegrass

Prairie junegrass



COMMON NAME:	Prairie junegrass
Species:	*Koeleria macrantha* (Ledeb. Schult. [= *Koleria pyramidata* (Lam.) P. Beauv.]
Life Span:	Perennial
Origin:	Native
Season:	Cool
Growth Form:	Bunchgrass
Flowering:	May to August

Vegetative Characteristics

culms:	erect (to 60 cm tall), tufted, with a few fine hairs just below the inflorescence
sheaths:	round, distinctly veined, hairs pointing backward, collars with long hairs on the margin; mostly basal
ligules:	membranous (to 1.5 mm long), may be minutely ciliate, obtuse to truncate, erose to entire
blades:	flat or rolled (to 25 cm long, to 3 mm wide), veins distinct, tips blunt; glabrous to pubescent on the upper surface
rhizomes:	none

Inflorescence Characteristics

type:	panicles (to 8 cm long, to 3 cm wide), contracted, spike-like, dense, often lobed toward the base; branches ascending, spreading at anthesis
spikelets:	2–5-flowered; glumes nearly equal (to 6 mm), unlike in shape; first 1-veined, narrow; second shorter than the first floret, 3-veined and broader above the middle, shiny and translucent; lemmas narrow (to 6 mm long), flattened, tapering at both ends, sharply pointed, shiny

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awns: lemma may have a short awn at the tip

Distribution and Habitat

This native grass is widely distributed on Nebraska uplands and occurs on all ecological sites except wetland. It grows on a wide variety of soil textures from clay to sand, but is most abundant in sandy soils with low fertility. It does not compete well with tall grasses in moist bottoms and draws. It is commonly associated with little bluestem, needleandthread, green needlegrass, and blue grama. However, it is less drought tolerant than blue grama.

Uses and Values

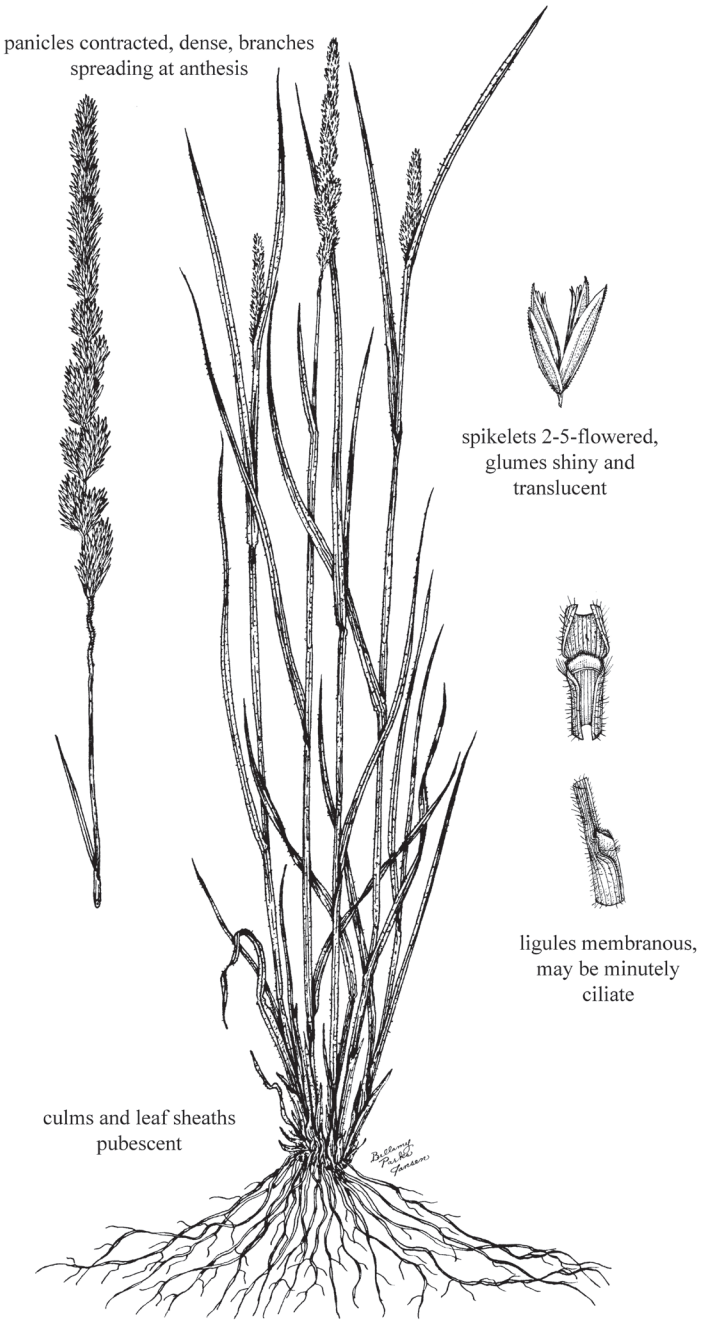
Forage. This cool-season grass grows early in the spring. It is quite palatable to all classes of livestock in the spring and again in the fall after curing. It is less palatable during seed production and until curing is completed. The inflorescences are usually ignored by grazing animals. Although 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. It produces satisfactory hay, but areas where prairie junegrass is common often have low yields.

Establishment. Prairie junegrass may be included in grass mixtures for rangeland seeding across much of Nebraska. It is especially important in seedings in the Mixed Grass Prairie region.

Restoration. It should be used in seeding mixtures used to restore Mixed Grass Prairies.

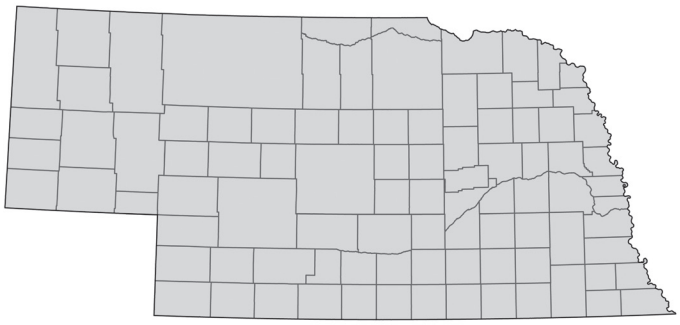
Wildlife. Prairie junegrass is grazed by deer, bighorn sheep, pronghorn, and elk. Its seeds are eaten by upland game birds and small mammals.

Ornamental. Its light colored inflorescences are attractive, and it is used in border plantings and as an accent planting in rock gardens.



Prairie junegrass

Prairie wedgescale



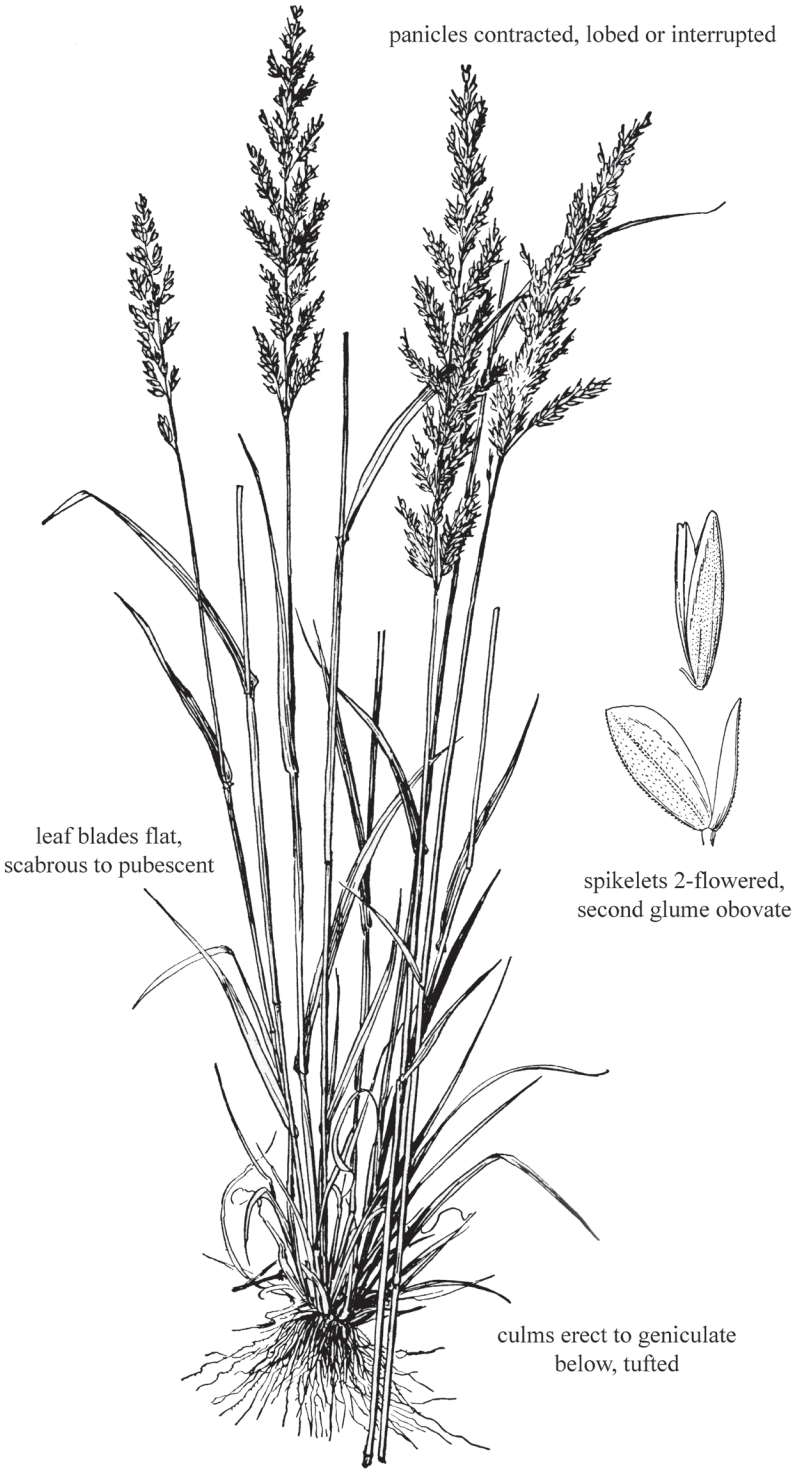
COMMON NAME:	Prairie wedgescale
Species:	*Sphenopholis obtusata* (Michx.) Scribn.
Life Span:	Perennial
Origin:	Native
Season:	Cool
Growth Form:	Bunchgrass
Flowering:	May to August

Vegetative Characteristics

culms:	erect to geniculate below (to 1.2 m tall), tufted, glabrous, internodes hollow
sheaths:	round, open, glabrous to scabrous to pubescent
ligules:	membranous (to 3 mm long), erose to lacerate
blades:	flat (to 13 cm long, to 8 mm wide), scabrous to pubescent
rhizomes:	none

Inflorescence Characteristics

type:	panicles (to 25 cm long, to 3 cm wide), contracted, erect to nodding, lobed or interrupted
spikelets:	2-flowered; unequal; first glume 1-veined (to 2.2 mm long), narrow, less than one-third second glume width; second glume 3–5-veined (to 2.9 mm long), obovate, apices rounded; lemmas obscurely veined (to 6 mm long), smooth to scabrous
awns:	none



Prairie wedgescale

Distribution and Habitat

This native grass grows in prairies, meadows, marshes, pastures, old fields, stream banks, and waste places. It is most common on moist silty ecological sites in eastern Nebraska. However, it does grow in sandy soils in central and western Nebraska.

Uses and Values

Forage. This cool-season grass grows early in the spring and produces good quality forage for all classes of livestock in the spring. It is less palatable during seed production and until curing is completed. It cures well and makes good hay if cut early, but productivity is low. Prairie wedgescale is a low forage producer.

Establishment. Prairie wedgescale seed is seldom available for seeding.

Restoration. A small amount of hand-harvested seed could be used in seeding mixtures used to restore prairie.

Wildlife. Prairie wedgescale is grazed by deer, pronghorn, and elk. Its seeds are eaten by upland game birds and small mammals.

Ornamental. It has been used in border plantings and as an accent planting in rock gardens.

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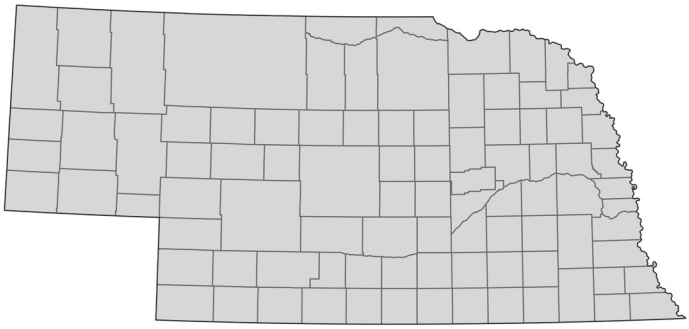
Quackgrass



COMMON NAME:	Quackgrass
Species:	*Elymus repens* (L.) Gould. [= *Agropyron repens* (L.) P. Beauv.]
Life Span:	Perennial
Origin:	Introduced
Season:	Cool
Growth Form:	Sod-forming
Flowering:	May to August

Vegetative Characteristics

culms:	erect to ascending (to 1.1 m tall), often geniculate, branched at the base, tangled, internodes hollow
sheaths:	round, glabrous to pilose
auricles:	small, generally conspicuous
ligules:	membranous (to 0.8 mm long), truncate
blades:	flat (to 30 cm long, to 12 mm wide), glabrous to sparsely pubescent above
rhizomes:	extensively creeping, yellowish to white (up to 3 m long), sharply pointed

Inflorescence Characteristics

type:	spikes (to 20 cm long), slender, loose to compact, somewhat resembling the slender heads of wheat; spikelets arranged in two rows, flat-wise to the rachis
spikelets:	3–8-flowered (to 20 mm long); nearly equal (to 12 mm long); first glume slightly shorter than the second glume; firm; 3–7-veined, acute, may be awn-tipped; lemmas 5-veined (to 3 mm long), glabrous to scabrous, awned
awns:	glumes may be awn-tipped or awnless; lemmas awned (to 5 mm long)

Distribution and Habitat

Quackgrass is native to Europe, however, it has become naturalized in Nebraska. It grows in moist areas of pastures, meadows, rangeland, lawns, roadsides, ditches, and cultivated fields. It is a serious invasive weed on cultivated land.

Uses and Values

Forage. Quackgrass furnishes fair to good forage for livestock. It is most palatable and nutritious in the spring. It can be cut for hay, but it may rapidly spread and become a serious weed.

Establishment. It is not recommended for seeding because of its ability to rapidly spread.

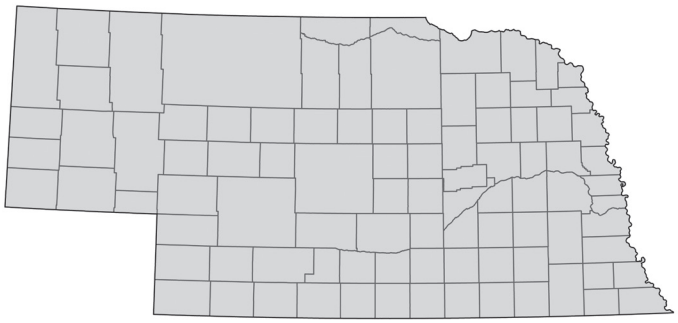
Restoration. Quackgrass is an introduced species and is not used in prairie restorations.

Wildlife. Deer, pronghorn, and small mammals utilize its forage. Prairie chickens, wild turkeys, and small mammals eat quackgrass seeds.

Ornamental. Quackgrass is not used as an ornamental because it rapidly spreads.

Quackgrass

Reed canarygrass



COMMON NAME:	Reed canarygrass
Species:	*Phalaris arundinacea* L.
Life Span:	Perennial
Origin:	Native and Introduced
Season:	Cool
Growth Form:	Sod-forming
Flowering:	May to July

Vegetative Characteristics

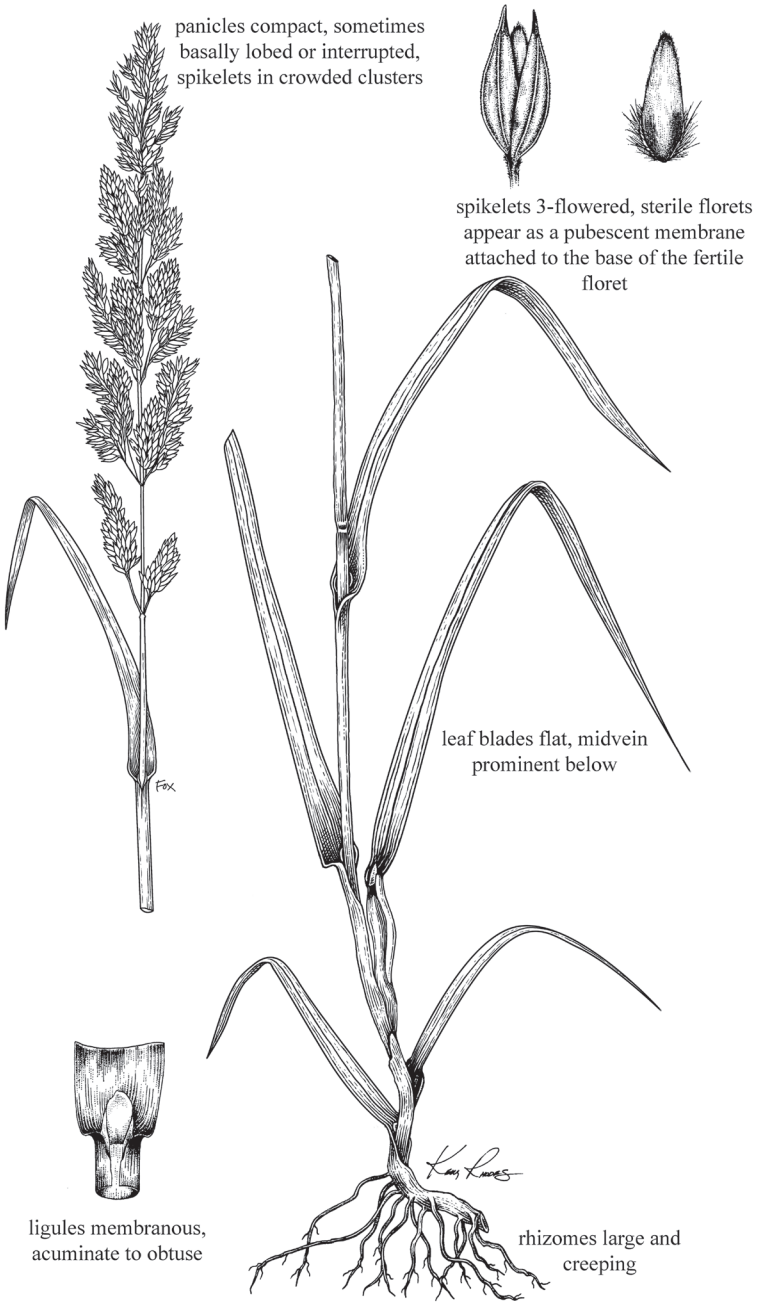
culms:	erect (to 1.5 m tall), coarse, glabrous, internodes hollow
sheaths:	round, longer than the internodes or the upper shorter, usually glabrous
ligules:	membranous (to 9 mm long), acuminate to obtuse, may be slightly toothed or lacerate
blades:	flat (to 45 cm long, to 20 mm wide) or slightly keeled, midvein prominent below, glabrous, margins scabrous
rhizomes:	large creeping rhizomes enable the plant to grow in large bunches or form a continuous sod

Inflorescence Characteristics

type:	panicles (to 18 cm long), compact, narrow, sometimes basally lobed or interrupted; spikelets in crowded clusters
spikelets:	3-flowered; glumes unequal (to 7 mm long), narrow, sharply pointed, flattened, 3-veined, minute teeth on the margins; 1 fertile floret (to 6 mm long) flanked by 2 sterile florets (to 2.5 mm long); sterile florets appear as a pubescent membrane attached to the base of the fertile floret, inseparable
awns:	none

Distribution and Habitat

Reed canarygrass is native to most parts of Nebraska. It is more widely distributed now than formerly, because it has been seeded extensively in wetland, subirrigated, and overflow sites. Most plant material used for these seedings originally came from Europe. These introduced plants are more aggressive than the native plants, and can become a problematic weed. It grows best on moist, cool sites and is found throughout the state on wet meadows and river banks and along drainage ditches.



Reed canarygrass

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Uses and Values

Forage. This cool-season grass grows rapidly very early in the spring. Rapid growth continues 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 30–40 cm in height. Reed canarygrass is known for its high yield of moderately palatable forage or hay on wetland ecological sites. Best quality hay is produced by mowing when the first inflorescences 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.

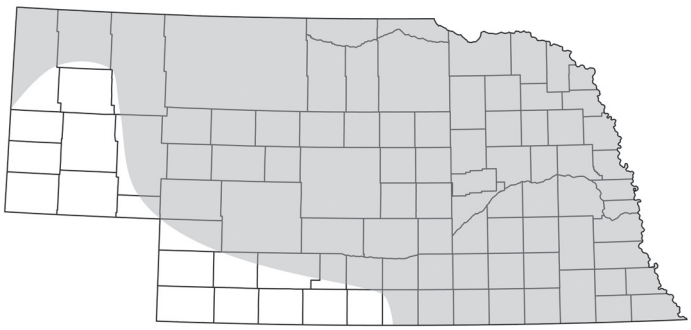
Establishment. Reed canarygrass is well adapted for seeding on wetland sites and on wetter portions of subirrigated sites, such as in Sandhill meadows. It can remain under water for a period of several weeks at a time without injury. It is moderately tolerant of salinity but should not be seeded on heavily saline or alkaline soils. It is also useful for erosion control on moist or wet soils. Germination of reed canarygrass is best when it is planted within a year of when 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 them by a light disking or having livestock trample them into the mud. Where seedbed preparation is impossible because of wet soils or it is undesirable 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 cuttings with a node establish readily. On very wet soils, establishment from plant cuttings has been superior to establishment from pieces of sod.

Restoration. Reed canarygrass is not used in prairie restorations, because it aggressively spreads in wet soils.

Wildlife. Reed canarygrass provides excellent nesting cover for wildlife. Its seeds are eaten by birds and small mammals. Its forage is only fair for deer and elk.

Ornamental. Reed canarygrass can be planted along ponds and streams as well as on any other wet sites. Caution must be used because it aggressively spreads and crowds out other plants.

Scribner rosettegrass



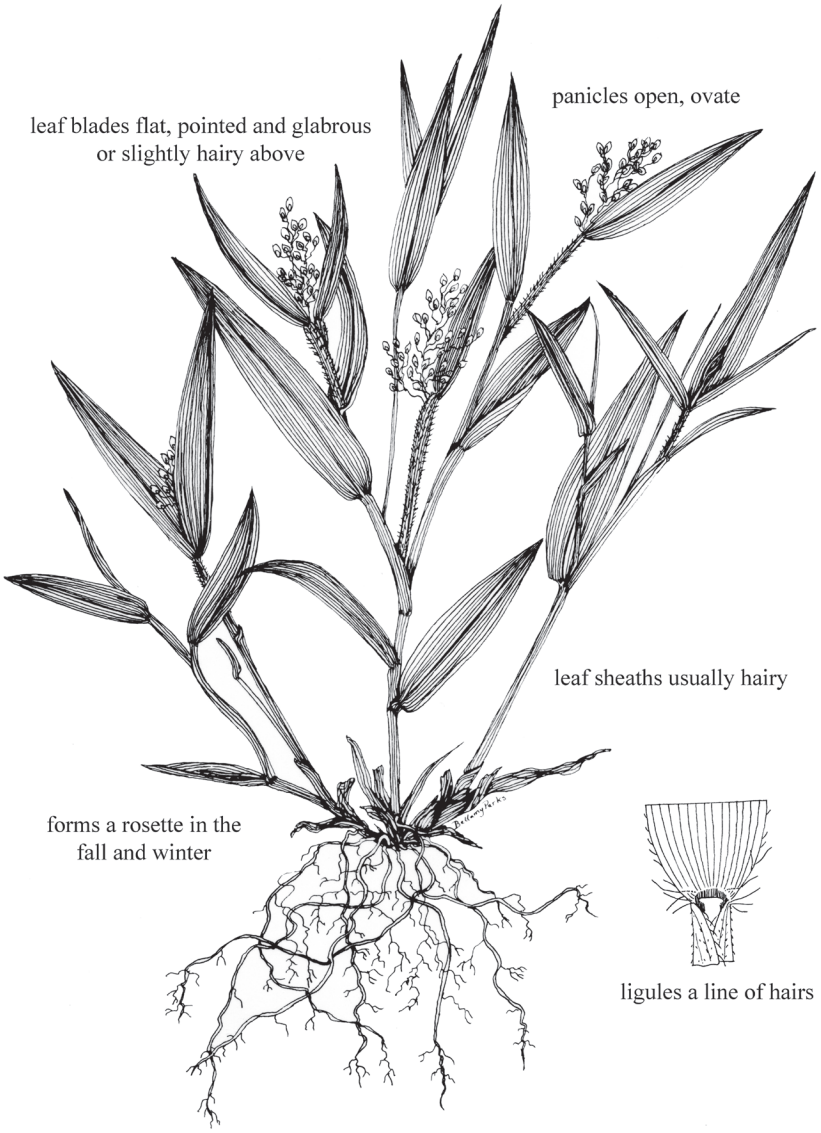
COMMON NAME:	**Scribner rosettegrass (Scribner panicum)**
Species:	*Dichanthelium oligosanthes* (Schult.) Gould [= *Panicum scribnerianum* Nash]
Life Span:	Perennial
Origin:	Native
Season:	Cool
Growth Form:	Bunchgrass
Flowering:	April to June

Vegetative Characteristics

culms:	erect or ascending (to 50 cm tall); branching well above the base, nodes glabrous or with short, soft hairs, internodes glabrous
sheaths:	round, shorter than internodes, loose; usually hairy, fewer hairs than on the blades
ligules:	line of hairs (to 3 mm long)
blades:	flat (to 15 cm long, to 15 mm wide), pointed, glabrous or slightly hairy above, may be scabrous and hairy beneath, margins ciliate
rhizomes:	none
other:	forms a rosette in fall and winter; may be easily confused with Wilcox rosettegrass. Wilcox rosettegrass has narrower blades with many long hairs on upper blades and sheaths

Inflorescence Characteristics

type:	panicles (to 10 cm long, to 5 mm wide), open, ovate; pedicels mostly shorter than 5 mm
spikelets:	2-flowered; glumes unequal; first glume (to 1.4 mm long) about one-third as long as spikelet, acute, 1-veined; second glume (to 4 mm long), nearly as long as spikelet, obtuse to rounded, 1-veined, glabrous; 1 fertile floret and 1 sterile floret, oval (to 3.5 mm long, to 2.5 mm wide); sterile floret composed of lemma only; usually glabrous
awns:	none
other:	may be partially enclosed by upper leaf sheaths



Scribner rosettegrass

Distribution and Habitat

This native grass is found on all ecological sites except wetlands. It grows between taller grasses and does best where other vegetation is not too dense. It is a common component on formerly cultivated fields in the Sandhills and abused sandy ecological sites.

Uses and Values

Forage. This cool-season grass starts growth in the fall forming a winter rosette, remains dormant but somewhat green through the winter, grows rapidly in the spring, and starts producing inflorescences in May and 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. Scribner rosettegrass is able to increase under heavy grazing because of low growth, a short period of good palatability, and ability to reseed rapidly. This grass never yields a large volume of herbage, but it has some value for providing range cattle with green forage in early spring.

Establishment. It is not used in grassland seedings in Nebraska.

Restoration. Scribner rosettegrass is not used in prairie restorations because it cannot compete with taller grasses.

Wildlife. Scribner rosettegrass is grazed in fall and winter by elk, deer, bighorn sheep, and pronghorn. Its seeds are eaten by upland game birds, songbirds, and small mammals.

Ornamental. Scribner rosettegrass has been used as a specimen planting in rock gardens.

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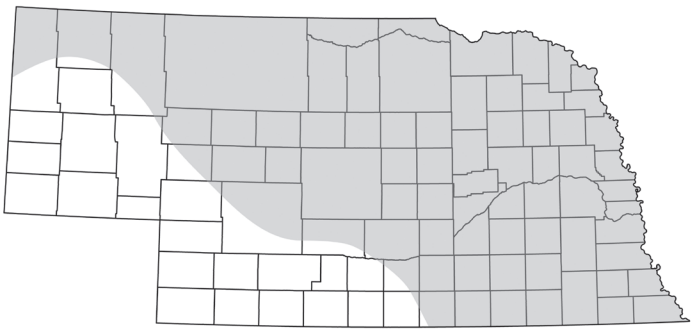
Wilcox rosettegrass



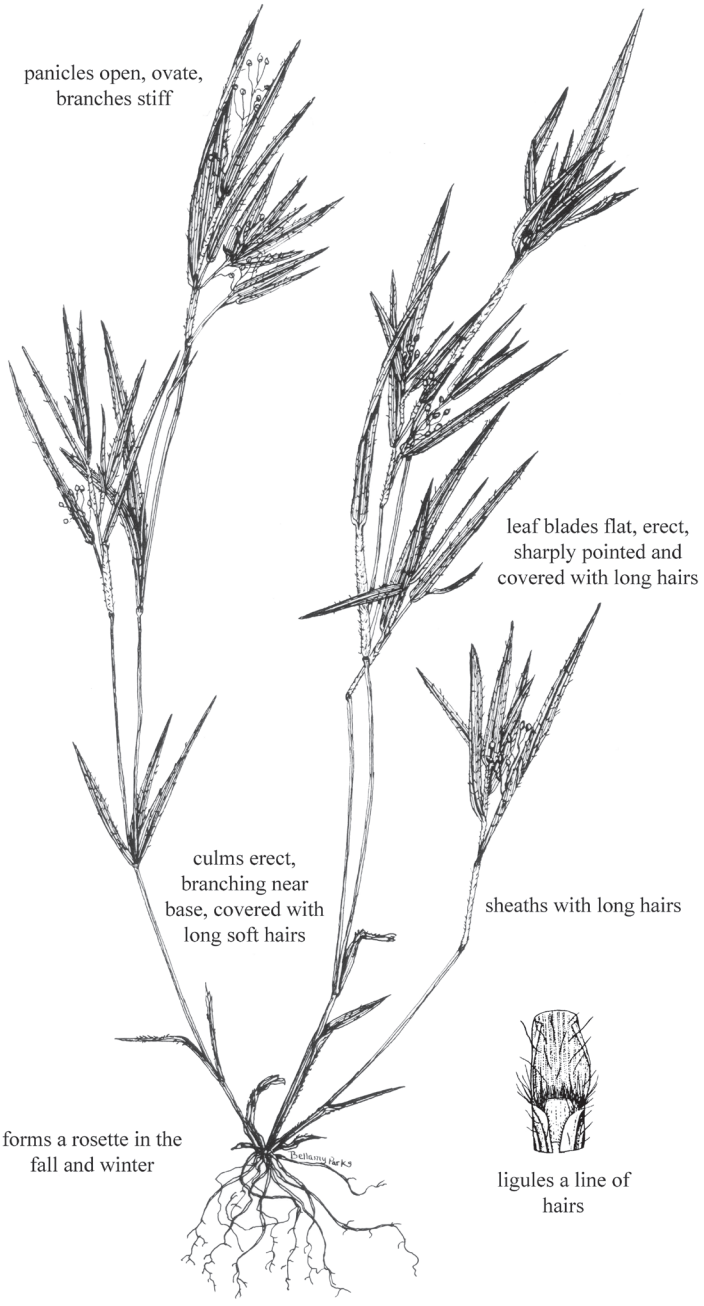
COMMON NAME:	**Wilcox rosettegrass (Wilcox panicum)**
Species:	*Dicanthelium wilcoxianum* (Vasey) Freckman [= *Panicum wilcoxianum* Vasey]
Life Span:	Perennial
Origin:	Native
Season:	Cool
Growth Form:	Bunchgrass
Flowering:	May to June

Vegetative Characteristics

culms:	erect (to 35 cm tall), branching near base, covered with long soft hairs except on nodes
sheaths:	round, overlapping, shorter than the internodes, open, with long hairs
ligules:	line of hairs (to 1.5 mm long)
blades:	flat (to 6 cm long, to 6 mm wide), erect, sharply pointed, covered with long hairs
rhizomes:	none
other:	leaves form a rosette in fall and winter; may be easily confused with Scribner rosettegrass. Scribner rosettegrass has wider blades with few to no hairs especially on upper surface

Inflorescence Characteristics

type:	panicles (to 6 cm long, to 4 cm wide), open, oval; to 50 spikelets per panicle; branches stiff, spreading, curving upward
spikelets:	2-flowered; glumes unequal; first glume (to 1.2 mm long) triangular, 1-veined, glabrous; second glume (to 2.9 mm long), almost as long as spikelet, obtuse, 9-veined, pubescent; 1 fertile floret (to 3.3 mm long, to 1.2 mm wide); 1 sterile floret (to 2.9 mm long) comprised of lemma only; 7-veined, covered with hairs
awns:	none



Wilcox rosettegrass

Distribution and Habitat

Wilcox rosettegrass is less common than Scribner rosettegrass. It is found on prairies and plains, but it is most common on sands and choppy sands ecological sites.

Uses and Values

Forage. Growth begins early in the spring, and seeds are produced in early to mid June. Wilcox rosettegrass grows in the fall, and it remains somewhat green through the winter. Palatability is fair for livestock, but it declines rapidly as it matures. Wilcox rosettegrass never contributes much to the total production of a site.

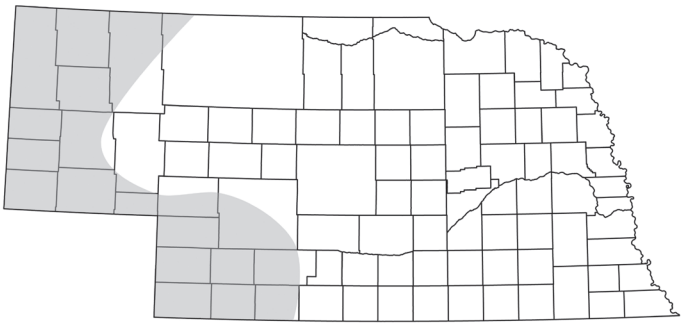
Establishment. Wilcox rosettegrass is not used in rangeland seedings.

Restoration. Wilcox rosettegrass is rarely used in prairie restorations because it cannot compete with taller grasses.

Wildlife. Deer, elk, and pronghorn graze the plants, especially in winter when they remain somewhat green. Upland game birds, songbirds, and small mammals eat the seeds.

Ornamental. Wilcox rosettegrass is used occasionally in rock gardens and as a ground cover.

Squirreltail



COMMON NAME:	Squirreltail
Species:	*Elymus elymoides* (Raf.) Swezey [= *Sitanion hystrix* (Nutt.) J. G. Sm.]
Life Span:	Perennial
Origin:	Native
Season:	Cool
Growth Form:	Bunchgrass
Flowering:	May to June

Vegetative Characteristics

culms:	erect to geniculate to decumbent (to 60 cm tall), stiff, densely tufted, glabrous to pubescent
sheaths:	round, open, usually overlapping, margins translucent, glabrous or scabrous or densely villous, collar not hairy
auricles:	small (to 1 mm long), often purplish
ligules:	membranous (to 1 mm long), obtuse to rounded, erose to ciliate
blades:	flat to rolled (to 20 cm long, to 5 mm wide), stiff and ascending, tapering to a fine point, prominently veined
rhizomes:	none

Inflorescence Characteristics

type:	spikes (to 15 cm long, excluding the awns), cylindrical, stiff, erect; usually 2 spikelets per node; rachis readily disarticulating; rachis internodes shorter than spikelets; sometimes partially enclosed in an inflated sheath
spikelets:	2–6-flowered; glumes unequal (to 10 mm long), narrow, the veins extending into long scabrous awns; lemmas rounded (to 12 mm long), 3–5-veined, may be slightly hairy, awned
awns:	lemmas awned (to 15 mm long), flexuous, divergent; glumes awned (to 10 cm long); awns widely spreading at maturity, stiff, green or tinged with purple

Distribution and Habitat

This native grass is found on dry upland sites in disturbed prairies and waste places. It is most common in southwest Nebraska in medium- to fine-textured soils. It tolerates moderate levels of salinity and alkalinity. Squirreltail occurs as scattered plants in disturbed prairies and waste places primarily associated with blue grama but may be locally prominent on disturbed areas.

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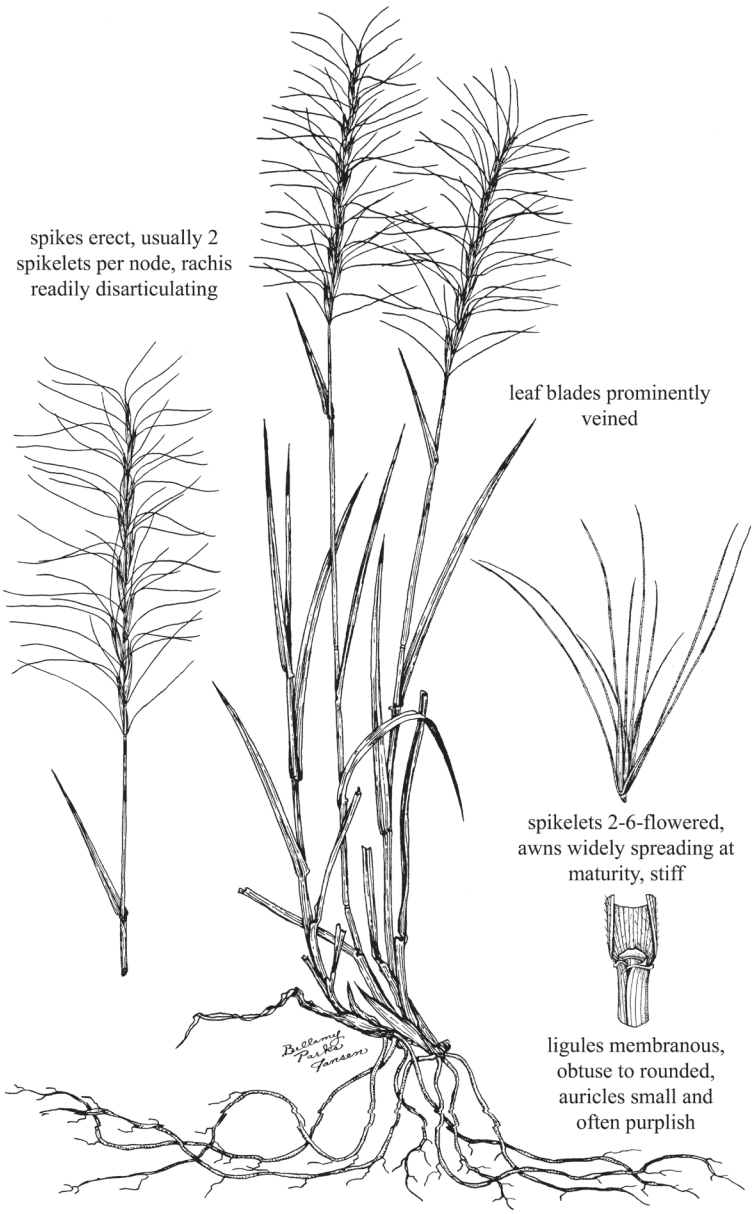


Squirreltail

Uses and Values

Forage. 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 inflorescences have broken and fallen, the foliage may be eaten to some extent in late summer and fall. It rarely becomes sufficiently abundant to produce much forage under conditions in Nebraska.

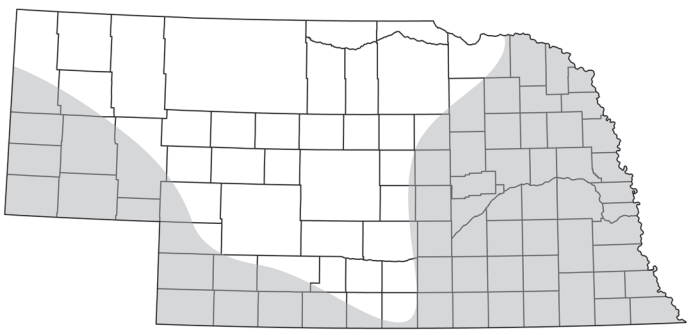
Establishment. Squirreltail is not recommended for seeding mixtures in Nebraska.

Restoration. It is not used in prairie restorations.

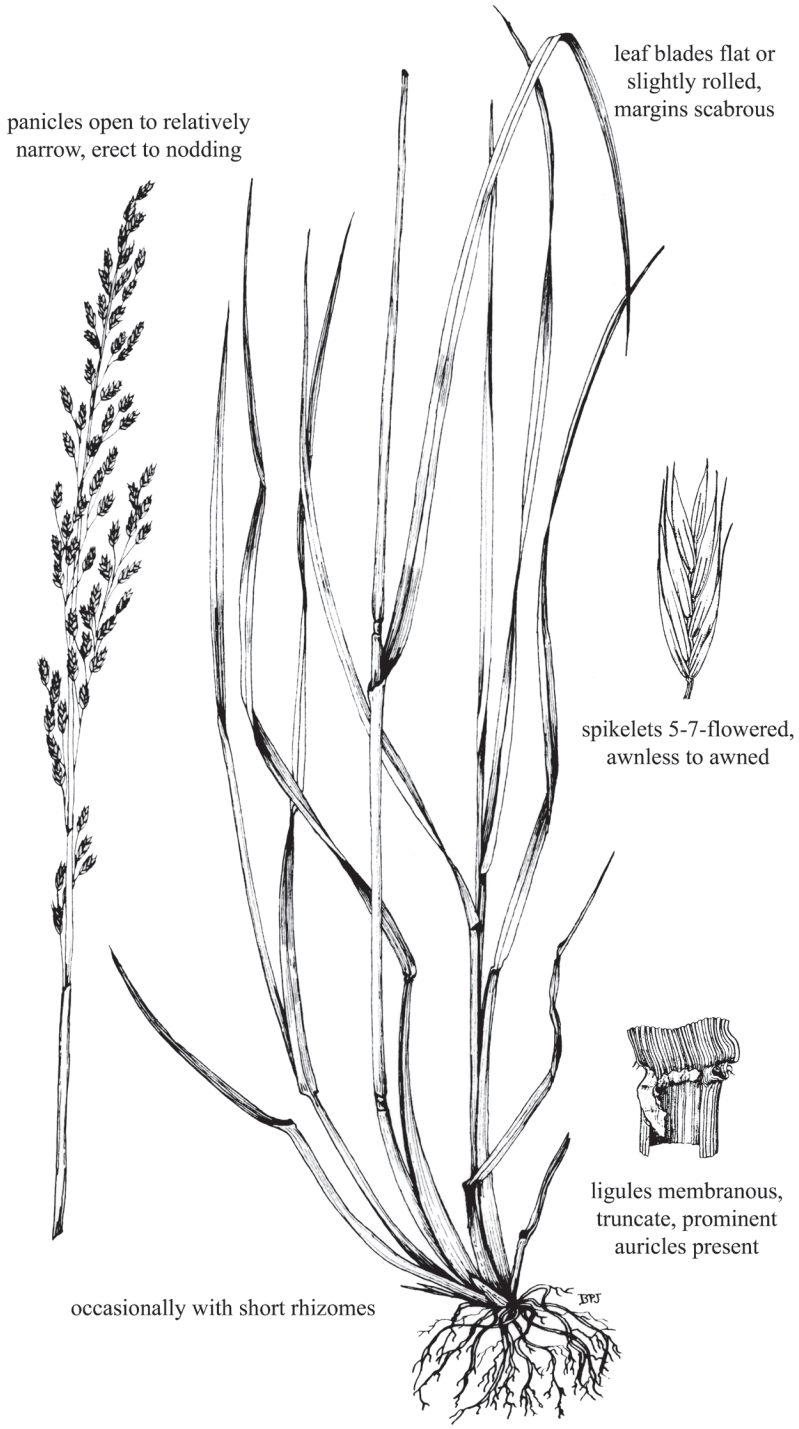
Wildlife. It produces poor forage for big game and fair forage for small mammals. It provides some cover for upland game birds and small mammals.

Ornamental. The purple-tinged inflorescences with long awns are attractive and it is occasionally used as an accent plant.

Tall fescue



Common Name:	Tall fescue
Species:	*Schedonorus arundinaceus* (Schreb.) Dumort [= *Lolium arundinaceum* (Schreb.) S.J. Darbysh.], [= *Festuca arundinacea* Schreb.]
Life Span:	Perennial
Origin:	Introduced
Season:	Cool
Growth Form:	Bunchgrass
Flowering:	May to October



Tall fescue

Vegetative Characteristics

culms:	erect or ascending (to 1.5 m tall), bases decumbent, strongly tufted, stout
sheaths:	round, open, smooth or slightly scabrous
auricles:	prominent on basal sheaths, short, ciliate on the margins
ligules:	membranous (to 2 mm long), truncate, erose or toothed
blades:	flat or slightly rolled (to 40 cm long, to 12 mm wide), stiff, glabrous, margins scabrous
rhizomes:	occasionally with short rhizomes, but it has the appearance of a bunchgrass

Inflorescence Characteristics

type:	panicles (to 30 cm long, to 6 mm wide), open to relatively narrow, erect to nodding; branches without spikelets on the lower one-third
spikelets:	5–7-flowered (to 15 mm long); glumes nearly equal, narrow, tapering at both ends, with membranous margins; first glumes (to 5.9 mm long) 1-veined; second glumes (to 6.1 mm long) 3-veined; lemmas (to 9 mm long) faintly 5-nerved, transparent; awnless to awned
awns:	glumes and lemmas awnless or awn-tipped (to 4 mm long)

Distribution and Habitat

Tall fescue was introduced from Europe, and its greatest use is in the southeast, south central, and Pacific Northwest regions of the United States. It grows in lawns, roadsides, and waste places.

Uses and Values

Forage. This cool-season grass is adapted to moist, deep soils, tolerates moderate soil

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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 produced more forage than tall wheatgrass. Tall fescue is ready for grazing in the spring somewhat later than tall wheatgrass. Tall fescue is more resistant to grazing, but it is much less salt tolerant than tall wheatgrass. 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. Poor animal performance is common when grazing tall fescue. In some areas, cattle grazing tall fescue have developed a lameness commonly called "fescue foot." Research has attributed this condition to an endophyte (fungus) that lives within the plant and produces a toxin that is absorbed by the animal's digestive system.

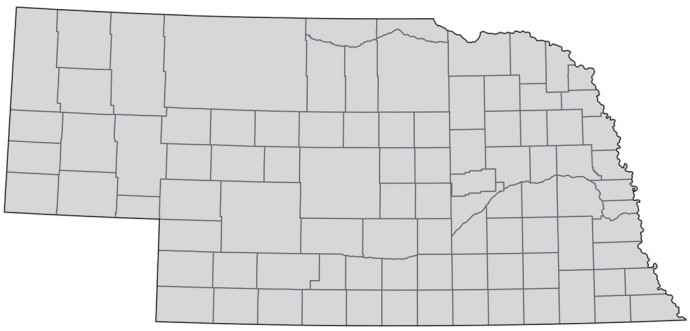
Establishment. Tall fescue can be seeded in cool-season mixtures for pasture in eastern Nebraska and for irrigated pasture. Care should be taken to plant an endophyte-free cultivar. Seeding a different species usually is a better choice.

Restoration. Tall fescue is an introduced species and is not used in prairie restorations.

Wildlife. Tall fescue provides nesting cover for upland game birds. Birds and small mammals eat the seeds.

Ornamental. Tall fescue can be used as turf, and a number of fine-leaved cultivars have been developed for this purpose. The texture of tall fescue foliage is much coarser than the texture of Kentucky bluegrass or buffalograss.

Timothy



COMMON NAME:	Timothy
Species:	*Phleum pratense* L.
Life Span:	Perennial
Origin:	Introduced
Season:	Cool
Growth Form:	Bunchgrass
Flowering:	June to July

Vegetative Characteristics

culms:	erect (to 1.2 m tall), sometimes geniculate below; lower culm nodes swollen, sometimes bulbous; tufted, glabrous
sheaths:	round, open, summit glabrous, distinctly veined, often turning purple
ligules:	membranous (to 10 mm long), truncate to acute, entire
blades:	flat or loosely rolled (to 30 cm long, to 10 mm wide), tapering to a sharp point, distinctly veined, margins with tiny barbs
rhizomes:	none

Inflorescence Characteristics

type:	panicles (to 20 cm long, to 10 mm wide), tightly contracted, dense, cylindrical, spike-like, branches tightly appressed
spikelets:	1-flowered, flattened; glumes equal (to 3.5 mm long), compressed, 3-veined; outward-pointing hairs on the midvein, stiff, glumes falling with the floret; margins paper-like; awed; lemma small (1.3–2.5 mm long); "U" shaped
awns:	glumes awned from tips; awns to 1.5 mm long, less than one-half the length of glumes, awn with fine teeth; midvein of the lemmas sometimes extended to an awn point

Distribution and Habitat

Timothy was introduced to North America 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 such as road-

sides, fields, and waste areas. Since it does not tolerate drought, it is seldom found on upland soils in central and western Nebraska.

Uses and Values

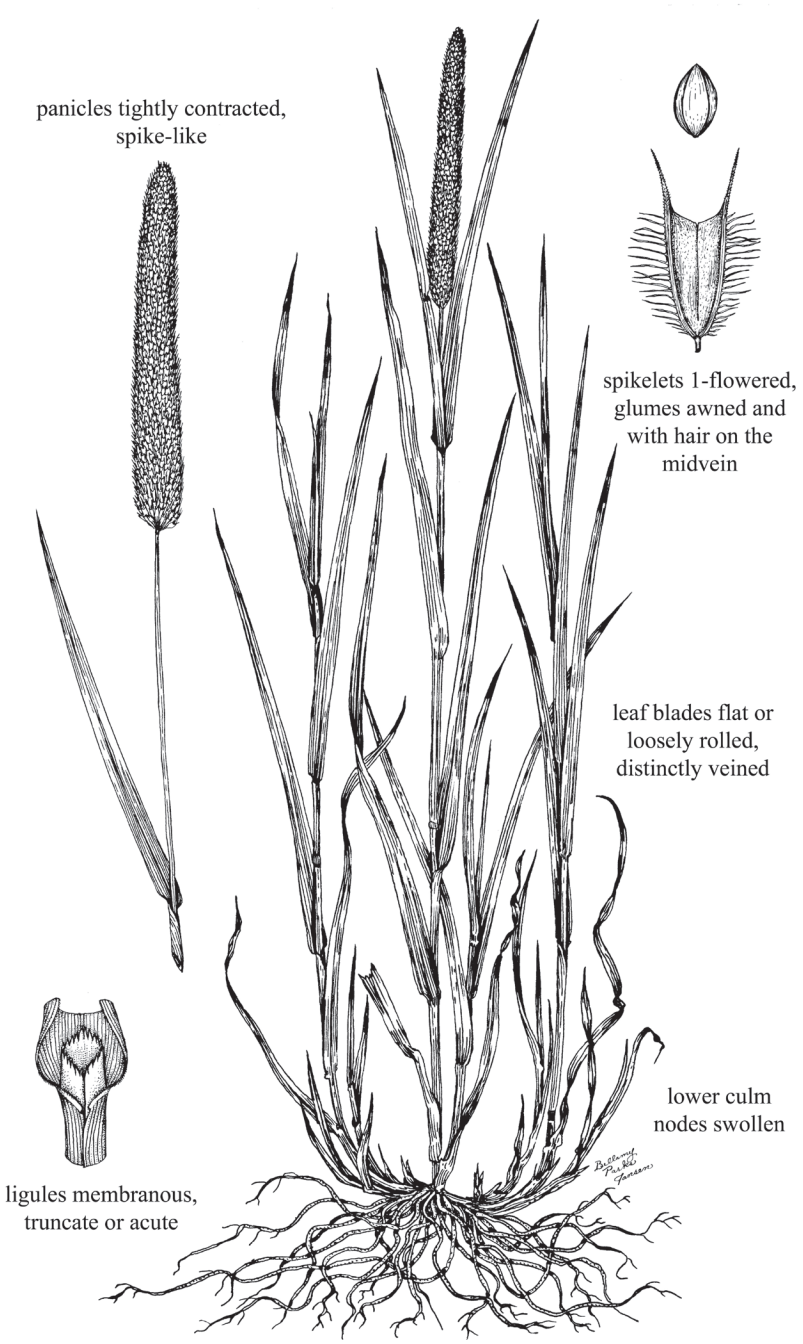
Forage. This cool-season grass is famed for its production of leafy, palatable hay. It is prized as hay for horses. In Nebraska, it has been used for improving subirrigated meadows in the Sandhills and river valleys. It grows well with red clover because both are adapted to subirrigated sites. It does not grow well on wetland or saline subirrigated sites. Where adapted, timothy is recommended over redtop bent for grass hay because of later maturity and higher quality. As a pasture grass, timothy produces leafy, nutritious forage throughout the summer. Occasionally, it has been used in permanent pasture mixtures in northeastern Nebraska or in subirrigated pastures across the state. However, it is not tolerant of heavy grazing and has generally been replaced in pasture mixtures by smooth brome and orchardgrass.

Establishment. Timothy is seeded in 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.

Restoration. Timothy is an introduced species and is not used in prairie restorations.

Wildlife. Timothy provides good to excellent forage for deer and elk. It is excellent nesting and brood rearing cover for pheasants. Small quantities of timothy hay are packaged and sold in pet stores for food for rabbits, guinea pigs, chinchillas, and prairie dogs.

Ornamental. Timothy is rarely used as an ornamental, but it makes an attractive mixture with other grasses and wildflowers for spot accents in moist gardens. The inflorescences are used in fresh and dried flower arrangements.



Timothy

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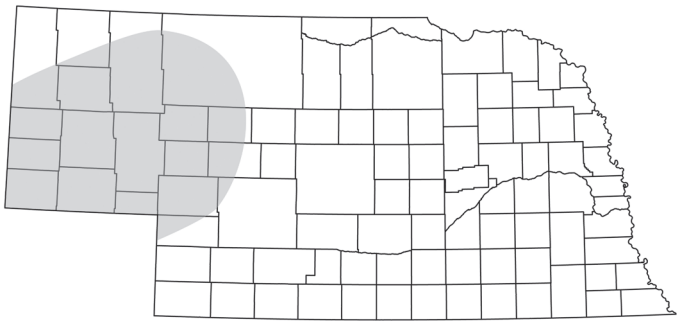
Weeping alkaligrass



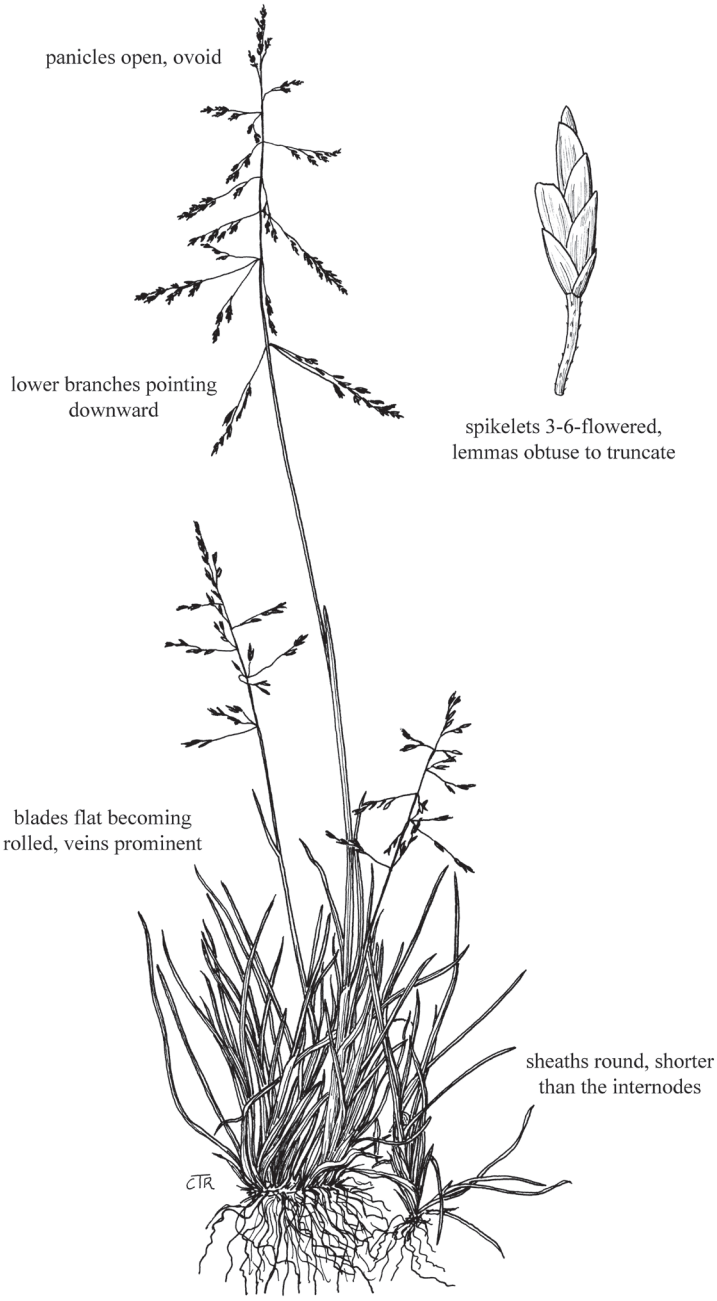
COMMON NAME:	Weeping alkaligrass
Species:	*Puccinellia distans* (Jacq.) Parl.
Life Span:	Perennial
Origin:	Introduced
Season:	Cool
Growth Form:	Bunchgrass
Flowering:	June to August

Vegetative Characteristics

culms:	erect or geniculate (to 60 cm tall), round or slightly compressed, glabrous
sheaths:	round, shorter than the internodes, closed at the base
ligules:	membranous (to 1.5 mm long), truncate or rounded
blades:	flat (to 12 cm long, to 6 mm wide), becoming rolled, veins prominent
rhizomes:	none

Inflorescence Characteristics

type:	panicles (to 15 cm long, to 5 cm wide), open, ovoid; lower branches pointing downward (reflexed)
spikelets:	3–6-flowered; glumes unequal; first glume (to 1.4 mm) 1-veined; second glume (to 2 mm long) 3-veined; lemmas obtuse to truncate (to 2.2 mm long), 5-veined, veins indistinct, tips obtuse to truncate, finely erose, margins hyaline, yellowish
awns:	none



Weeping alkaligrass

Distribution and Habitat

Weeping alkaligrass grows in medium- to fine-textured soils. It is tolerant of alkaline and saline soil and is found in moist to wet poorly drained soils of meadows, pastures, lawns, and waste areas. It was introduced from Eurasia for pasture.

Uses and Values

Forage. Palatability of weeping alkaligrass is only fair. Occasionally, it may provide important forage in localized areas. Seldom is it present in large enough quantities to be an important source of forage.

Establishment. It is not used in grassland seedings.

Restoration. Weeping alkaligrass is an introduced species and is not used in restorations

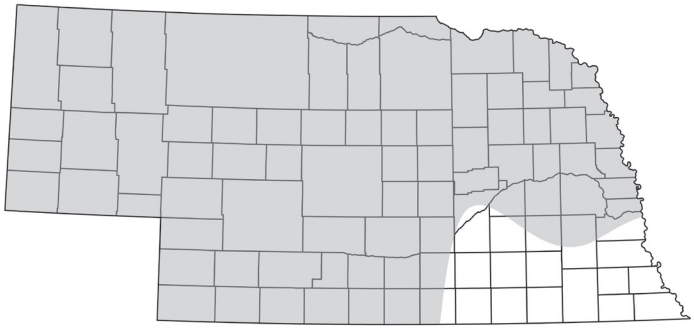
Wildlife. Deer lightly graze the foliage. Birds and small mammals eat the seed, and it provides nesting and escape cover for upland birds.

Ornamental. Weeping alkaligrass is not used in ornamental plantings.

Other

Nuttall alkaligrass [*Puccinellia nuttalliana* (Schult.) Hitch.] is a native species found in central and western Nebraska growing on the edges of ponds and in alkaline meadows. It can grow in standing water. The lower panicle branches are spreading to divergent, rather than pointing downward as with weeping alkaligrass. Also, the spikelets of Nuttall alkaligrass are larger (to 3.5 mm long) than those of weeping alkaligrass (to 2.2 mm long). Palatability of Nuttall alkaligrass is low throughout most of the year.

Crested wheatgrass



COMMON NAME:	Crested wheatgrass
Species:	*Agropyron cristatum* (L.) Gaertn.
Life Span:	Perennial
Origin:	Introduced
Season:	Cool
Growth Form:	Bunchgrass
Flowering:	June to August

Vegetative Characteristics

culms:	erect to ascending (to 1 m tall), base occasionally geniculate; tufted, glabrous
sheaths:	round, open, margins overlapping, usually glabrous
auricles:	slender (1 mm long)
ligules:	membranous (to 1.5 mm long), rounded to truncate, erose
blades:	flat or folded (to 20 cm long, to 8 mm wide), veins raised on the upper surface of the blade, smooth below, margins with small teeth
rhizomes:	none

Inflorescence Characteristics

type:	spikes (to 9 cm long, to 20 mm wide), erect, bilateral, dense, tapering to both ends; main branch pubescent and occasionally wavy; 1 spikelet per node; spikelets closely overlapping, several times longer than the rachis internodes, pointing up and outward from main branch
spikelets:	3–9-flowered (to 15 mm long), flattened and placed flatwise on the main branch; glumes about equal (to 6 mm long), second slightly longer; awn-tipped, firm, somewhat keeled and twisted, often hairy; lemmas pointed, may be hairy
awns:	glumes and lemmas tapering to short awns (to 6 mm long)

Distribution and Habitat

Crested wheatgrass is native to eastern Europe and Asia. It was introduced from Russia into the United States in about 1898, but was not commonly seeded until the 1930s

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when it was used to stabilize old cultivated fields. It is common in many counties in northern and western Nebraska where it has been seeded for pasture and hay production and was formerly seeded for cover on roadsides. It is most abundant on dry, medium-textured soils and is less adapted to heavy clays and sands. It is relatively tolerant of saline soils.

Crested wheatgrass

Uses and Values

Forage. Because of its rapid, early spring growth, this cool-season grass is valuable for early pasture. It is ready for grazing about ten days to two weeks before intermediate wheatgrass, tall wheatgrass, western wheatgrass, and smooth brome. It is highly palatable and nutritious in the spring when it is green and rapidly growing. After flowering, however, the grass becomes coarse, and the palatability and nutritional value decrease. Since crested wheatgrass matures early, it is less desirable than most of the 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 when early green forage is a critical need for many Nebraska livestock operations. Crested wheatgrass may also provide valuable fall grazing if late summer moisture is adequate to stimulate regrowth.

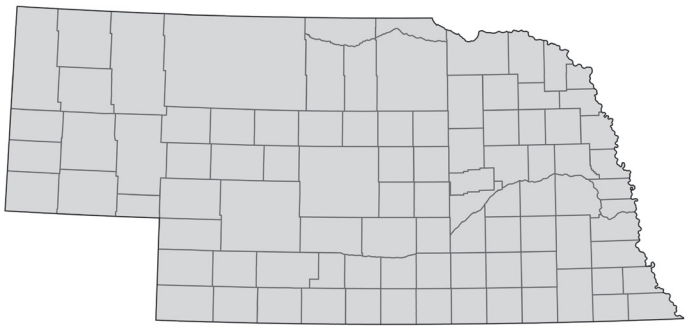
Establishment. Crested wheatgrass is recommended for seeding in pure stands on silty to clay loam sites in the western one-third of Nebraska. It is less adapted to heavy clay soils than medium-textured soils and should not be planted on loose, sandy soils. Crested wheatgrass withstands drought and cold, has moderate salt tolerance, and establishes a stand rather rapidly. It recovers well from intensive 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.

Restoration. Crested wheatgrass is an introduced species and is not used in prairie restorations.

Wildlife. Crested wheatgrass provides fair forage for wildlife. It is valuable to deer, elk, bighorn sheep, and pronghorn for early spring grazing. Elk graze the foliage in winter. It provides nesting and escape cover for upland game birds.

Ornamental. Crested wheatgrass is used occasionally as a low maintenance turf.

Intermediate wheatgrass



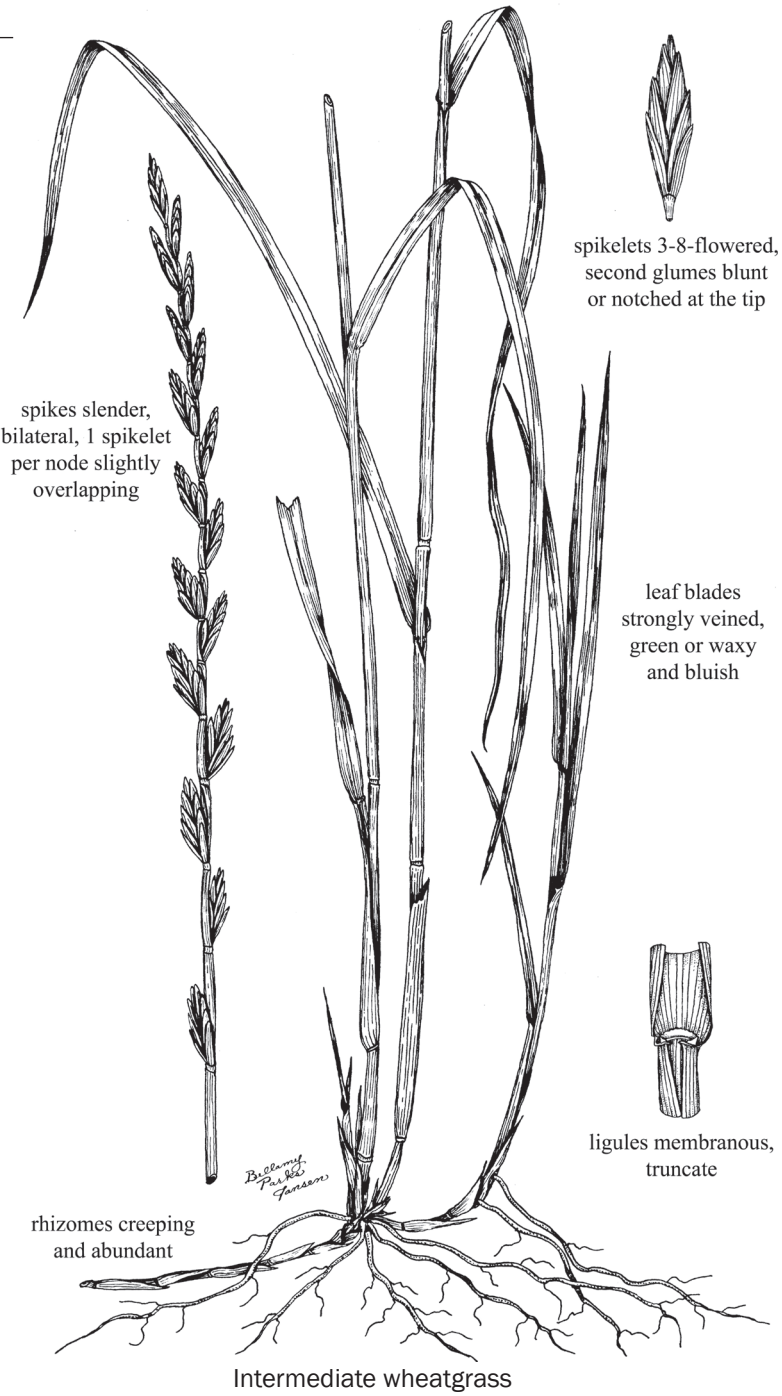
COMMON NAME:	Intermediate wheatgrass
Species:	*Thinopyrum intermedium* (Host.) Barkworth & D.R. Dewey [= *Elymus hispidus* (P. Opiz) Melderis], [= *Agropyron intermedium* (Host) P. Beauv.]
Life Span:	Perennial
Origin:	Introduced
Season:	Cool
Growth Form:	Sod-forming
Flowering:	June to September

Vegetative Characteristics:

culms:	erect (to 1.2 m tall), robust, glabrous, waxy, bluish
sheaths:	round, open, occasionally hairy, upper margins ciliate
auricles:	well-developed (to 2 mm long), clasping, sharply pointed
ligules:	membranous (to 1 mm long), truncate, erose to entire
blades:	flat or loosely rolled (to 40 cm long, to 15 mm wide), stiff, broad at base and tapering to a point, strongly veined, green or waxy and bluish, glabrous
rhizomes:	creeping, abundant

Inflorescence Characteristics

type:	spikes (to 20 cm long), slender, bilateral, erect; spikelets 1 per node, may be slightly overlapping, spikelets curving away from the main branch at maturity, place flatwise to the rachis
spikelets:	3–8-flowered (to 20 mm long); glumes nearly equal (to 9 mm long), second slightly longer than first, about one-half as long as spikelet, asymmetrical, may be with long dense hairs, distinct veins, blunt or notched at the tip with rounded lobes; lemmas lanceolate (to 11 mm long), faintly 3–5-veined, may have hairs (to 7 mm long)
awns:	none, lemma may be awn-tipped



Intermediate wheatgrass

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Distribution and Habitat

Intermediate wheatgrass was introduced from Europe in the 1930s. It has become rather common over Nebraska from seedings, but it is less common than smooth brome in the eastern one-half of Nebraska. Also, it grows on roadsides, disturbed areas, and fields. Intermediate wheatgrass is adapted to a broad range of soils textures and soil moisture conditions.

Uses and Values

Forage. 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 after rain. It has been used successfully as an irrigated pasture grass in pure stands, especially when 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 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.

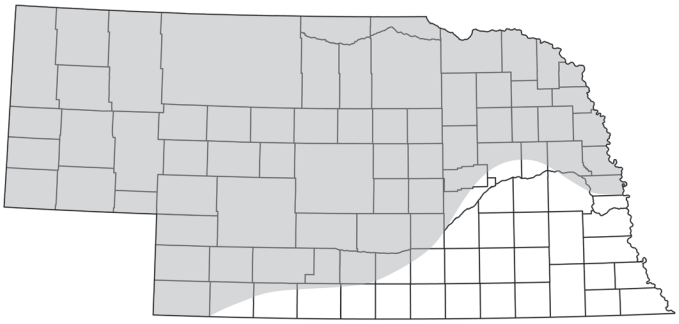
Establishment. Intermediate wheatgrass is recommended for seeding on fertile soils throughout most of Nebraska, especially on moderately saline or alkaline soils. In eastern Nebraska, it is adapted to sites on which smooth brome is found. In western Nebraska, it is adapted to all upland sites, except 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 by drought. It is more tolerant of dry conditions than smooth brome but less 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 tolerance of low soil moisture, intermediate wheatgrass also responds well when supplemental water is available only in the spring or fall.

Restoration. Intermediate wheatgrass is an introduced species and is not used in prairie restorations.

Wildlife. Intermediate wheatgrass produces fair forage for big game animals. It provides nesting and escape cover for upland game birds. Birds and small mammals eat the seed.

Ornamental. Intermediate wheatgrass has been used as a background planting. Care should be taken because it can spread quickly from rhizomes.

Slender wheatgrass



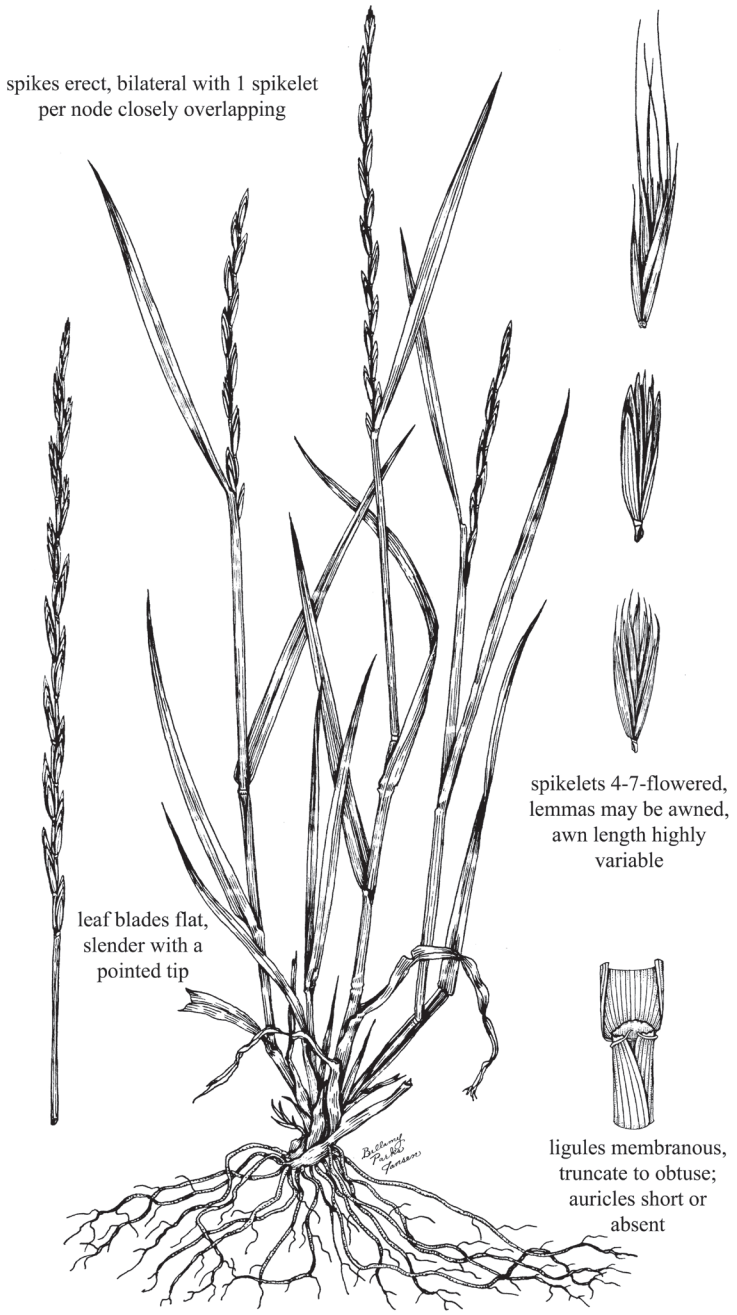
COMMON NAME:	Slender wheatgrass
Species:	*Elymus trachycaulus* (Link) Gould *ex* Shinners [= *Agropyron trachycaulum* (Link) Shinners]
Life Span:	Perennial
Origin:	Native
Season:	Cool
Growth Form:	Bunchgrass
Flowering:	June to August

Vegetative Characteristics

culms:	erect or from a decumbent base (to 1.5 m tall), slender, tufted; green or slightly blue-green, glabrous; nodes dark
sheaths:	round, glabrous or rarely with fine hairs
auricles:	short (to 1 mm long) or absent, only one of the pair may be present
ligules:	membranous (to 1 mm long), truncate to obtuse, erose to ciliate
blades:	flat (to 25 cm long, to 8 mm wide); slender with a pointed tip, glabrous, margins with a narrow white band, slightly barbed
rhizomes:	uncommon

Inflorescence Characteristics

type:	spikes (to 25 cm long), erect, slender, bilateral, compact, 1 spikelet per node, spikelets closely overlapping (usually one-half of each spikelet overlaps), placed flatwise to the rachis; sometimes violet-tinged
spikelets:	4–7-flowered (to 22 mm long); glumes nearly equal (to 15 mm long), nearly enclosing the florets, second slightly longer than the first, strongly 5–7-veined; margins transparent and slightly scabrous; nerves dark green; lemmas pointed (to 13 mm long), 3–5-veined, veins obscure, glabrous of short hairs on rachilla and margins of lemma
awns:	lemma may be awned, length highly variable (1–30 mm long); glumes may taper to short awns



Slender wheatgrass

Distribution and Habitat

Slender wheatgrass is most common on upland sites in western Nebraska, particularly in the northwest corner of the state. It grows abundantly on subirrigated ecological sites over the western two-thirds of the state. It seldom grows in dense or pure stands. Instead, it is found mostly as scattered plants.

Uses and Values

Forage. 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.

Establishment. Slender wheatgrass is adapted for seeding in western Nebraska on silty and clayey ecological sites may be seeded on sandy and subirrigated ecological sites. Since its forage yields are low, it is much less commonly included in seeding mixtures than western wheatgrass. Seed production is ample, seedlings are vigorous, and plants are cold resistant. It is moderately salt tolerant but is less tolerant of drought than western and crested wheatgrass.

Restoration. Slender wheatgrass should be a minor component of seed mixtures for prairie restorations in western Nebraska.

Wildlife. Slender wheatgrass provides good to excellent forage for pronghorn, deer, bighorn sheep, and elk. It provides nesting and escape cover for upland game birds.

Ornamental. Slender wheatgrass can be used as a screen planting.

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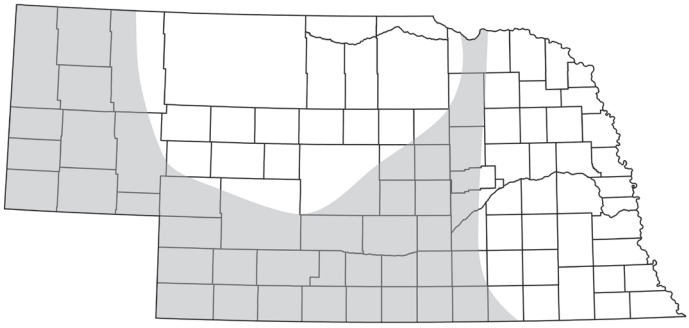
Tall wheatgrass



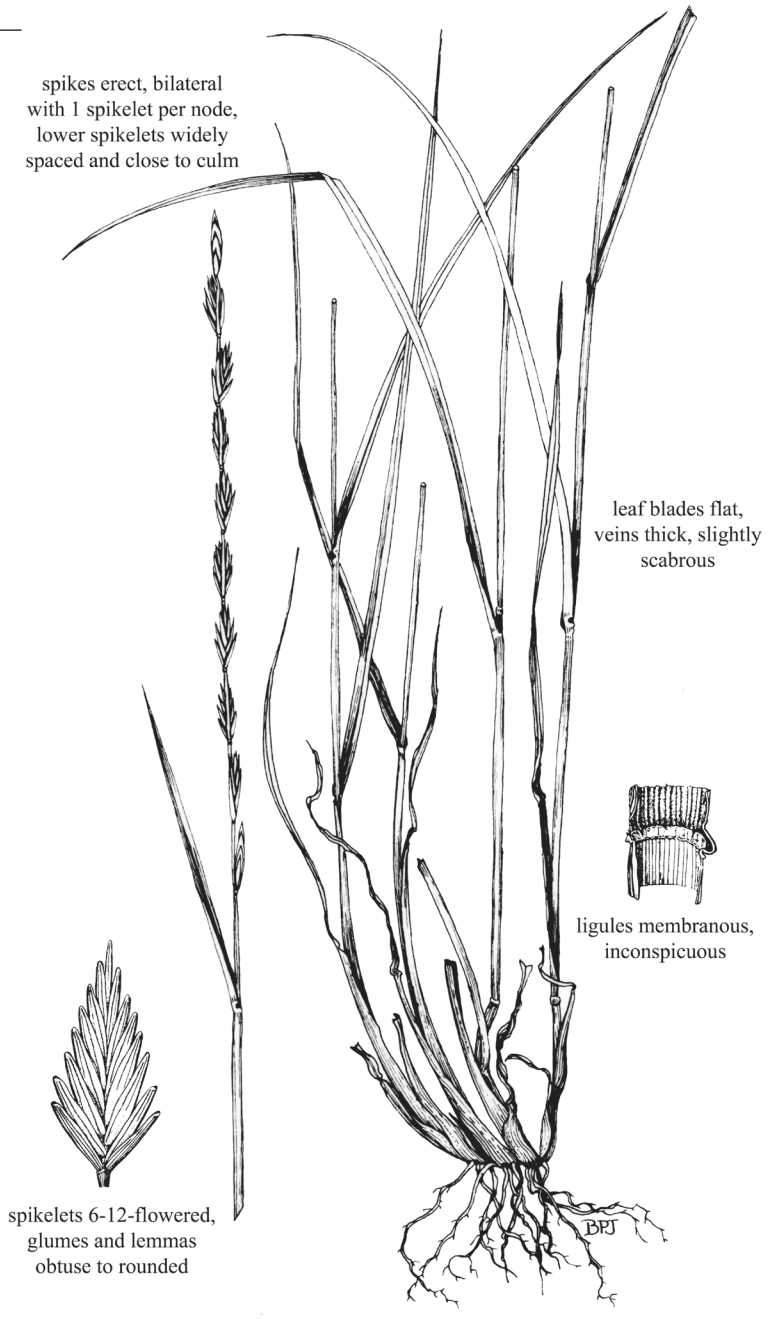
COMMON NAME:	Tall wheatgrass
Species:	*Elymus ponticus* (Podp.) N. Snow [= *Elymus elongatus* (Host) Runemark], [= *Agropyron elongatum* (Host) P. Beauv.]
Life Span:	Perennial
Origin:	Introduced
Season:	Cool
Growth Form:	Bunchgrass
Flowering:	June to September

Vegetative Characteristics

culms:	erect (to 1.5 m tall), tufted, stout
sheaths:	round, smooth, upper margins fringed with hairs
auricles:	erect (to 2 mm long), not clasping
ligules:	membranous (to 0.5 mm long), inconspicuous, irregular, with a few hairs
blades:	flat (to 40 cm long, to 7 mm wide), stiff, veins thick, may be slightly scabrous, sometimes sparsely covered with long hairs
rhizomes:	none

Inflorescence Characteristics

type:	spikes (to 35 cm long), erect, bilateral, often loose and open; 1 spikelet per node, placed flatwise to the rachis; upper spikelets slightly overlapping and pointing away from main branch, lower spikelets widely spaced and close to culm
spikelets:	6–12-flowered (22 mm long); glumes unequal (first glume to 9 mm long, second to 10 mm long), asymmetrical, obtuse to rounded; lemmas large (to 11 mm long), obtuse to rounded, 5-veined, midvein thickened
awns:	lemmas rarely awned



Tall wheatgrass

Distribution and Habitat

This grass was introduced in 1909 from Turkey, where it grows on saline meadows and seashores. It is most commonly found in the North Platte and Platte River valleys where it has been seeded on wet saline and alkaline soils.

Uses and Values

Forage. This cool-season grass is ready for grazing later in the spring than crested wheatgrass. It is a coarse grass that has only fair to good palatability for cattle early in the growing season. Palatability declines to poor at the time when inflorescences appear. Tall wheatgrass 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 the forage. 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 very productive once established on favorable sites.

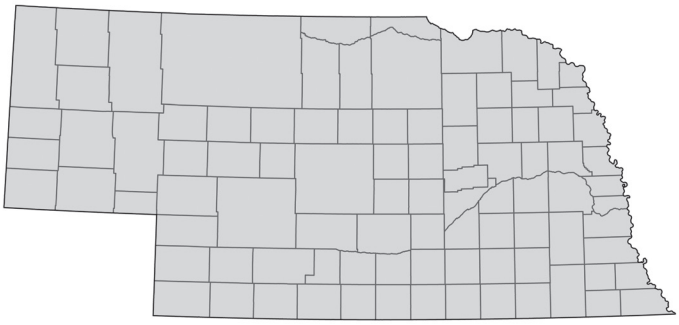
Establishment. Tall wheatgrass is highly tolerant of saline and alkaline soils with high water tables. For this reason, it is recommended for seeding on saline subirrigated sites with high pH and poor drainage. Although it also produces well on normal subirrigated sites, tall wheatgrass has no advantage over intermediate wheatgrass and smooth brome on the more favorable upland sites of central and eastern Nebraska, and it is less adapted to the dry upland soils of western Nebraska than crested wheatgrass and Russian wildrye.

Restoration. Tall wheatgrass is an introduced species and is not used in prairie restorations.

Wildlife. The abundant foliage furnishes cover for upland game birds and big game. Big game animals occasionally lightly graze tall wheatgrass. The seeds are eaten by birds and small mammals.

Ornamental. Tall wheatgrass has been used as a screen planting.

Western wheatgrass



COMMON NAME:	Western wheatgrass
Species:	*Pascopyrum smithii* Barkworth & D.R. Dewey [= *Elymus smithii* (Rydb.) Gould], [= *Agropyron smithii* Rydb.]
Life Span:	Perennial
Origin:	Native
Season:	Cool
Growth Form:	Sod-forming
Flowering:	May to September

Vegetative Characteristics

culms:	erect or from a decumbent base (to 90 cm tall), stiff, single or in small clusters, glabrous, waxy
sheaths:	round, open, shorter than the internodes, glaucous, glabrous, may be scabrous
auricles:	present or absent; slender, short, clasp the stems, claw-like, sometimes purplish at base
ligules:	membranous (to 1 mm long), truncate, erose to minutely ciliate
blades:	flat to rolled on drying (to 25 cm long, to 7 mm wide), rigid, tapering to a sharp point, strongly veined
rhizomes:	slender, creeping
other:	whole plant may appear blue-green and have a waxy coating

Inflorescence Characteristics

type:	spikes (to 20 cm long), erect, distinctly bilateral, often dense, stiff; spikelets closely overlapping (about one-half of each spikelet overlaps); spikelets usually solitary or occasionally 2 per node, placed flatwise to the rachis
spikelets:	5–12-flowered (to 25 mm long), compressed; glumes slightly unequal, first shorter (to 12 mm long) than the second (to 15 mm long), asymmetrical, narrow, rigid, faintly 3–5-veined; lemmas sharply pointed (to 14 mm long), rigid, occasionally densely hairy, 5-veined

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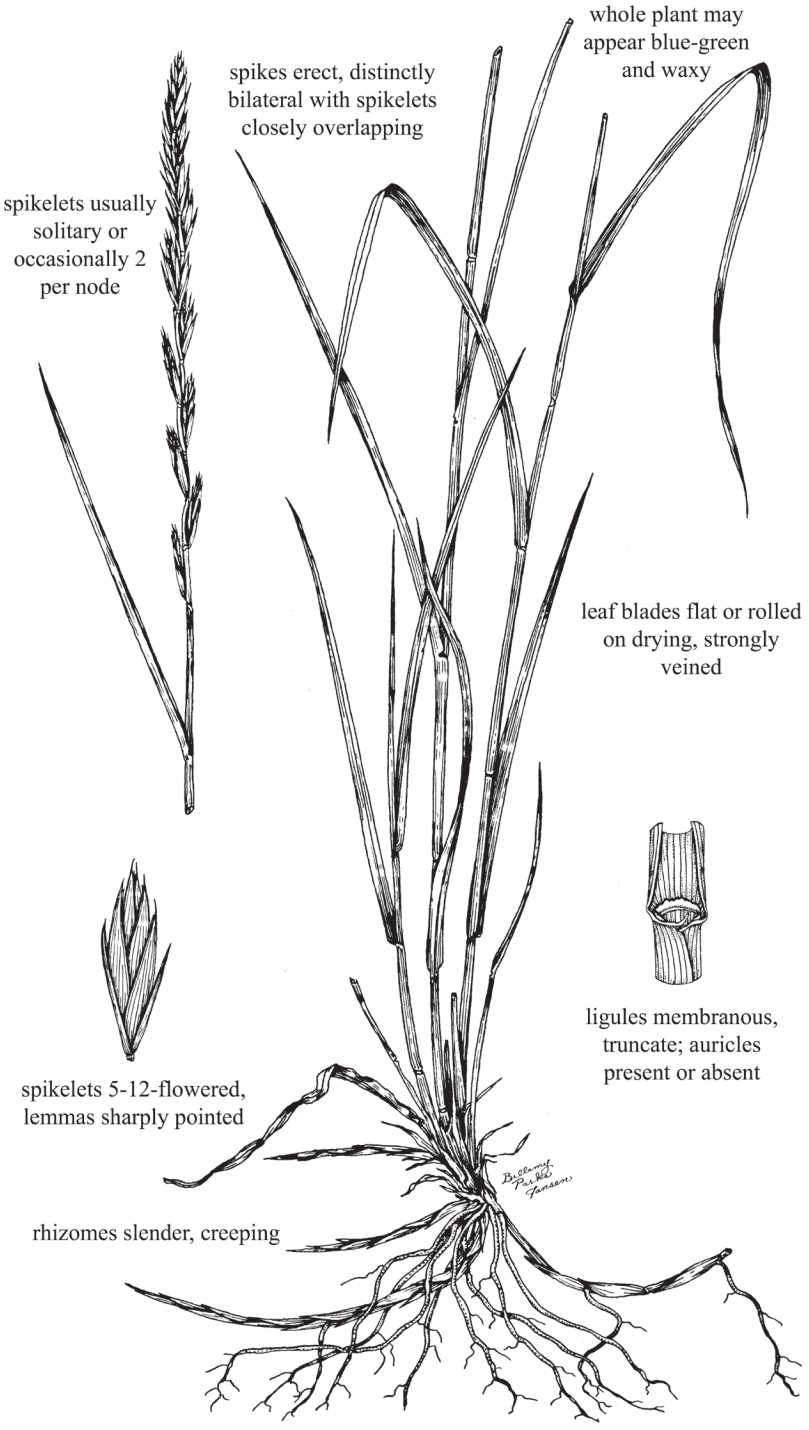
awns: usually none; glumes occasionally awn-tipped or awned (to 5 mm long)

Distribution and Habitat

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



Western wheatgrass

Uses and Values

Forage. This cool-season grass grows rapidly in late April and May, but it starts 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 forage for sheep and cattle. Wheatgrass swales are commonly cut for hay in central and western Nebraska. When cut in early bloom, western wheatgrass makes fair quality hay.

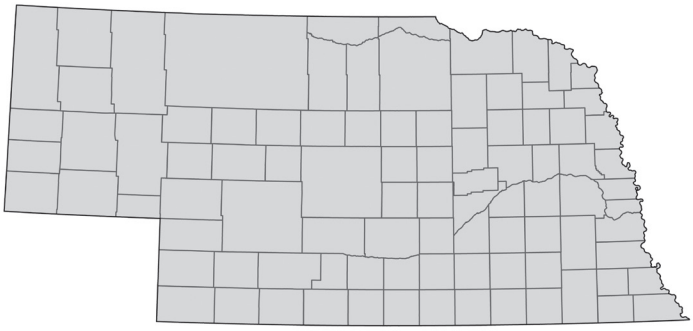
Establishment. This productive grass is valuable for seeding in native grass mixtures on overflow, silty, clayey, saline subirrigated, and sandy ecological sites, particularly in central and western Nebraska. It is occasionally seeded in pure stands for cool-season pasture. When compared with intermediate wheatgrass on silty soils, it is slower to establish, better at tolerating dry conditions, less palatable, and matures earlier in the spring.

Restoration. Western wheatgrass is an important species for prairie restoration in many parts of Nebraska. It is especially important when the soil has significant clay content.

Wildlife. Western wheatgrass provides fair forage for bighorn sheep, pronghorn, and other big game animals. Upland game birds and small mammals eat the seed.

Ornamental. The bluish-green foliage is attractive. Western wheatgrass planted in landscapes spreads rapidly by rhizomes.

Canada wildrye



COMMON NAME:	Canada wildrye
Species:	*Elymus canadensis* L.
Life Span:	Perennial
Origin:	Native
Season:	Cool
Growth Form:	Bunchgrass
Flowering:	June to August

Vegetative Characteristics

culms: erect to ascending from decumbent bases (to 1.5 m tall), tufted, coarse, leafy

sheaths: round, overlapping, smooth, rarely hairy

auricles: well developed (to 2 mm long), slender, clasping, finger-like

ligules: membranous (to 1.5 mm long), truncate, erose or rarely ciliate

blades: flat or folded (to 40 cm long, to 15 mm wide), elongate, ascending, tapering to a fine point, upper surface scabrous, margin finely toothed, midvein prominent below

rhizomes: none

Inflorescence Characteristics

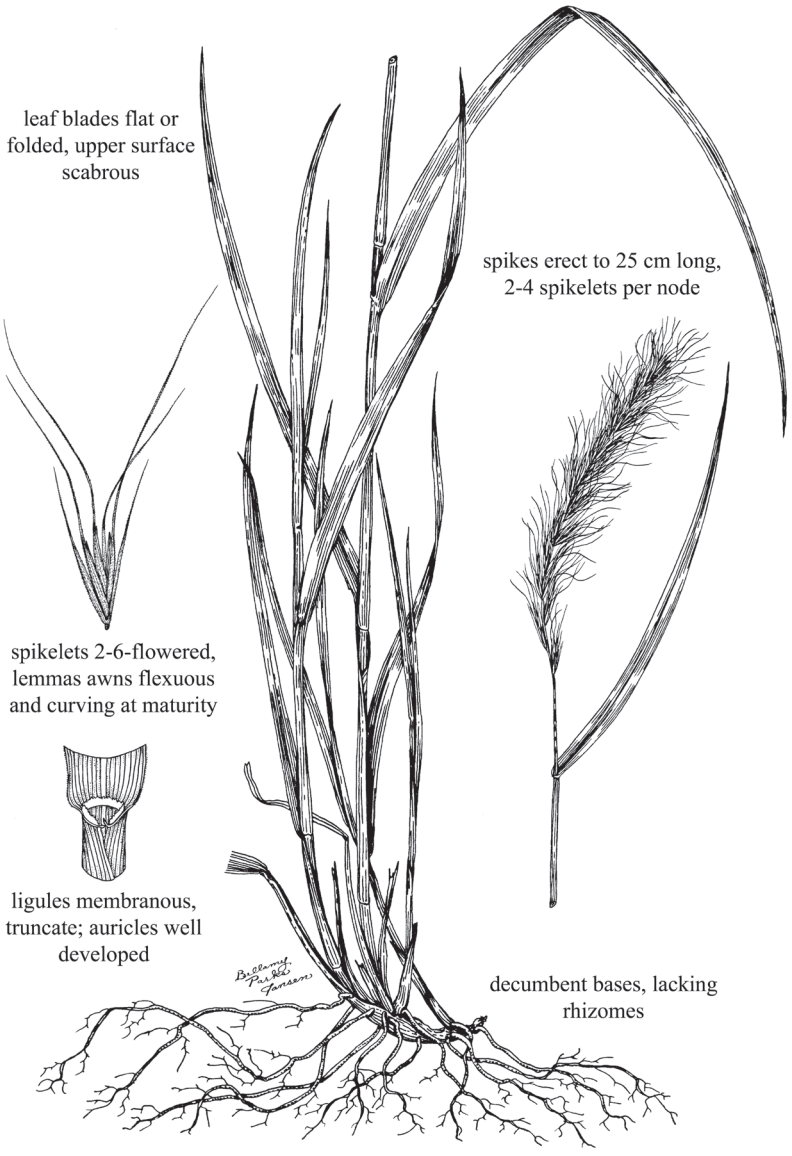
type: spikes (to 25 cm long), erect to arching, thick, bristly; 2–4 spikelets per node, not distinctly bilateral, overlapping, slightly spreading, internodes about one-half spikelet length

spikelets: 2–6-flowered (to 15 mm long, excluding awns); glumes about equal (to 20 mm long), 3–7-veined, subulate; bases flat, broad at base; tapering to an awn; lemmas broad at base (to 15 mm long), surfaces may be scabrous or have long stiff hairs, awned

awns: lemma awned (to 5 cm long), flexuous, curving outward at maturity; glumes tapering to awns (to 20 mm long)

Distribution and Habitat

This native grass is scattered throughout Nebraska but is less common in western Nebraska. It grows primari-



Canada wildrye

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ly where moisture is abundant, such as on overflow and subirrigated ecological sites. On upland sites, it grows where favorable local moisture concentrations prevail, such as near small mammal mounds, edges of roads, and in ditches. Canada wildrye is adapted to the full range of soil textures from gravelly to clayey.

Uses and Values

Forage. This cool-season grass is a satisfactory but not an outstanding rangeland grass. It is moderately palatable in the spring when green and growing, but palatability and nutritive value drop sharply as the plants mature in early summer. When cut before inflorescences appear, it provides hay of fair to good quality. It does not cure well. It does not tolerate continuous grazing. However, natural seeding 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 rangeland.

Establishment. Canada wildrye is used extensively in mixtures for rangeland seeding, prairie restoration, and wildlife plantings. It has good tolerance of soil salinity and is adapted to nearly all soil textures.

Restoration. Canada wildrye should be used in prairie restorations in central and eastern Nebraska where soil moisture is sufficient. It is rarely abundant in native prairies and, therefore, should be a minor component of the seed mixture for the restoration.

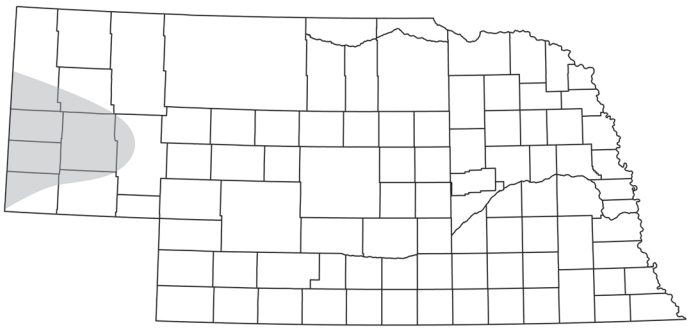
Wildlife. Canada wildrye provides forage for deer and elk in the spring and early summer before production of inflorescences. It furnishes excellent habitat for upland game birds and small mammals by providing nesting, brood, escape, and winter cover.

Ornamental. It may be used as a screen, background, or specimen planting. The arching inflorescences are used in fresh and dried flower arrangements.

Other:

Virginia wildrye [*Elymus virginicus* L.] grows in shaded areas throughout Nebraska. It closely resembles Canada wildrye, except that Virginia wildrye has straight awns that are only about 10 mm in length. Macoun wildrye [*Elymus macounii* Vasey] is a sterile hybrid between foxtail barley and slender wheatgrass. It is most common on disturbed sites where these parental species occur. Its glumes are broad, and it usually has only 1 spikelet (occasionally 2) per inflorescence node.

Russian wildrye



COMMON NAME:	Russian wildrye
Species:	*Psathyrostachys juncea* (Fisch.) Nevski [= *Elymus junceus* Fisch.]
Life Span:	Perennial
Origin:	Introduced
Season:	Cool
Growth Form:	Bunchgrass
Flowering:	May to June

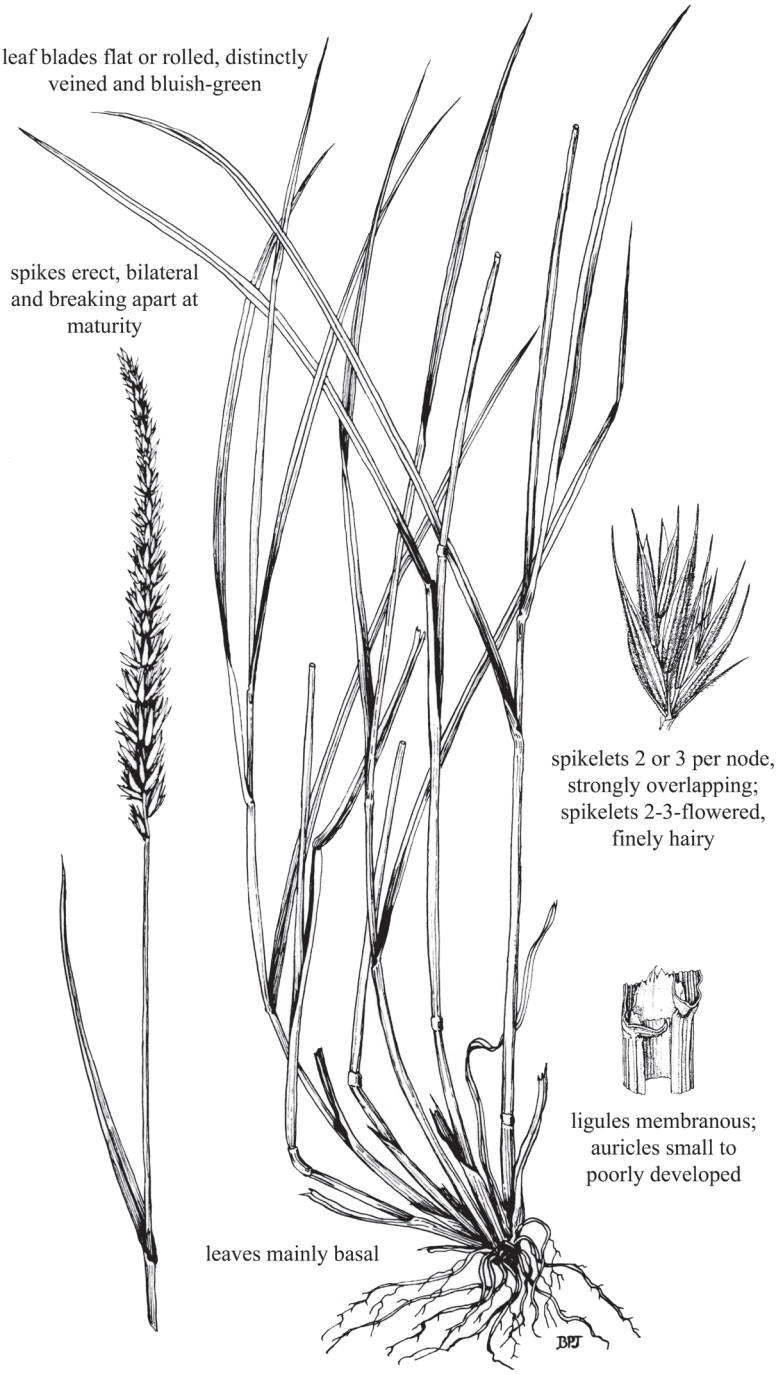
Vegetative Characteristics

culms:	erect (to 1 m tall), not branching, densely tufted; leaves mainly basal; culm may be scabrous just below spike
sheaths:	glabrous, old sheaths remain at base
auricles:	small to poorly developed, clasping the culm
ligules:	membranous (to 1 mm long), truncate
blades:	flat or rolled (to 40 cm long, to 6 mm wide), soft, lax, scabrous, distinctly veined; bluish-green
rhizomes:	none

Inflorescence Characteristics

type:	spikes (to 11 cm long, to 9 mm wide), bilateral, erect, straight, dense; spikelets 2 or 3 per node, strongly overlapping; inflorescence branches breaking apart at maturity
spikelets:	2–3-flowered (to 10 mm long); glumes nearly equal (to 6.5 mm long), needle-like (subulate), 1-veined; lemmas acuminate (to 9 mm long), 5–7-veined, finely hairy, often smooth and shiny at base, awned

awns: lemma tipped with a short awn (to 3 mm long)



Russian wildrye

Distribution and Habitat

Russian wildrye was introduced to North America from Siberia in 1907. Since the 1920s, it has been occasionally seeded for cool-season pasture in western Nebraska. In Nebraska, Russian wildrye is best adapted to the western part of the state. It grows best on loam and clay loam soils. It can tolerate cold, low moisture, and moderately saline and alkaline soils.

Uses and Values

Forage. 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 August to mid-November, and it can be used to extend the grazing period into the fall. Since the leaves cure well, it may be grazed into the winter but livestock avoid the mature inflorescences.

Establishment. Russian wildrye can be seeded for pasture because its basal leaf growth makes it more suited to grazing than as a hay crop. It is slow to establish. Seedlings tend to be weak and develop slowly, being sensitive to frost and drought. 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 will grow any place that crested wheatgrass will grow, but it is better adapted than crested wheatgrass to upland saline or alkaline soils. It produces less forage than tall wheatgrass on saline subirrigated sites.

Restoration. Russian wildrye is an introduced species and is not used in prairie restorations.

Wildlife. Russian wildrye is highly palatable to wildlife. Pronghorn, deer, bighorn sheep, and elk may graze it so closely that stands can be damaged. The seed readily shatters at maturity providing food for small mammals and upland game birds.

Ornamental. Its basal leaves and bluish-green color make Russian wildrye an attractive border plant.

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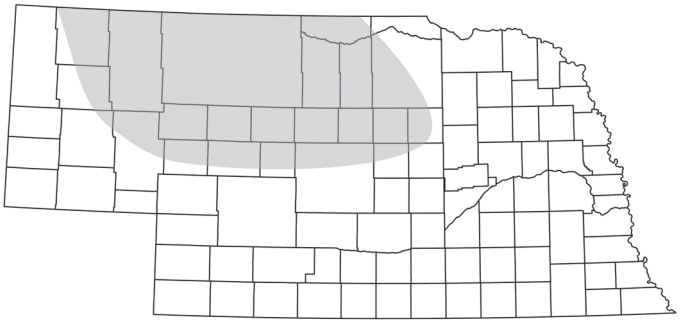
Cool-Season Annual Grasses

American sloughgrass
Annual bluegrass
Cheatgrass
Japanese brome
Little barley
Northern wildrice
Sixweeksgrass

American sloughgrass



COMMON NAME:	American sloughgrass
Species:	*Beckmannia syzigachne* (Steud.) Fernald
Life Span:	Annual
Origin:	Native
Season:	Cool
Flowering:	June to September

Vegetative Characteristics

culms:	erect (to 1.2 tall), robust, glabrous, internodes hollow
sheaths:	round, open
ligules:	membranous (to 10 mm long), acuminate, entire to lacerate
blades:	flat (to 18 cm long, to 12 mm wide), scabrous
rhizomes:	none (rarely with stolons)

Inflorescence Characteristics

type:	panicles (to 30 cm long, to 20 mm wide), contracted, dense; branches 1–2 cm long, ascending
spikelets:	1-flowered (to 3.6 mm long), pedicellate, laterally compressed, strongly keeled; glumes equal (to 3.3 mm long), slightly shorter than the lemmas, 3-veined, apices glabrous; lemmas faintly 5-veined (to 3.6 mm long), lanceolate, acuminate, sometimes mucronate
awns:	none

Distribution and Habitat

American sloughgrass is most common in fine-textured soils that are saturated with water or the water is near the soil surface all year. It is found in wet meadows, marshes, ditches, around ponds and lakes, and in standing water.

Uses and Values

Forage. American sloughgrass is palatable to all classes of livestock and wildlife. It can be hayed if the soil is not too wet. It typically supplies a small amount of forage for livestock because it is usually not abundant and the wet habitats in which it grows are not always grazed.

Establishment. This annual species is not commonly used in grassland seedings, but it can provide valuable erosion protection in wet habitats.

Restoration. It is not used in prairie restorations.

Wildlife. Deer lightly graze American sloughgrass. It is commonly planted for wildlife habitat.

Ornamental. It is not used in ornamental plantings.

American sloughgrass

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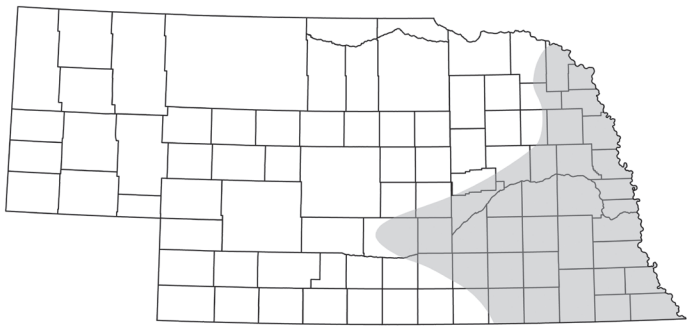
Annual bluegrass



COMMON NAME:	Annual bluegrass
Species:	*Poa annua* L.
Life Span:	Annual
Origin:	Introduced
Season:	Cool
Flowering:	April to October

Vegetative Characteristics

culms:	erect to ascending (to 30 cm tall), sometimes geniculate, slender, flattened, glabrous, may form mats
sheaths:	round, closed only near the base or up to three-fourths of their length, glabrous
ligules:	membranous (to 4 mm long), truncate to acuminate, decurrent
blades:	folded (to 14 cm long, to 4 mm wide), tips abruptly pointed and boat-shaped, glabrous, soft
rhizomes:	none

Inflorescence Characteristics

type:	panicles (to 10 cm long, to 4 cm wide), pyramidal or ovate, open; branches at lowermost node solitary or paired, spikelets on upper one-half of branches
spikelets:	2–8-flowered (to 6 mm long, to 2 mm wide), florets distinctly separated from each other; glumes unequal; first glume smaller (2.2 mm long), 1–3-veined; second glume larger (to 2.5 mm long), 3-veined; margins thin and membranous; lemmas keeled, margins thin and membranous, pubescent on the veins
awns:	none

Distribution and Habitat

Annual bluegrass is most common in the eastern portion of the state. It grows in abused pastures, roadsides, lawns, gardens, waste places, cultivated fields, and ditches.

Uses and Values

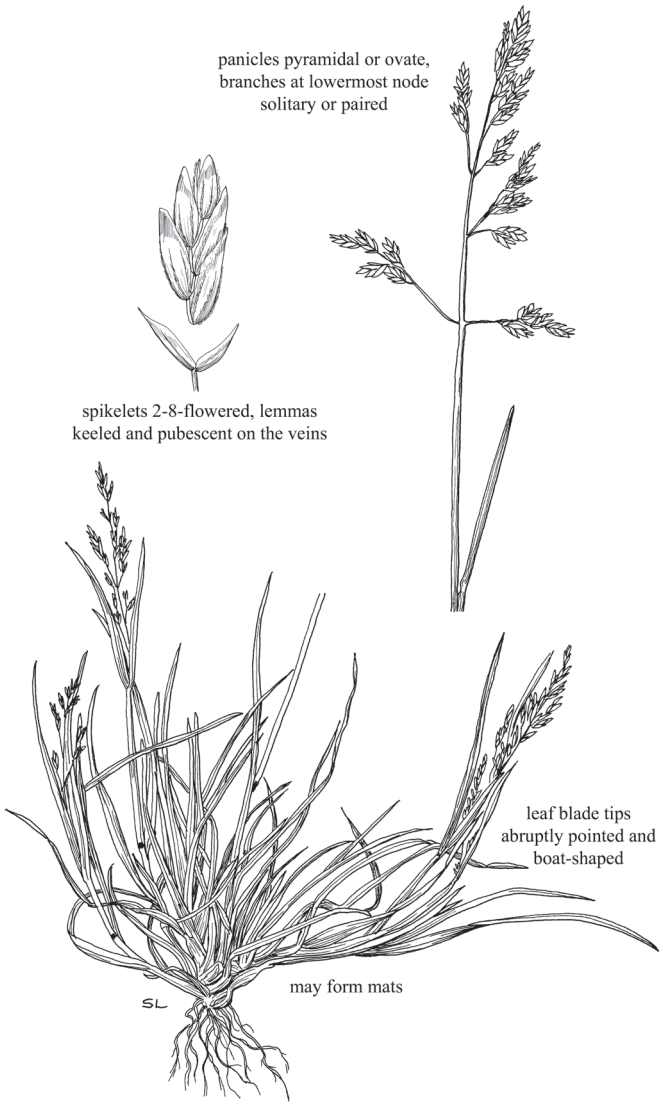
Forage. Annual bluegrass starts growth early in the spring before most other grasses. During this period, it supplies a small amount of forage for livestock. Its palatability quickly decreases causing animals to switch to other species.

Establishment. This annual species is not used in grassland seedings

Restoration. It is an introduced, annual species and is not used in prairie restorations.

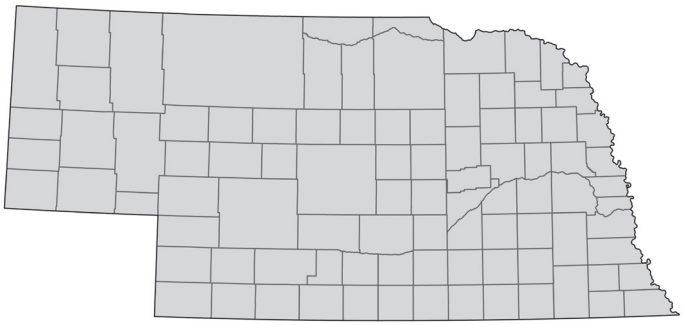
Wildlife. Deer lightly graze annual bluegrass. Prairie chickens and small mammals eat the seeds.

Ornamental. Annual bluegrass is frequently an impurity in lawn grass seed. It is not desirable, because it gives lawns an uneven appearance.



Annual bluegrass

Cheatgrass



COMMON NAME:	Cheatgrass (downy brome)
Species:	*Bromus tectorum* L.
Life Span:	Annual
Origin:	Introduced
Season:	Cool
Flowering:	May to June

Vegetative Characteristics

culms: ascending (to 70 cm tall), may be decumbent at the base, may be branched from the base

sheaths: round, flattened toward collar, softly hairy, margins closed

ligules: membranous (to 3 mm long), obtuse to acuminate, lacerate to erose

blades: flat (15 cm long, to 6 mm wide), with long soft hairs

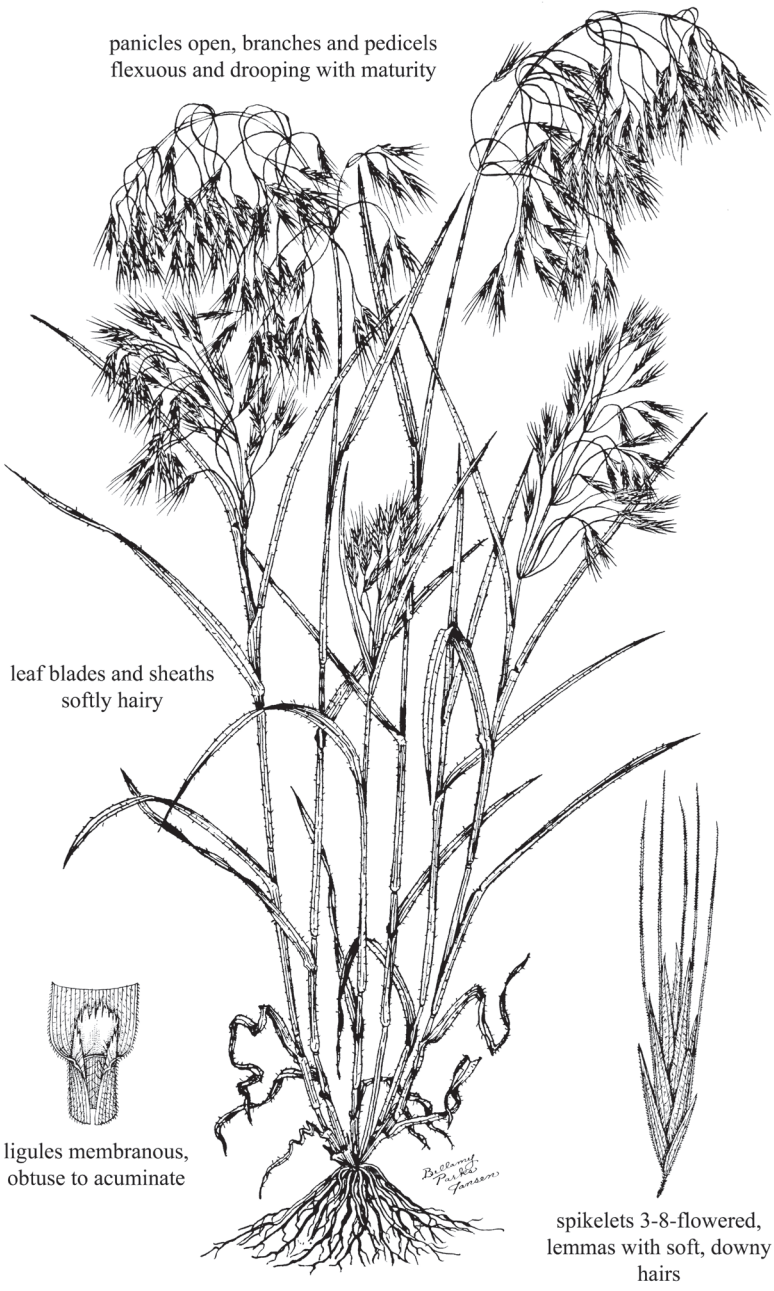
rhizomes: none

Inflorescence Characteristics

type: panicles (to 18 cm long), open, occasionally narrow, much-branched; branches and pedicels slender, flexuous, spreading, drooping with maturity; typically brownish-red to purple at maturity

spikelets: 3–8-flowered (to 20 mm long, to 6 mm wide, excluding awns), nearly round; glumes unequal; first glume 1-veined (to 6 mm long), second glume 3–5-veined (to 11 mm long), with broad transparent margins, glabrous to hirsute; lemmas (to 15 mm long) with thin membranous margins and ending in long, slender teeth; teeth to 3 mm long); lemmas with soft, downy hairs

awns: lemma awned (to 18 mm long); awn straight to slightly geniculate



Cheatgrass

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Distribution and Habitat

Cheatgrass is a weedy species introduced unintentionally from Europe. It is widely distributed in Nebraska and is particularly common on silty, limy upland, and clayey ecological sites in western Nebraska. Since this plant readily invades sites where the natural vegetation has been weakened by improper grazing, drought, or previous cultivation, it is often an indicator of poor rangeland health. Cheatgrass does not compete strongly with established perennial grasses and occurs only in small amounts on rangeland in good health. However, once it becomes a dominant component of the vegetation, it is difficult to control and retards rangeland improvement. Its abundance changes greatly from year to year with fluctuating rainfall. Germination and early growth is favored by a moist and warm fall, winter, and spring. 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.

Uses and Values

Forage. Cheatgrass remains green and palatable only for two to four weeks in the early spring and for a few weeks 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 mouth and eyes of grazing animals and contaminate sheep fleeces. Animals fed hay containing mature cheatgrass may also be injured. Dry cheatgrass burns readily and is a fire hazard.

Establishment. Cheatgrass is a highly invasive, weedy species and is not used in grassland seedings.

Restoration. It is an annual, introduced species and is not used in prairie restorations.

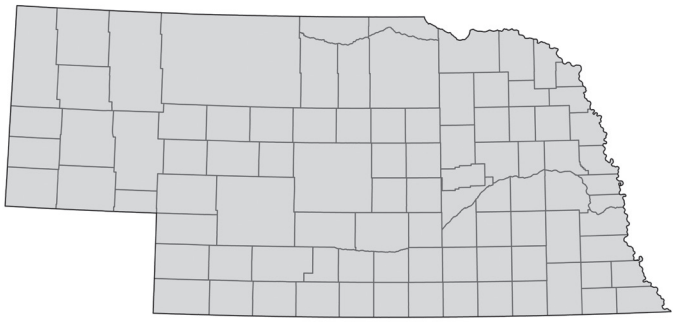
Wildlife. New growth provides food for wild turkeys, deer, pronghorn, bighorn sheep, and prairie dogs. Seeds are eaten by wild turkeys, songbirds, and small mammals.

Ornamental. Cheatgrass is not used as an ornamental.

Other

Bald brome [*Bromus racemosus* L.], corn brome [*Bromus squarrosus* L.], and rye brome [*Bromus secalinus* L.] are closely related to cheatgrass and have similar growth, uses, and values. These bromes can be readily separated from cheatgrass. Bald brome first glumes are 5-veined, and the second glumes are 7-veined. Corn brome awns are usually less than 10 cm long. Rye brome sheaths are usually glabrous.

Japanese brome



COMMON NAME:	Japanese brome
Species:	*Bromus japonicus* Houtt.
Life Span:	Annual
Origin:	Introduced
Season:	Cool
Flowering:	May to July

Vegetative Characteristics

culms:	ascending (to 60 cm tall), slender, weak
sheaths:	round, closed, densely hairy with long hairs
ligules:	membranous (to 2 mm long), obtuse to rounded, lacerate
blades:	flat (to 25 cm long, to 7 mm wide), densely hairy or velvety, midveins prominent
rhizomes:	none

Inflorescence Characteristics

type:	panicles (to 20 cm long), open, spreading to loosely ascending; branches slender, flexuous, drooping
spikelets:	6–11-flowered (to 3.5 cm long, excluding awns), nearly round, pedicels longer than the spikelets; glumes unequal; first glume 3–5-veined (to 6 mm long), second glume 7-veined (to 8 mm long), broad, awnless; lemmas relatively broad (to 9 mm long), glabrous, split or lobed near the tip (teeth to 3 mm long), awned
awns:	lemma of upper florets awned (to 13 mm long) from between the teeth, awns become twisted and bent at maturity

Distribution and Habitat

Japanese brome is widespread on waste areas and deteriorated rangeland in Nebraska. It is common on roadsides and in disturbed areas. It occurs on all ecological sites except wetlands and often grows intermixed with cheatgrass.

Uses and Values

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

Establishment. This weedy species should not be seeded.

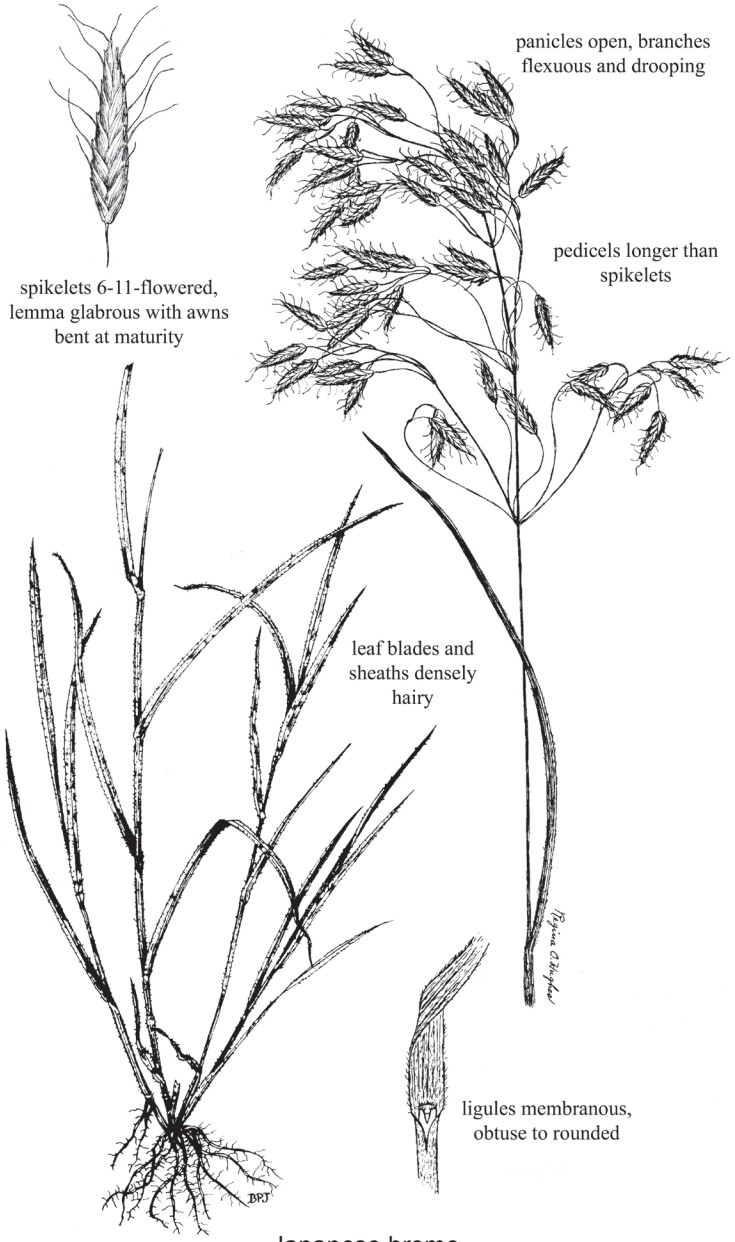
Restoration. Japanese brome is an annual, introduced species and is not used in prairie restorations.

Wildlife. Small mammals, songbirds, and prairie chickens eat the seeds.

Ornamental. Japanese brome is not used as an ornamental

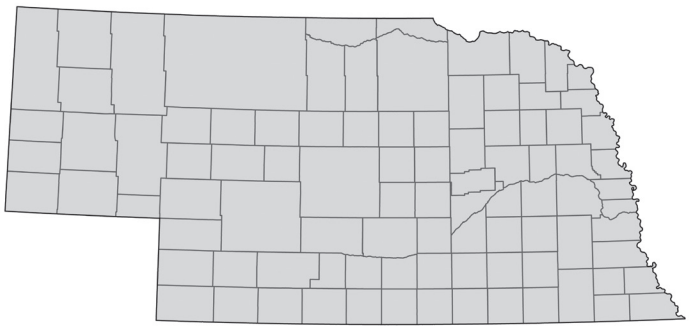
Other

Japanese brome is known to cross with two similar annual bromes, bald brome (*Bromus racemosus* L.) and rye brome (*Bromus secalinus* L.). All are weedy grasses that require similar management considerations and normally are unable to compete with healthy, vigorous perennial grasses.



Japanese brome

Little barley



COMMON NAME:	Little barley
Species:	*Hordeum pusillum* Nutt.
Life Span:	Annual
Origin:	Native
Season:	Cool
Flowering:	May to June

Vegetative Characteristics

culms:	ascending (to 40 cm tall), weak; glabrous; nodes dark
sheaths:	round, glabrous or with a few hairs

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auricles:	small auricles may or may not be present
ligules:	membranous (to 0.8 mm long), truncate, may be erose
blades:	flat (to 12 cm long, to 5 mm wide), lax, margins weakly barbed, may be slightly hairy
rhizomes:	none

Inflorescence Characteristics

type:	spicate racemes (to 8 cm long, to 8 mm wide, excluding awns), narrow, erect, dense; 3 spikelets per node, the center spikelet fertile, the 2 lateral spikelets sterile and on pedicels; rachis readily disarticulating
spikelets:	1-flowered; glumes equal; glumes of the central spikelet narrow (to 5.5 mm long), 3-veined; glumes of the lateral spikelets shorter, inner 2 similar to central spikelet glumes; outer 2 awn-like, scabrous; lemmas of central spikelet narrow (to 7 mm long, excluding awns), lemmas of lateral spikelets smaller (to 3.5 mm long)
awns:	lemma of central spikelet awned (to 7 mm long), lemmas of lateral spikelets short-awned, outer glumes of lateral spikelets awn-like, other glumes awned (to 15 mm long)
other:	base of the inflorescence sometimes enclosed in the subtending sheath

Distribution and Habitat

This native grass is widespread and common on dry soils or alkaline soils, particularly in disturbed areas where competition from perennial plants is low. Little barley may be dense during years with favorable winter and spring moisture on formerly cultivated land or rangeland damaged by drought or improper use.

Uses and Values

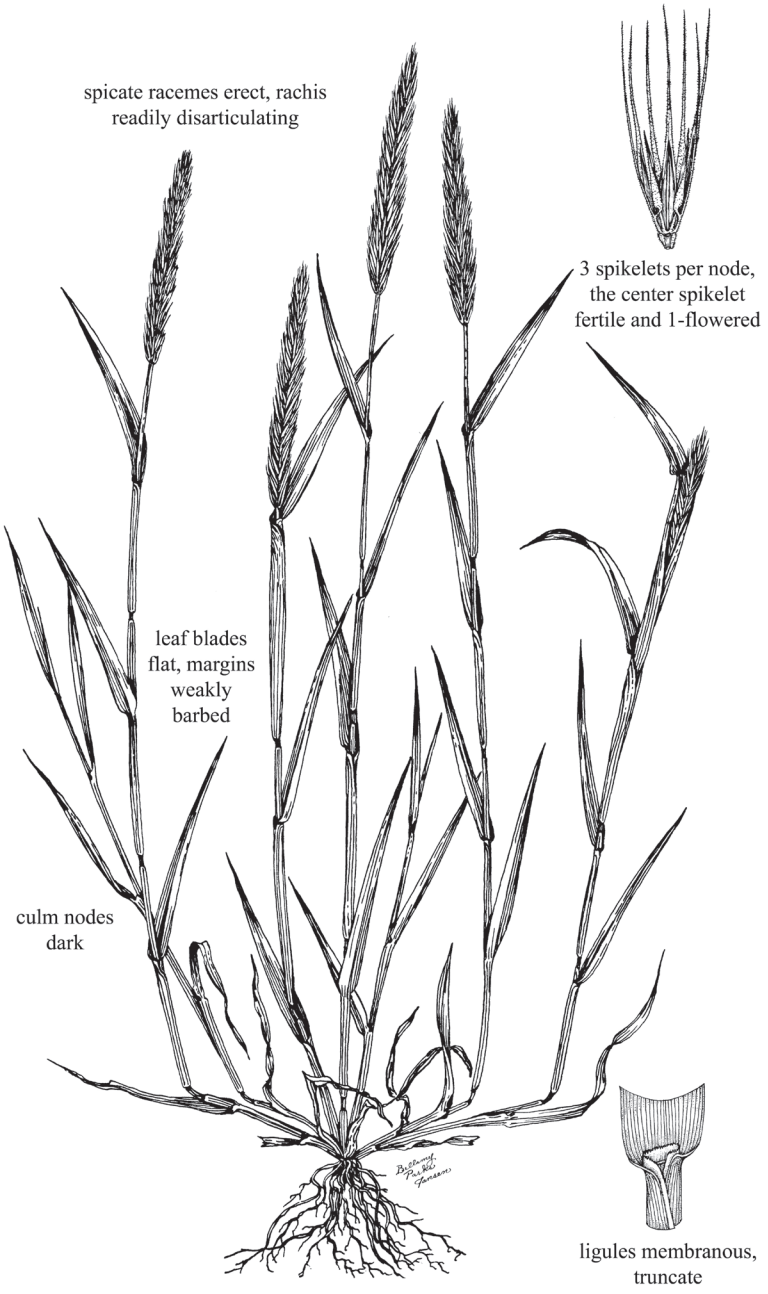
Forage. Some temporary grazing may be provided by this annual, cool-season grass in late fall and early spring. However, forage production is low and variable. Plants produce seed and become dry and unpalatable by early to mid-June. Little barley spreads in rangeland in poor health and cultivated pastures with poor stands, vigor, and fertility. Practices that will maintain rangeland and pastureland in a vigorous, productive condition will effectively control little barley.

Establishment. It is an annual species and is not a component of grassland seedings.

Restoration. Little barley is an annual, weedy species and is not seeded in prairie restorations.

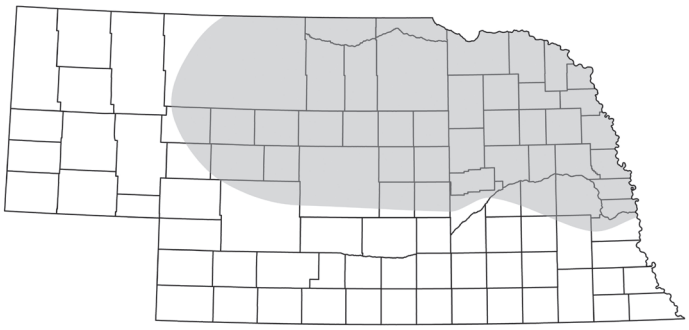
Wildlife. Seeds and leaves of little barley are eaten occasionally by waterfowl and small mammals.

Ornamental. Little barley is not used as an ornamental.



Little barley

Northern wildrice



COMMON NAME:	Northern wildrice
Species:	*Zizania palustris* L
Life Span:	Annual
Origin:	Native
Season:	Cool
Flowering:	July and August

Vegetative Characteristics

culms:	erect (to 3 m tall), robust, emergent to partially immersed in water, internodes glabrous, pubescent at the nodes
sheaths:	round, open, loose, glabrous or sparsely hairy
ligules:	membranous (to 15 mm long)
blades:	flat (to 80 cm long, to 3 cm wide), glabrous to sparsely hairy
rhizomes:	none

Inflorescence Characteristics

type:	panicles (to 60 cm long, to 35 cm wide), open; branches with unisexual spikelets; lower branches with staminate spikelets, divergent; upper branches with pistillate spikelets, ascending
spikelets:	1-flowered, glumes absent; staminate spikelets lanceolate to narrowly oblong (to 16 mm long), pointed to awned; pistillate spikelets narrowly oblanceolate (to 3 cm long, to 2.5 mm wide)
awns:	staminate lemmas awned or not awned (to 2 mm long); pistillate spikelets awned (to 10 cm long)

Distribution and Habitat

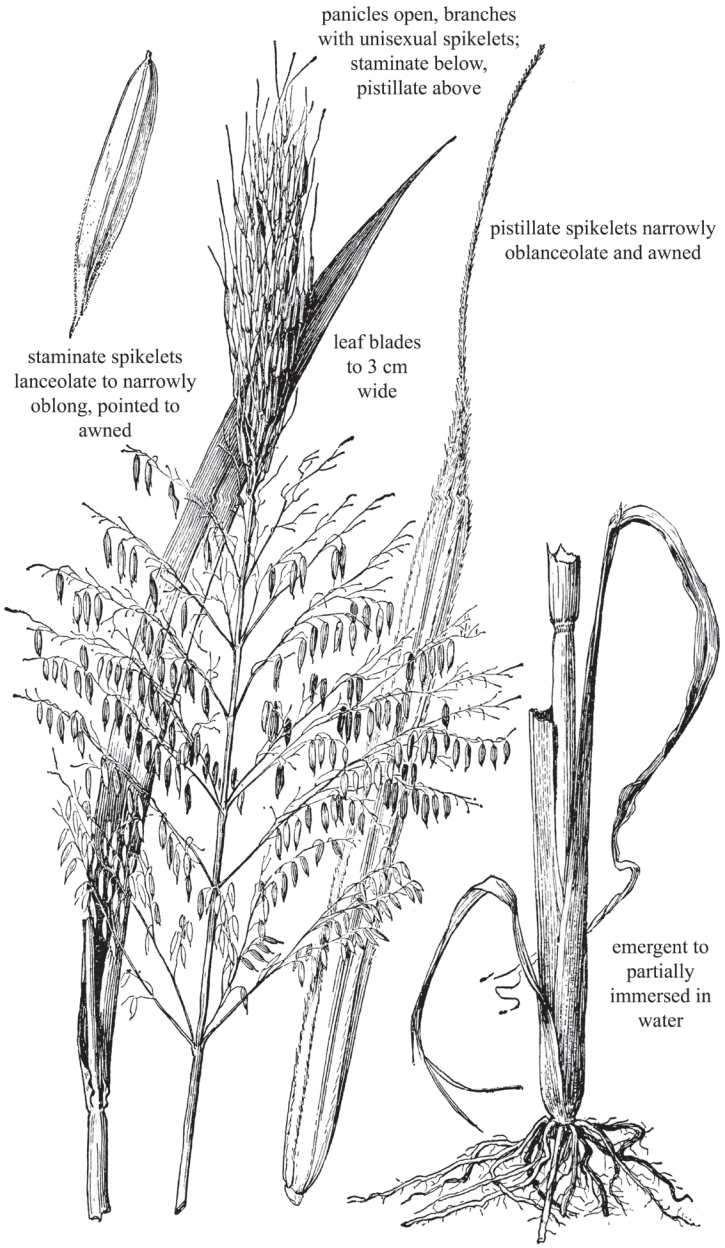
Northern wildrice grows in flooded clay and sandy loam soils in lakes, rivers, and streams. It is most common in north-central and northeastern Nebraska.

Uses and Values

Forage. Northern wildrice is palatable to cattle. It is not considered to be an important forage source because its habitat is not one in which animals easily graze.

Establishment. This annual species can be broadcast in pond and lake margins.

Restoration. It can be planted in the appropriate habitat within prairie restorations.



Northern wildrice

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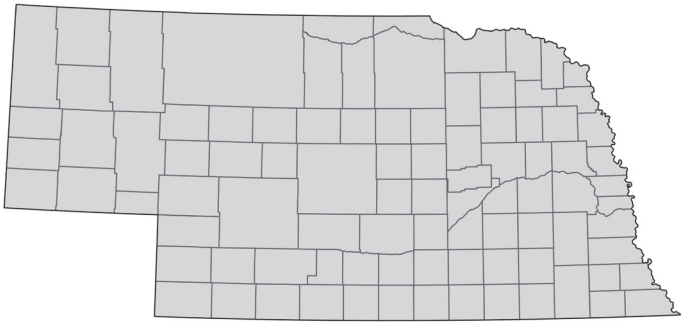
Wildlife. Deer, elk, and geese graze the foliage. Northern wildrice seeds are an important source of food for many species of birds.

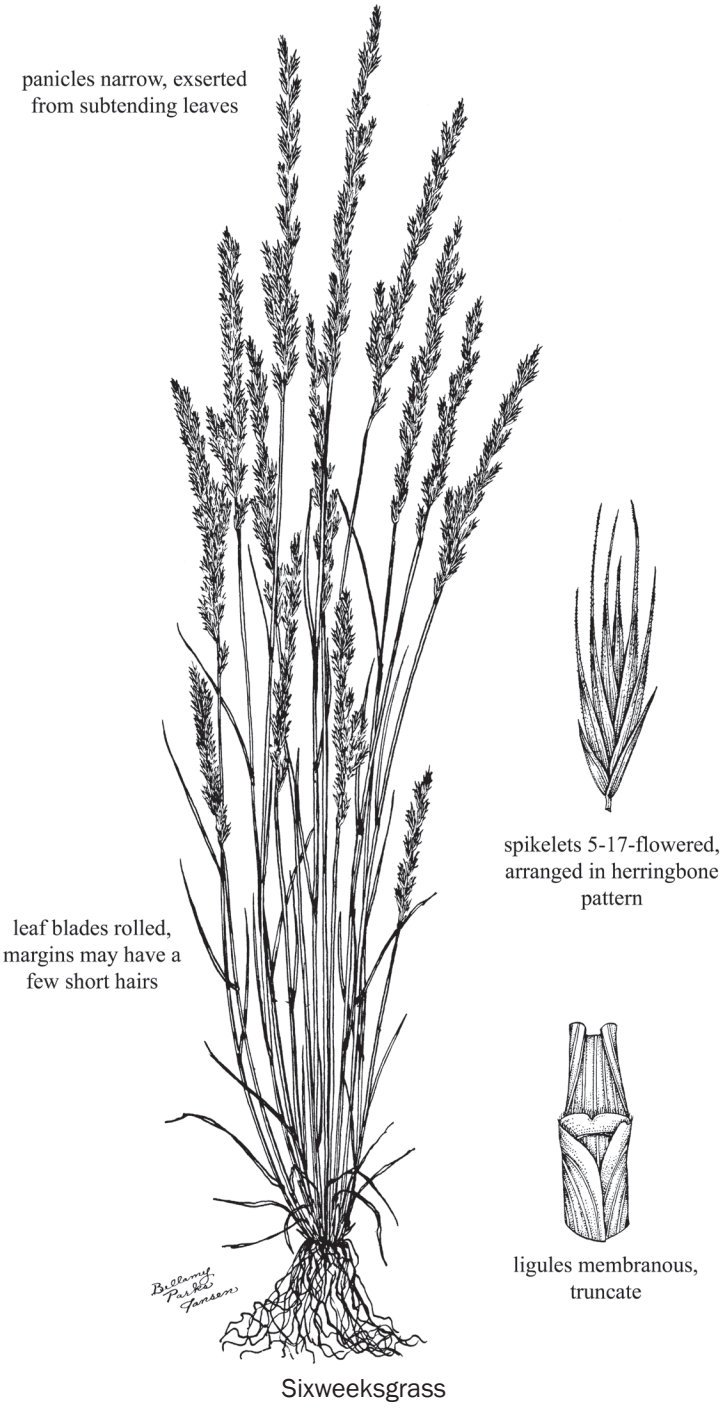
Ornamental. It can be grown as an ornamental in large garden ponds. However, its size must be taken into consideration before planting.

Other

Northern wildrice was an important source of food for some Native Americans. It continues to be harvested and marketed for food.

Sixweeksgrass





Sixweeksgrass

COMMON NAME:	Sixweeksgrass (sixweeks fescue)
Species:	*Vulpia octoflora* (Walter) Rydb. [= *Festuca octoflora* (Walter) Rydb.]
Life Span:	Annual
Origin:	Native
Season:	Cool
Flowering:	April to June

Vegetative Characteristics

culms:	erect or from a decumbent base (to 60 cm tall), weak, solitary or in small groups, glabrous to glaucous
sheaths:	round, open, glabrous or sparsely hairy
ligules:	membranous (to 1.5 mm long), truncate, erose
blades:	rolled (to 10 cm long, to 2 mm wide), glabrous to sparsely hairy, margins may have few short hairs
rhizomes:	none

Inflorescence Characteristics

type:	panicles (to 12 cm long), narrow, compact, exserted from subtending leaves; branches short
spikelets:	5–17-flowered, (to 10 mm long, excluding awns), arranged in a herringbone pattern, dense; rachilla visible between florets; glumes unequal; first glume (to 4.5 mm long) 1-veined; second glume (to 6 mm long), 3-veined; membranous, keeled, sharply pointed; lemmas (to 6 mm long) round, slender, 5-veined, pointed
awns:	lemmas awned (to 10 mm long), glumes with awn-tip or short awn

Distribution and Habitat

Sixweeksgrass is a weedy, winter annual widespread on Nebraska pastures, rangeland, and waste places. It is found on practically all ecological sites where bare spaces between perennial grasses allow it to grow. It is particularly common on upland sites in the Sandhills.

Uses and Values

Forage. This grass is unpalatable and nearly worthless for forage since it pulls up so easily. It is sometimes called "pullout grass." Cattle tend to avoid grazing in areas infested with sixweeksgrass. Although an abundance of sixweeksgrass is a result of improper grazing and indicative of rangeland in poor health, its prevalence in certain years appears to be primarily caused by weather conditions. If the fall weather is warm and moist, seeds of sixweeksgrass 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.

Establishment. This annual species is not used in grassland seedings.

Restoration. Sixweeksgrass is an annual and should not be used in prairie restorations.

Wildlife. Sharp-tailed grouse, songbirds, and small mammals eat the seeds.

Ornamental. Sixweeksgrass is not used as an ornamental.

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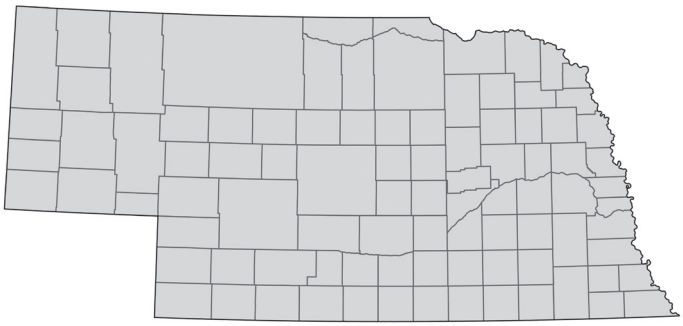
Grass-like Plants

American bulrush
Field horsetail
Schweinitz flatsedge
Nebraska sedge
Needleleaf sedge
Sun sedge
Threadleaf sedge
Yellow nutsedge

American bulrush



COMMON NAME:	**American bulrush (common threesquare)**
Species:	*Schoenoplectus pungens* (Vahl) Palla [= *Scirpus americanus* Pers., misapplied to Nebraska specimens]
Life Span:	Perennial
Origin:	Native
Season:	Cool
Growth Form:	Grass-like plant
Flowering:	May to September

Vegetative Characteristics

culms:	erect to ascending (to 1.5 m tall), sharply triangular in cross section; may be lax, bowing, or curving upward from horizontal stems, loosely clustered, often thick (to 25 mm wide); leaves attached near the culm base
leaves:	flat or folded (to 30 cm long, to15 mm wide); few (usually 3 or more); basal, keeled, V-shaped in cross-section
other:	creeping, horizontal rootstalks

Floral and Fruit Characteristics

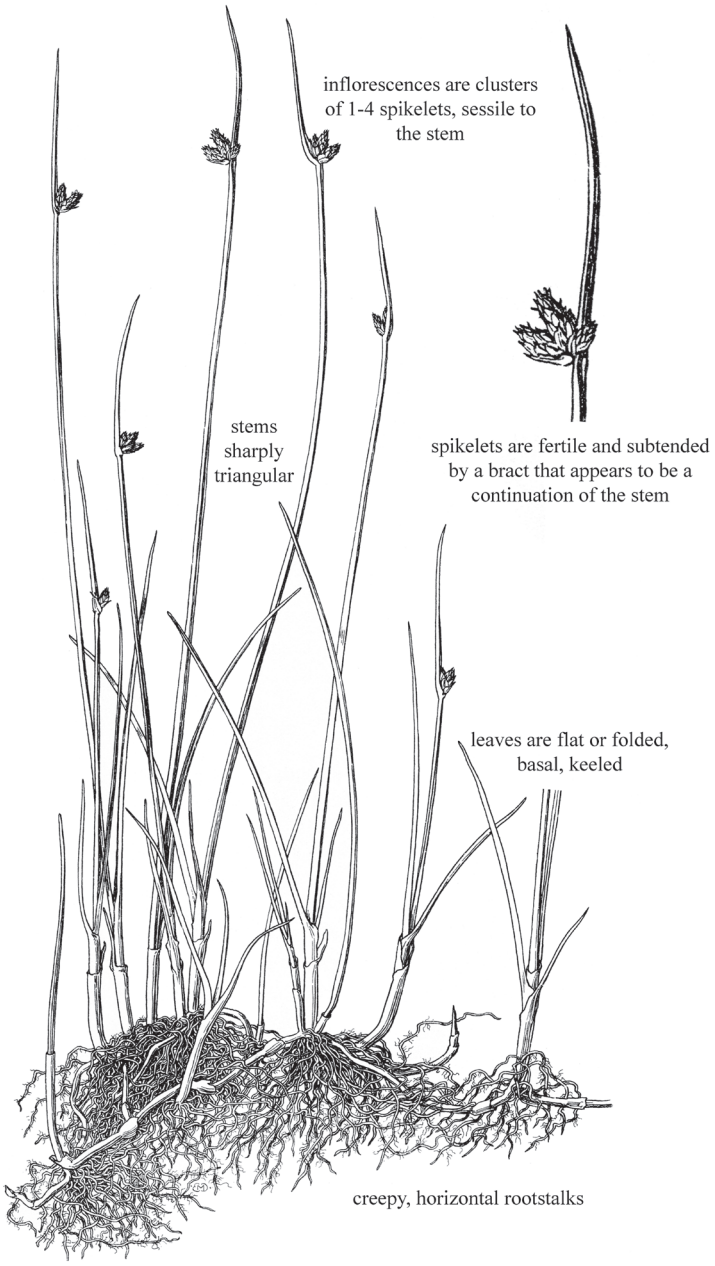
inflorescences:	clusters, capitate globe-like; 1–4 spikelets per cluster, sessile
spikelets:	fertile (to 20 mm long, to 4 mm wide), subtended by a bract (to 6 cm long); bracts appear to be a continuation of the triangular stem; scales (to 4 mm long) with pointed tips, orangish-brown to brown, thin and transparent; midvein prolonged as a short and straight awn
fruits:	seed (achene) oval (3 mm long),with 3–6 perianth bristles from the base reaching almost to tip of the achene

Distribution and Habitat

American bulrush is common in marshes, wet meadows and other wet, low places. It commonly grows in saline alkaline soils, but these soils are not considered an essential factor for its survival.

Uses and Values

Forage. In drier years when sites that are normally wet can be hayed, American bulrush can make up a signifi-



American bulrush

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cant part of harvested hay. Forage quality is considered to be quite low. Coarse hay, containing American bulrush is often fed on Sandhills trails, blowouts, 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.

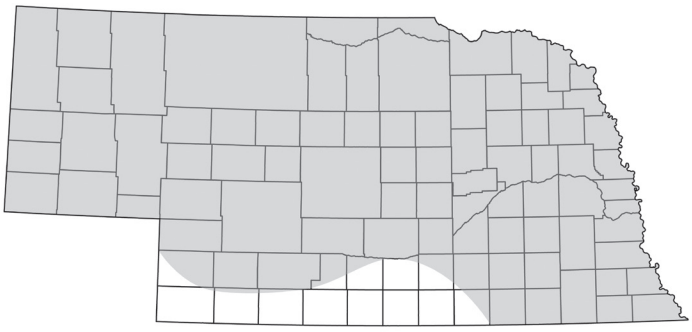
Establishment. It is not used in plantings.

Restoration. Rootstalks of American bulrush can be transplanted into restorations of small, wet areas.

Wildlife. It provides escape and winter cover for wildlife.

Ornamental. American bulrush can be transplanted into banks of ponds, along streams, and into other wet areas. However, size and rapid spread should be considered before planting.

Field horsetail



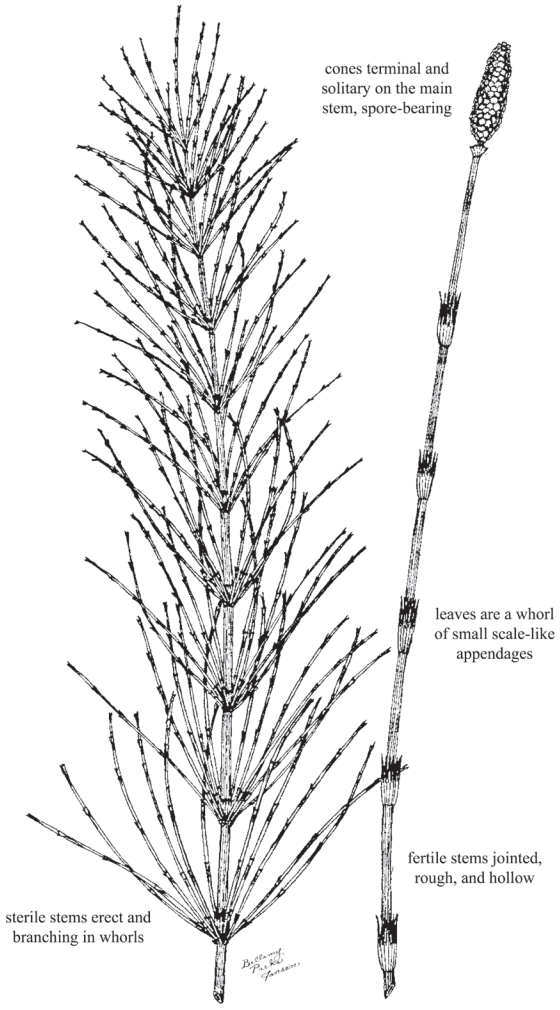
COMMON NAME:	Field horsetail
Species:	*Equisetum arvense* L.
Life Span:	Perennial
Origin:	Native
Season:	Cool
Growth Form:	Grass-like plant
Flowering:	April to June

Vegetative Characteristics

stems:	solitary or several in a group, in two forms, strongly dissimilar; sterile stems (to 80 cm long) erect, branching in whorls; fertile stems soon withering (to 20 cm long), simple or rarely branching; stems rough, hollow, jointed; easily pulled apart at the joints
leaves:	if present, a whorl of small scale-like appendages, turning brown at maturity; sheaths broad and conspicuous (to 20 mm long), teeth persistent, cylindrical, usually grayish with black bands above and below
rhizomes:	creeping, slender

Floral and Fruit Characteristics

inflorescences:	cones (strobili) to 3.5 mm long, terminal and solitary on the main stem, ellipsoid, elevated on stalks often longer than the cones
strobili:	oblong to nearly cone-shaped; strobilus bearing numerous sporangia
spores:	minute, numerous, globe-shaped, uniform, green



Field horsetail

Distribution and Habitat

Field horsetail is common in damp to wet soils. It grows in along streams, ponds, and lake beds where the subsoil is moist and in low pastures, meadows, thickets, roadsides, and disturbed areas.

Uses and Values

Forage. Field horsetail is not an important or desirable forage plant. In hay, excessive quantities (more than 20% of the total amount) have been know 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.

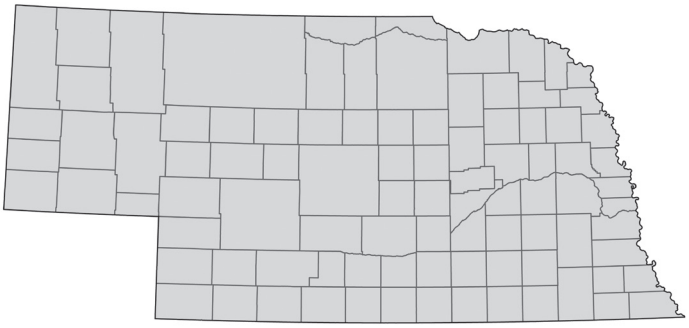
Establishment. It is not used in grassland seedings.

Restoration. It is used occasionally in the restoration of small wet meadows where it is transplanted into the site.

Wildlife. Field horsetail forage is fair for deer and pronghorn in winter, and its roots and stems are eaten by wild geese.

Ornamental: Field horsetail is grown in Japanese gardens and along the edges of water gardens. This plant can be invasive, so container plantings sunk into the ground are often recommended.

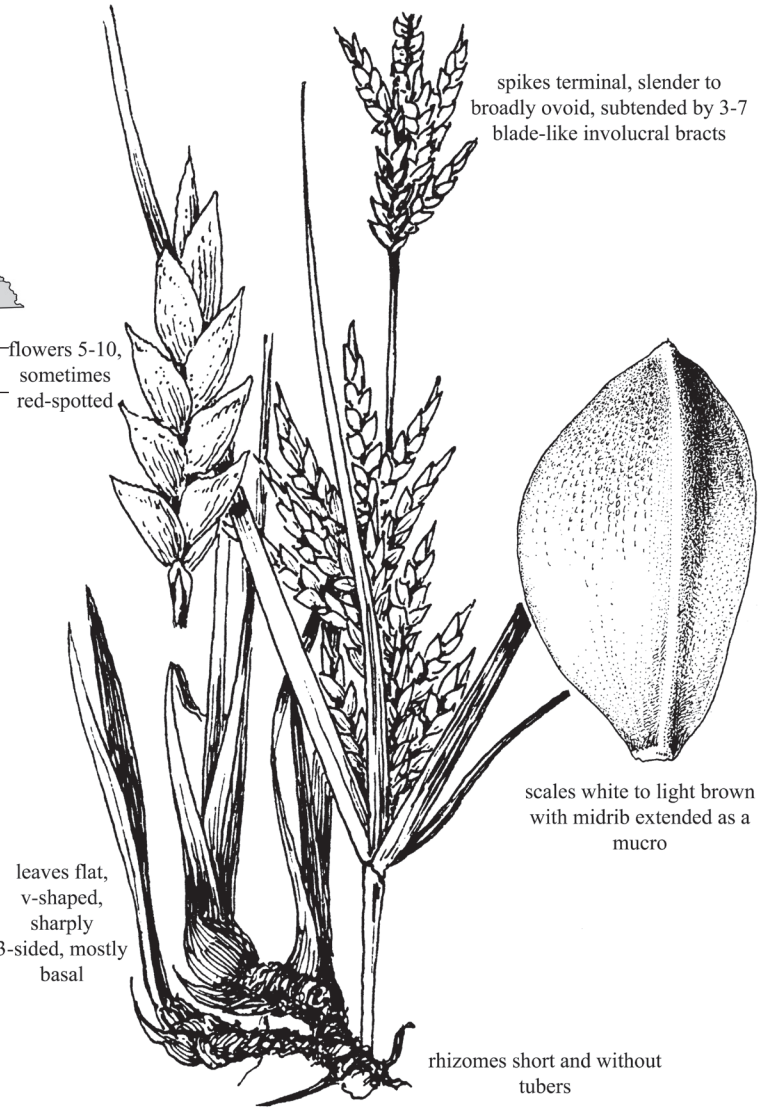
Schweinitz flatsedge



COMMON NAME:	Schweinitz flatsedge
Species:	*Cyperus schweinitzii* Torr.
Life Span:	Perennial
Origin:	Native
Season:	Warm
Growth Form:	Grass-like
Flowering:	June-September

Vegetative Characteristics

stems:	erect (to 60 cm tall), sharply 3-sided, solid, glabrous or minutely scabrous
leaves:	flat or V-shaped, 3-ranked; mostly basal; blades grass-like (to 35 cm long, to 6 mm wide), margins and midveins minutely scabrous; upper leaves bladeless
rhizomes:	short, without tubers



Schweinitz flatsedge

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Floral and Fruit Characteristics

inflorescences:	spikes terminal (to 25 mm long, to 16 mm wide), slender to broadly ovoid, uncrowded, subtended by 3–7 blade-like involucral bracts
flowers:	flowers 5–10 (to 10 mm long, to 4 mm wide), slender, spreading, sometimes red-spotted, scales white to light brown with midrib extended as a mucro
fruits:	achenes (seeds), ellipsoid to ovoid (to 2.5 mm long, to 1.5 mm wide), light brown to dark brown to black.

Distribution and Habitat

Schweinitz flatsedge is found throughout Nebraska growing in upland prairies and along rivers and streams. In Nebraska, it is least common in the southeast and in the Panhandle.

Uses and Values

Forage. Schweinitz flatsedge provides poor to fair forage for livestock. It can be an important component of hay. It is especially palatable in the spring, but it is grazed throughout the season.

Establishment. Schweinitz flatsedge is not used in grassland seedings. Commercial seed is not available.

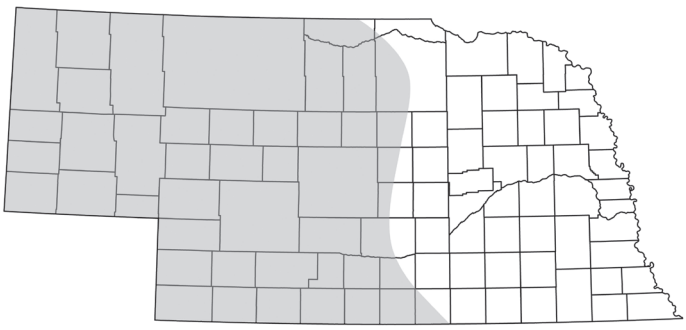
Restoration. It is not used in prairie restorations.

Wildlife. It is grazed by deer and elk. Young shoots are an important food for waterfowl,

muskrats, and other small mammals.

Ornamental. This species is rarely used as an ornamental.

Nebraska sedge



COMMON NAME:	Nebraska sedge
Species:	*Carex nebrascensis* Dewey
Life Span:	Perennial
Origin:	Native
Season:	Cool
Growth Form:	Grass-like
Flowering:	April to July

Vegetative Characteristics:

stems:	erect (to 1.2 m tall), stout, triangular in cross-section, brown to straw-colored
leaves:	grass-like, blades flat, linear (to 40 cm long, to 12 mm wide), 8–15 per culm, most on the lower one-third of the plant, flat or channeled near the base, thick, firm, light green to bluish-green
rhizomes:	long, scaly, brown to straw-colored
other:	plants brownish- to red-tinged at the base, old sheaths persisting

Floral and Fruit Characteristics:

inflorescences:	spikes 3–6; upper 1–2 spikes staminate (to 7 cm long, to 9 mm wide), linear; lower 2–5 spikes pistillate (to 6 cm long, to 9 mm wide); lowest bract leaf-like, usually exceeding the inflorescence
flowers:	several staminate flowers per spike; scales brown to purplish-black, lance-shaped, pointed, midveins white, bending outward; sac (perigynium) of the pistillate flowers oblong to obovoid (3–4 mm long, 2 mm wide), with reddish dots, strongly nerved
fruits:	achenes (seeds) lens-shaped (to 2.2 mm long, to 1.3 mm wide)

Distribution and Habitat

This native sedge is common in wet areas, meadows and ditches. It is especially abundant on subirrigated and wetland ecological sites in the Sandhills region. It is found in some alkaline soils. Nebraska sedge is most common in the western one-half of Nebraska.

Uses and Values

Forage. Nebraska sedge is an important forage plant both for grazing and as hay. Although not as palatable as many species, it is valuable late season forage when it is often grazed heavily.

Establishment. It is not used in grassland seedings.

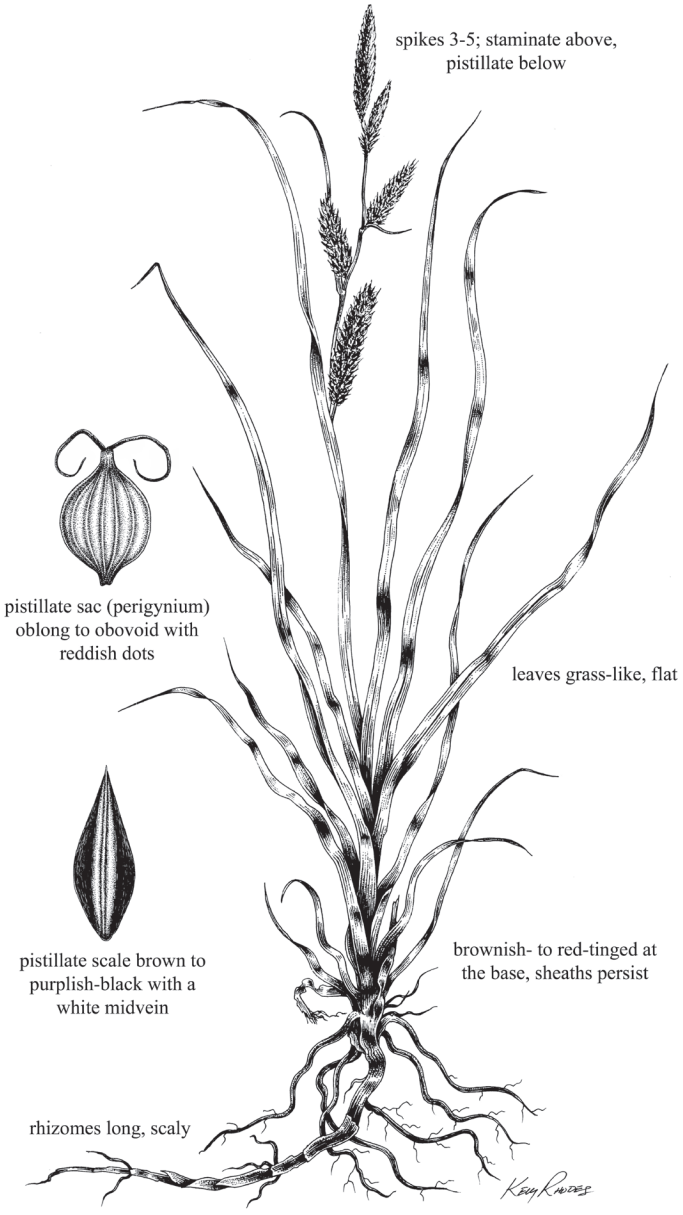
Restoration. Nebraska sedge is not used in prairie restorations because seed is not available commercially.

Wildlife. Nebraska sedge provides fair to good forage for deer, pronghorn, and elk. It furnishes nesting, brood rearing, and escape cover for waterfowl and upland game birds.

Ornamental. Generally, it is not used as an ornamental, but it can be transplanted by hand in to appropriate wet sites.

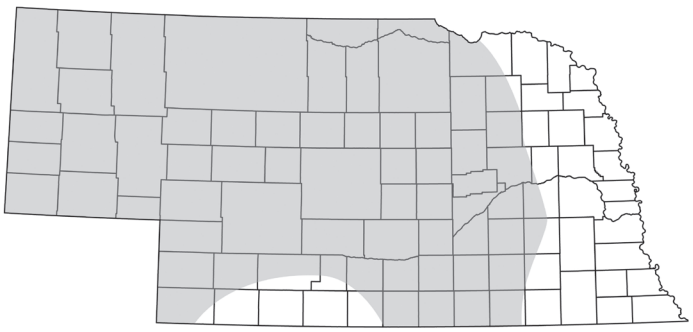
Other

Woolly sedge [*Carex pellita* Muhl. *ex* Willd.] grows in wet meadows, low prairies, ditches, and roadsides throughout Nebraska. It is one of the most common species in the state. In the vegetative stage, this plant can be distinguished from other wetland sedges by its filamentous and often red-spotted sheath fronts.



Nebraska sedge

Needleleaf sedge



COMMON NAME:	Needleleaf sedge
Species:	*Carex eleocharis* L.H. Bailey [= *Carex duriuscula* C.A. Mey.]
Life Span:	Perennial
Origin:	Native
Season:	Cool
Growth Form:	Grass-like
Flowering:	May to July

Vegetative Characteristics

stems:	erect to ascending (to 20 cm tall), slender, smooth, obscurely 3-angled
leaves:	mainly basal, firm, slender, flat and widest at base (to 1.5 mm wide at base), slender, tapering and rolled above; ligule wider than long
rhizomes:	slender, creeping

Floral and Fruit Characteristics

inflorescences:	spikes (to 20 mm long, to 10 mm wide), subcapitate, several, sessile, closely overlapping; bract below; 3–7 sessile ovoid spikelets, staminate and pistillate flowers intermixed
flowers:	staminate flowers conspicuous above in the spike, pistillate flowers scarcely distinguishable in the dense spikes; sac (perigynium) of the pistillate flowers brown with a saw- toothed beak
fruits:	achenes (seeds), lens-shaped (to 2 mm wide); usually 1–8 per spike; scales short, wide, light to dark brown, margins transparent; veins only slightly visible; beak scabrous

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Distribution and Habitat

Needleleaf sedge is found in open, dry to moderately moist rangeland. It is most common on sandy soils where it is found in mixed stands with other grasses and sedges.

Uses and Values

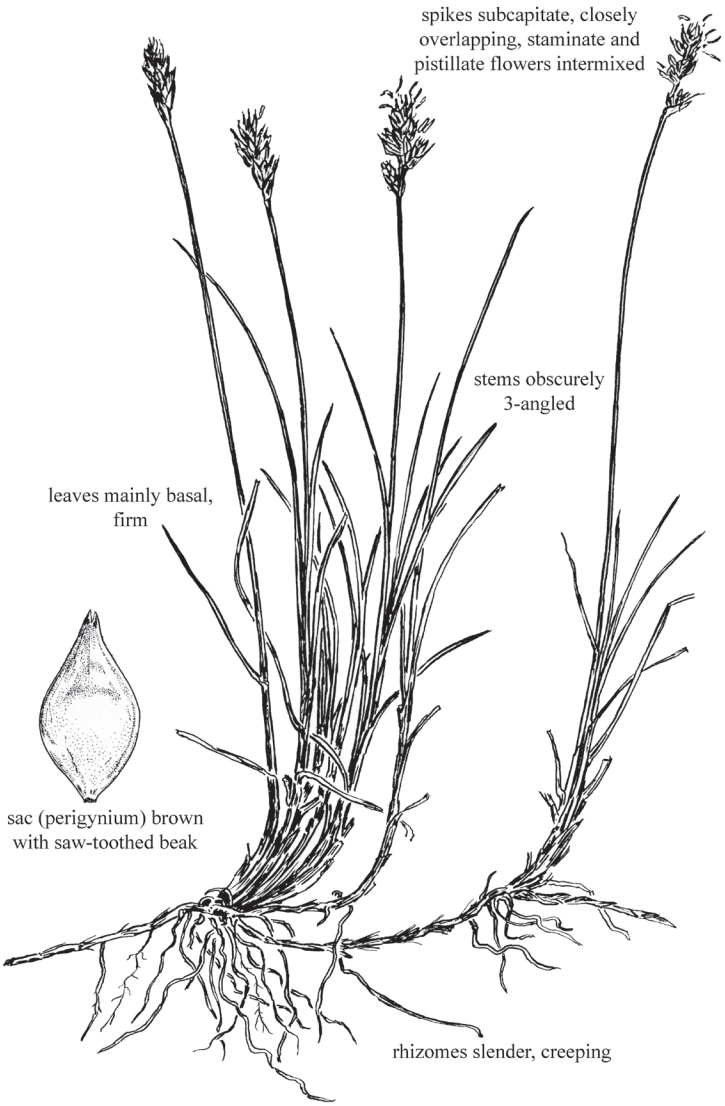
Forage. Needleleaf sedge provides fair to good forage for livestock. It is especially palatable in the spring but is often grazed throughout the season. It is very resistant to grazing and is especially valued on abused rangeland.

Establishment. Needleleaf sedge is not used in grassland plantings.

Restoration. It is not used in prairie restorations.

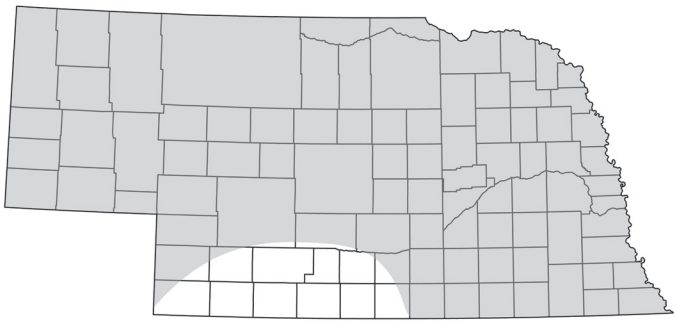
Wildlife. Needleleaf sedge furnishes good forage for deer, elk, and pronghorn. These animals use it most in the winter and spring.

Ornamental. It is not used as an ornamental.



Needleleaf sedge

Sun sedge



COMMON NAME:	Sun sedge
Species:	*Carex heliophila* Mack. [= *Carex inops* L.H. Bailey]
Life Span:	Perennial
Origin:	Native
Season:	Cool
Growth Form:	Grass-like
Flowering:	May to July

Vegetative Characteristics

stems:	slender (to 35 cm tall), wiry, reddish-brown tinged
leaves:	thin (to 3 mm wide), rather stiff, dull green; lower sheaths breaking and becoming fibrous, 5–10 per stem
rhizomes:	creeping, slender, short or long

Floral and Fruit Characteristics

inflorescences:	staminate spikes (to 20 mm long) at the tip of the stem, appearing pedicelled above the pistillate spikes; 1 or 2 pistillate spikes (to 6 mm long) sessile to the culm; lowest bract scale-like or sometimes long and green
flowers:	several staminate flowers per spike; pistillate flowers to 15 per spike; scales pointed; sac (perigynium) that encloses the seed inflated at the tip (to 2.5 mm long, to 1.8 mm wide), reddish-brown, resinous dotted, 2-edged, 2-ribbed
fruits:	oval to triangular, dull-green, covered with tiny hairs, keeled on both sides and ending in a beak (to 1 mm long)

Distribution and Habitat

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

Uses and Values

Forage. Sun sedge is especially important for forage in the early part of the grazing season and later 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.

Establishment. It is not used in grassland seedings.

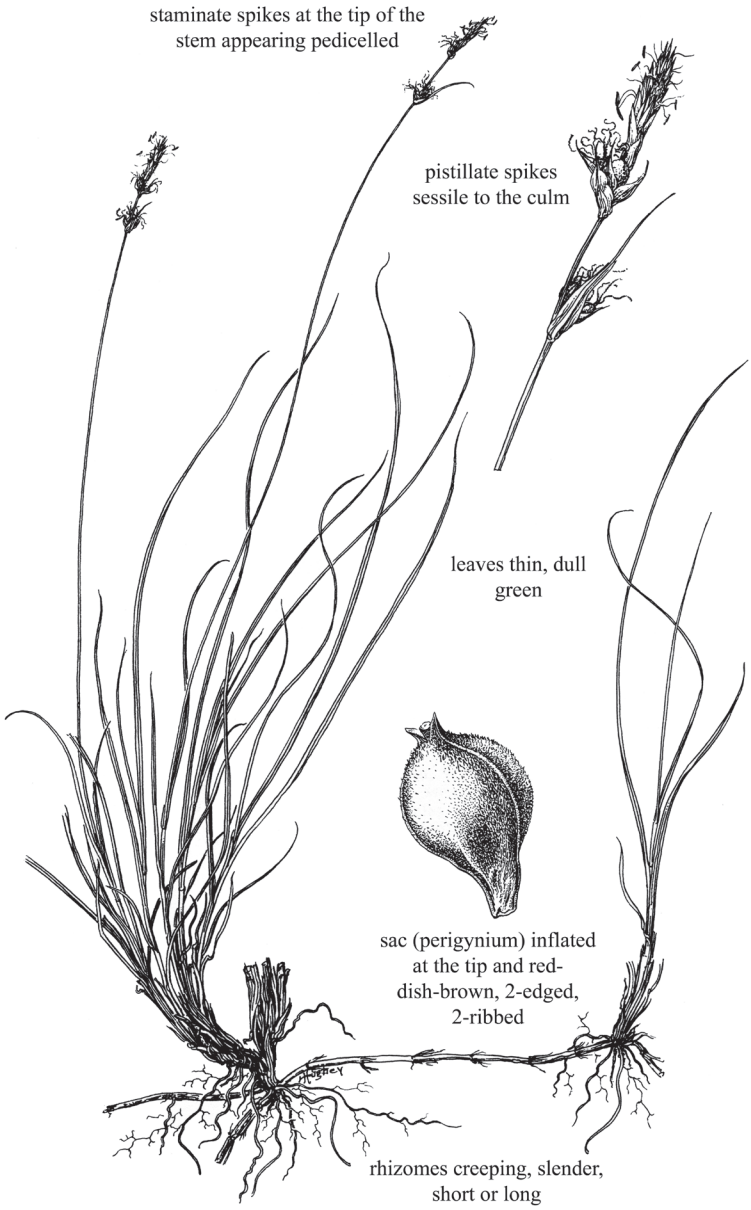
Restoration. Sun sedge is not used in prairie restorations.

Wildlife. Sun sedge provides fair to good forage for deer, elk, bighorn sheep, and pronghorn.

Ornamental. It is not used as an ornamental.

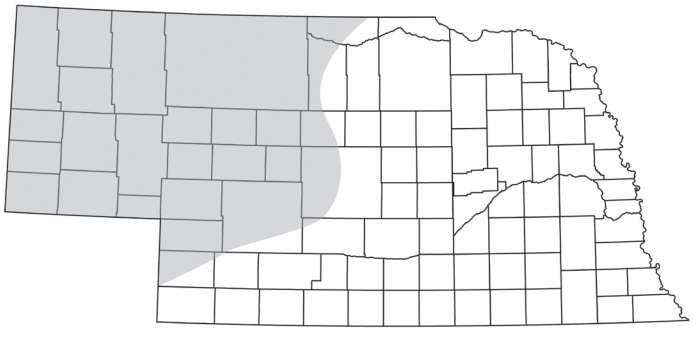
Other

Broom sedge [*Carex scoparia* Schkuhr *ex* Willd.] grows in all but far western and southwestern Nebraska. It is common in wet meadows, marshes, and lake shores usually in sandy soils. Its inflorescences are longer (to 5 cm long) than those of sun sedge.



Sun sedge

Threadleaf sedge



COMMON NAME:	Threadleaf sedge (blackroot)
Species:	*Carex filifolia* Nutt.
Life Span:	Perennial
Origin:	Native
Season:	Cool
Growth Form:	Grass-like
Flowering:	April to June

Vegetative Characteristics

stems: erect to ascending, filiform or thread-like (to 30 cm tall), stiff, wiry, slightly triangular

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leaves:	rolled (to 20 cm long, to 1 mm wide), thread-like, mostly basal, generally 2 to 3 per culm, light green, glabrous; sheaths brown near the base, glabrous
other:	densely tufted without creeping rhizomes; roots are fibrous, stout, and black

Floral and Fruit Characteristics

inflorescences:	spike (to 25 mm long, to 6 mm wide), solitary, terminal, staminate (above) and pistillate flowers (below) located at different places on the same plant (monoecious); staminate portion elevated on a short peduncle, light brown
flowers:	staminate flowers 3–25; scales obovoid, reddish-brown; margins conspicuous, transparent, white; pistillate flowers 1–15, erect; sac or scale (perigynium) that encloses the seed obovoid to oblong (to 4.5 mm long, to 2.5 mm wide); perigynium 2-ribbed with bright white, transparent margins, turning straw-colored at maturity
fruits:	achenes (seeds), obovoid (to 3 mm long), triangular in cross section, brown to black

Distribution and Habitat

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

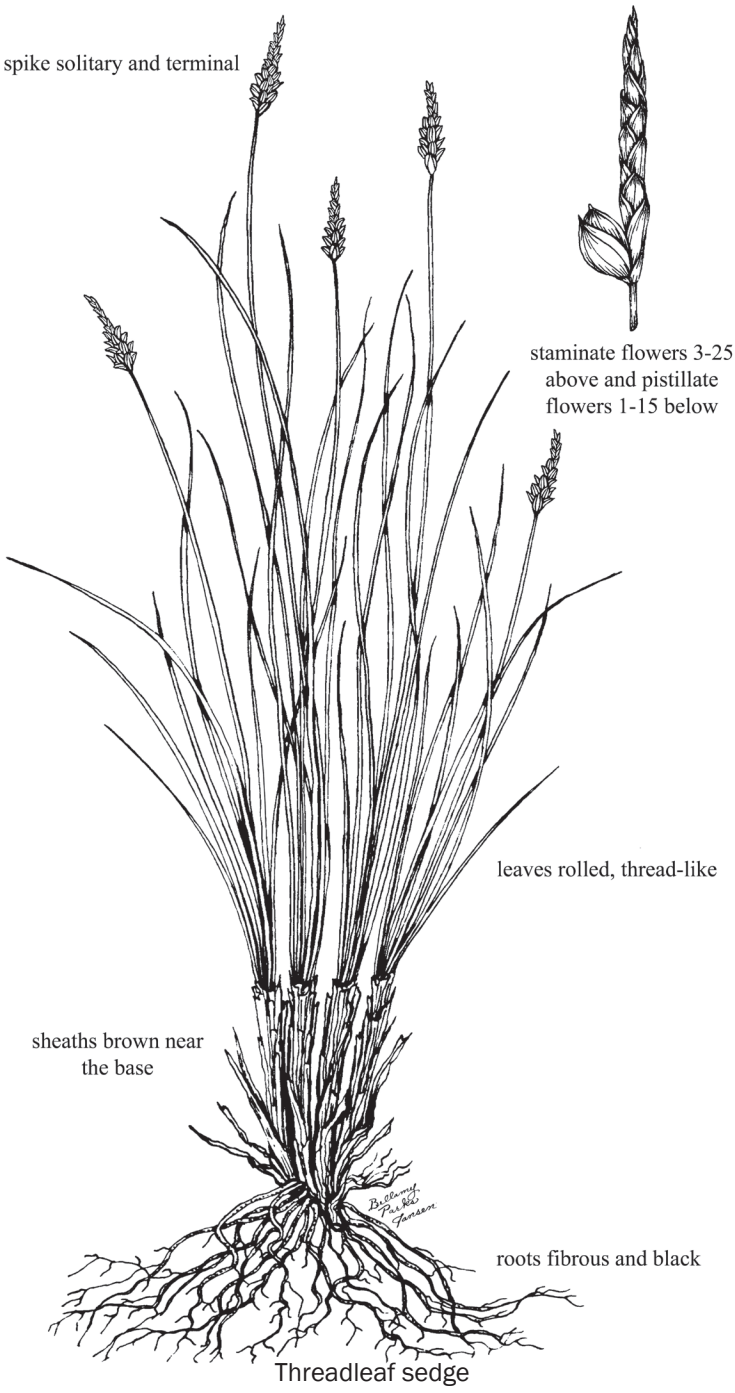
Uses and Values

Forage. It provides good to excellent forage for livestock and wildlife. Threadleaf sedge, or blackroot, provides extremely valuable early spring forage. Palatability remains relatively high throughout the growing season. It can withstand extended periods of drought and relatively heavy grazing. Its growth is too low to contribute much to yield when hayed.

Establishment. It is not used in grassland seedings.

Restoration. Threadleaf sedge is not used in prairie restorations because achenes (seeds) are not available commercially. Hand transplanting is very time consuming.

Wildlife. Its forage is good to excellent for pronghorn, elk, bighorn sheep, and deer. It is especially important in winter and early spring. Birds and small mammals eat the seeds.



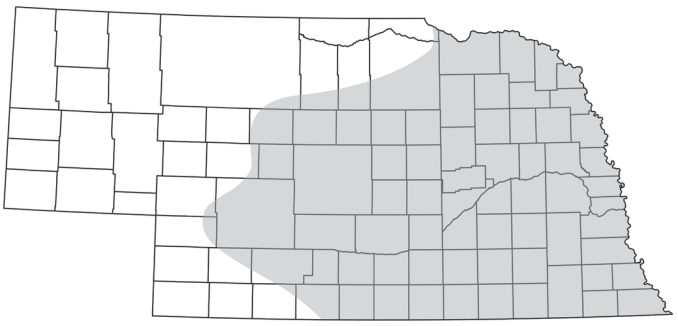
Threadleaf sedge

Ornamental. Threadleaf sedge has been used as a specimen planting in rock gardens. It forms a dense sod, but it spreads so slowly that it is not practical to use it as turf.

Other

Field sedge [*Carex praegracilis* W. Boott] grows in all but the far eastern part of Nebraska. It is found on low prairies, roadsides, and often in alkaline soils. It is a taller (to 50 cm tall) than threadleaf sedge, has stout rhizomes, and wider leaves (to 3 mm wide).

Yellow nutsedge



COMMON NAME:	Yellow nutsedge
Species:	*Cyperus esculentus* L.
Life Span:	Perennial
Origin:	Introduced
Season:	Warm
Growth Form:	Grass-like
Flowering:	July-August

Vegetative Characteristics

stems:	erect (to 80 cm tall), acutely 3-sided, solid, glabrous, appear waxy
leaves:	3-ranked; mostly basal; blades grass-like (to 80 cm long, to 10 mm wide), crowded, yellowish-green, glabrous
rhizomes:	slender, scaly, some terminating in hard tubers (to 2 cm long) or nutlets

Floral and Fruit Characteristics

inflorescences:	spikes terminal (to 25 mm long); uncrowded, subtended by 3–9 blade-like involucral bracts, 1 or more bracts longer than the inflorescence; spikelets 8–25 per spike
flowers:	flowers 8–20 (to 20 mm long, to 1.8 mm wide), slender, highly reduced; rachilla winged
fruits:	achenes (seeds), 3-angled with plane faces between, narrowly oblong (to 1.5 mm long, to 0.8 mm wide); yellowish-brown to amber

Distribution and Habitat

Yellow nutsedge was introduced from Eurasia. It grows in moist soils of pastures in the eastern one-half of Nebraska and is scattered westward along streams, lakes, and in meadows where it is found in mixed stands with grasses. It often invades lawns, gardens, waste areas, cultivated fields, and roadsides.

Uses and Values

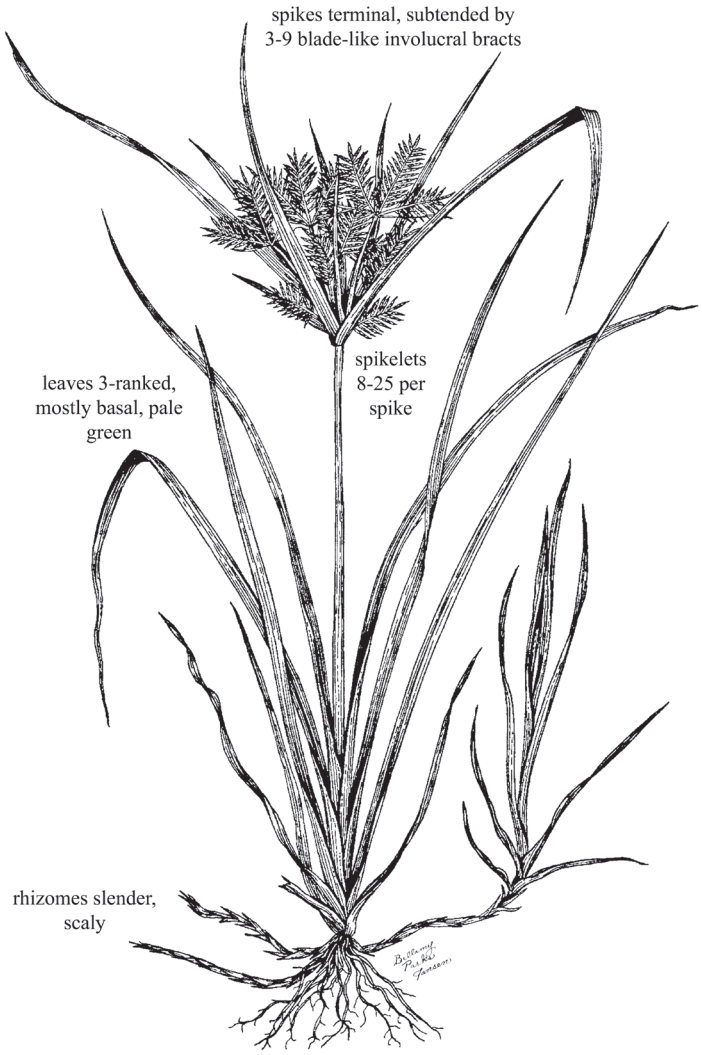
Forage. Yellow nutsedge is not a desirable plant, but it provides poor to fair forage for livestock. It is especially palatable in the spring, but it is grazed throughout the season.

Establishment. Yellow nutsedge is not used in grassland seedings.

Restoration. This aggressive weed is not used in prairie restorations.

Wildlife. Yellow nutsedge is grazed by deer. Young shoots are an important food for waterfowl, muskrats, and other rodents. Also, tubers or nutlets are consumed by ducks, pocket gophers, deer, muskrats, and wild turkeys.

Ornamental. This invasive species is not used as an ornamental.



Yellow nutsedge

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Glossary

A

A- Prefix meaning without

Abandoned cropland Formerly cultivated land that is no longer farmed and has not been seeded to perennial plants

Abrupt Changing sharply or quickly, rather than gradually

Absent Not present; never developing

Achene A one-seeded, indehiscent fruit with a relatively thin wall in which the seed coat is not fused to the ovary wall

Acidic Soil with a low pH (less than 5.5)

Acuminate Gradually tapering to a sharp point and forming concave sides

Acute Tapering to a point with more or less straight sides

Adapted Plants that are able to grow and reproduce in a given area

Alkali A soil with a high pH (8.5 or higher) and high exchangeable sodium content (15% or more), normally interferes with the growth of most species

Alkaloid Any of numerous nitrogen-containing organic bases, which may be toxic to grazing animals

Annual Within one year; applied to plants which do not live more than one year

Anther Pollen-bearing portion of the stamen

Anthesis Time when flowers are open and pollination occurs; the act of flowering

Apex The tip or distal end

Apices Plural of apex

Aquatic Growing in, on, or near water

Articulate Jointed; provided with internodes; separating clearly at maturity

Articulation A joint or point of attachment

Ascending Growing or angled upward; obliquely upward

Asymmetrical Not symmetrical; not divisible into equal halves

Auricle Ear-shaped lobes, such as those that occur at the base of leaf blades of some grasses

Awn A slender bristle at the end, on the back, or on the edge of an organ; the extension of a nerve beyond the leaf-like tissue

Awn column Undivided portion of the awn below the branches, such as in the genus *Aristida*

Awnless Without awns

Awn-tipped A short extension of the vein

Axil Angle between an organ and its axis

Axillary Growing in an axil

Axis The central or main longitudinal support upon which parts are attached

B

Background plant Usually taller plants placed at the back of a landscape planting

Barb A short, rigid projection

Basal Located at or near the base of a structure, such as leaves arising from the base of the stem

Beak A narrow or prolonged tip; a hard point or projection

Bilateral Two-sided; structures on two sides of an organ

Binomial A taxonomic name consisting of a genus and a specific epithet forming the species name; the Latin or scientific name

Blade The part of the grass leaf above the sheath

Bleached Having lost most of the original color

Blowout A depression in the surface of sand or sandy soil caused by wind erosion

Blunt Having a point or edge that is not sharp

Border planting A mass of plants that define a property border, provide a backdrop for other plants, or create an outdoor living area; a screen planting can also be a border planting

Bottomlands Land occupying a low position in the topography

Bowing Bent in a simple curve

Bract Reduced leaves (frequently associated with the flowers)

Bracteole A bract borne on a secondary shoot or axis

Branch A lateral stem

Bristle A stiff, slender appendage

Brittle Easily broken

Browse Leaves, twigs, and other parts of woody plants consumed by animals; the act of consuming portions of woody plants

Bulb An underground bud with fleshy, thick scales

Bulblet A small bulb

Bump An abrupt protuberance on the surface

Bunchgrass A grass that grows in a tuft; without stolons or rhizomes

Bur A rough and prickly covering of florets

C

Calcareous A soil containing sufficient calcium carbonate (often with magnesium carbonate) to effervesce when treated with hydrochloric acid

Callus The indurate downward extension of tissue from the mature lemma in *Nassella, Hesperostipa, Aristida,* and some other genera; hardened tissue

Capillary Fine and slender or hair-like, such as a branch or awn

Capitate Aggregation into a dense globular cluster or head; head-like

Caryopsis Usually the fruit or grain of grasses; more specifically, a special type of fruit in which the seed coat is fused to the fruit coat (pericarp)

Central Situated at, in, or near the center

Channeled Deeply grooved

Ciliate Fringed with hairs on the margin

Clasping One organ or tissue partially or totally wrapped around a second

Cluster A number of similar tissues or organs growing together; a bunch

Coarse Composed of relatively large parts; not fine textured or structured

Cobwebby A tuft of tangled, fine hairs

Collar The area on the lower side of a leaf at the junction of the blade and sheath

Colonizing Spreading into a new area by seeds or by vegetative means

Colony A group of plants of the same species growing in close association with each other; all members of the group may have originated from a single plant

Column The lower portion of the awn of grasses

Comb-like With narrow, closely set, and divergent segments like the teeth in a comb

Compact Having a small, dense structure

Compressed Flattened laterally

Concave Hollowed inward like the inside of a bowl

Cone A cluster of scales on an axis, scales may be persistent or deciduous

Connate Fusion of parts to form a tube, such as sheath margins

Conspicuous Obvious; easy to notice

Constricted Drawn together; appearing to be tightly held

Contaminate The introduction of unwanted materials causing a reduction of value or use

Continuous A rachis or other organ that does not readily disarticulate

Contorted Bent; twisted

Contracted Inflorescences that are narrow or dense, frequently spike-like

Convex Rounded on the surface like the bottom or exterior of a bowl

Cool-season A category of plants that grow best during the cool portions of the year

Corm Short, bulb-like base of a stem, usually fleshy and underground

Cover Usually standing plant material which is important for erosion prevention and/or wildlife habitat

Creeping Continually spreading; a shoot or horizontal stem that roots at the nodes

Cross-section Cut at right angle to the main axis; transverse

Crowded Pressed close together; a number of structures in a small space

Crown The tuft of hairs at the summit of the lemma in some grasses such as in the genus *Nassella*

Culm The hollow or pithy jointed stem or stalk of a grass, sedge, or rush

Cultivar A named, improved variety or strain of a species

Cure Drying, as in standing herbage or hay

Curved Gently bent

Cylindric, Cylindrical Shaped like a cylinder

D

Decurrent Parts that are connected to and extend down another structure

Decumbent Curved upward from a horizontal or inclined base, with only the end ascending

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Deferment Leaving rangeland or pastureland unstocked and ungrazed for a growing season or year

Deflexed Abruptly turned downward

Delicate Fine structure or texture

Dense Crowded

Desirable Preferred species for a given area or site

Deteriorated No longer in high condition or health; in low condition or health caused by improper management

Diffuse Open and much-branched, loosely branching

Digitate Several members arising from one point at the summit of a support, like the fingers arising from the hand as a point of origin

Dioecious Unisexual; the staminate and pistillate flowers being on separate plants; such as buffalograss

Disarticulating, Disarticulation Separating at maturity at a node or joint

Distant To be separated by space

Distichous Conspicuously two-ranked leaves, spikelets, or other components

Distinct Clearly evident; separate; apart

Distribution Geographic range of a plant species

Disturbance Alteration or destruction of the vegetative cover

Disturbed sites Areas on which the vegetative cover has been altered or destroyed

Divergent Extending away from each other by degrees; widely spreading

Dominant A species of plant that controls the character of the vegetation

Dormancy An inactive state; period during which plants are not active, such as in winter

Downy A soft, fine pubescence

Droop To hand downward; pendulous

Drought Two or more growing seasons with precipitation low enough to negatively influence plants

Dryscape A landscape comprised of plants that require little or no supplemental water

Dull Lacking brilliance or luster; not shiny

E

Ecological site Classification of land based on potential vegetation, soils, topography, climate, and location

Edgewise Sideways; a spikelet attached so that it projects out from the rachis, such as perennial ryegrass; opposite of flatwise

Ellipsoid A solid body circular in cross-section and elliptic in long-section

Elongate Narrow, the length many times the width or thickness

Embedded Enclosed in a supporting structure or organ; imbedded

Enclosed Contained within a structure or structures

Enlarged Greater size than normal

Entire Whole; with a continuous margin

Erect Upright; not reclining or leaning

Erose Irregularly notched at the apex; appearing gnawed or eroded

Erosion Wearing away of the soil by the action of water and/or wind

Evident Obvious; distinct; easily seen

Exceed Greater than; larger than

Excurrent Extending beyond or out of a leaf or spikelet bract; frequently used to describe mucros extending beyond the glumes or lemmas

Expanded Increased or extended

Exposed Open to view

Exserted Protruding or projecting beyond; not included

Extensive Having a wide or considerable range or spread

F

Faint Lacking distinctness

Fertile Capable of producing fruit

Fibrous Consisting of or containing mostly fibers; commonly used to describe branching root systems

Filiform Thread-like; long and slender

Firm Hard; resisting distortion when pressure is applied; indurate

First glume The lowermost of the typical glumes, odd-veined; an empty bract attached to the rachilla

Flag-leaf Leaf attached immediately below the inflorescence

Flanked To be situated at either side of a structure

Flat, Flattened Having the major surfaces essentially parallel and distinctly greater than the minor surfaces

Flatwise With the flat side of the spikelet in contact with the rachis, such as crested wheatgrass; opposite of edgewise

Flexuous Bent alternately in opposite directions; a wavy form

Floret Lemma and palea with included flower of the grasses

Folded A part or organ that is doubled over or laid over

Foliage Plant material that is mainly leaves

Forage Herbage usually consumed by animals

Fringed Having a border consisting of hairs or other structures

G

Geniculate Bent abruptly, like a knee (grass bases may be bent in this manner)

Glabrous Without hairs

Gland A protuberance or depression that appears to secrete a fluid

Glandular Supplied with glands

Glaucous A waxy surface that easily rubs off

Globe-shaped Nearly spherical in shape; globose

Glossy Having a surface luster; shiny

Glumes The pair of bracts at the base of a spikelet in grasses

Grassland Any place where grasses are the dominant plants

Grass-like Herbaceous plants similar in appearance to grasses such as sedges and rushes

Graze To consume growing and/or standing grass or forb herbage; to place animals on grasslands to enable them to consume the herbage

Groove A long, narrow channel or depression

H

Habitat The place or environment where an animal or plant lives, grows, and reproduces

Hair Filaments projecting from the surface of plant parts

Harsh A texture disagreeable to the touch; rough; unpleasant

Hay Herbaceous plant material that has been mowed and dried in preparation of being fed to animals

Herbage Above-ground material produced by herbaceous plants; vegetation that is available for consumption by grazing animals

Herbaceous Perennial or annual plants that die back to the surface of the soil each year

Herringbone Pattern made up of two rows of parallel lines with adjacent rows slanting in reverse directions

Hirsute With straight, rather stiff hairs

Hispid Rough with erect, bristly hairs; hairs thicker than hirsute

Hollow Unfilled space; empty

Hyaline Thin and translucent or transparent

Hydrocyanic acid An aqueous solution of hydrogen cyanide that is poisonous

I

Imbedded Enclosed in a supporting structure or organ

Included Not exerted nor protruding

Indistinct Not easily seen; not sharply outlined or separable

Indurate Hard

Infertile Incapable of sexual reproduction; staminate or neuter

Inflated Swollen or expanded; puffed up

Inflorescence The arrangement of flowers on an axis subtended by a leaf or portion thereof

Inseparable Cannot be taken apart

Internerves Spaces between the nerves

Internode The part of a stem between two successive nodes

Interrupt To break the uniformity; to come between two similar objects or structures

Intricate Having many complex parts or elements

Introduced Not native to North America

Invade Move or spread into an area where a species did not grow before

Involucral Of or pertaining to the involucre

Involucre A whorl or circle of bracts below the flower or spikelet cluster

Involute Rolled inward from both edges so that the upper surface is within

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J

Joint The node of a grass culm, inflorescence, or any other node

Jointed Possessing nodes or articulations

Junction Place at which two structures or organs join

K

Keel The sharp fold or ridge at the back of a compressed sheath, blade, glume, lemma, or palea of grass florets

Keeled Ridged, like the keel of a boat

Knotty Woody in texture; sometimes used to describe thick, hard rhizomes

L

Lacerate Appearing torn at the edge or irregularly cleft

Lanceolate Rather narrow, tapering to both ends, widest below the middle

Lateral Belonging to or borne on the sides

Laterally compressed Appearing folded along a central axis; keeled; V-shaped in cross-section

Lax Drooping or loose

Leaf blade The expanded and flattened or folded or rolled (involute) portion of a leaf

Leaf sheath The tubular basal portion of a leaf that enclosed the grass culm

Leathery Having the texture of leather

Lemma An odd-veined bract of a spikelet occurring above the glumes

Life span The length of time a plant will live

Ligule A membrane, ciliate membrane, or ring of hairs on the upper side of a leaf at the junction of the sheath and blade

Linear Long and narrow with parallel sides

Lobe The projecting part of an organ with divisions less than one-half the distance to the base or midvein, usually rounded or obtuse

Loose Not arranged tightly together

M

Margin An edge; border

Marsh An area of perpetually wet soil

Mat A tangled mass of plants growing close to the soil surface and generally rooting at the nodes

Mature Fully developed

Meadow Moist, level, lowland on which grasses dominate

Membrane A thin, soft, and pliable tissue

Membranous Thin, opaque, not green; like a membrane

Micro- A prefix meaning small

Midvein The central or principal vein of a leaf or bract

Minute Small

Monoecious Plants with male and female flowers at different locations on the same plant; all flowers unisexual

Mucro A minute awn or excurrent midvein of an organ

Mucronate Tipped with a short tip or point-like awn; usually the short extension of a vein beyond the leafy tissue

N

Naked Uncovered; lacking pubescence; lacking enveloping structures

Narrow Longer than wide; of small width; contracted panicles are usually narrow

Native Occurring in North America before settlement by Europeans

Nerve The vascular bundles or veins of leaves, culms, glumes, paleas, lemmas, or other organs

Neuter Lacking stamens and pistil

Nitrates Compounds of nitrogen accumulated by some grasses that can cause poisoning if consumed by animals

Nodding Inclined somewhat from vertical; drooping

Node Points along the stem where leaves are borne; a joint in a stem or inflorescence

Notch Gap; a V-shaped indentation

Numerous Many

O

Ob- A prefix meaning inversely

Obovate, Obovoid Shaped like an egg with the broadest portion above the middle

Obscure Inconspicuous; not easily seen

Obtuse Shape of an apex, with an angle greater than 90 degrees

Obvious Easily seen

Opposite Structures that are paired at the nodes and placed one on each side of the node

Origin Place where the species originally occurred

Ornamental A plant cultivated for its beauty rather than for agronomic use

Ovary The expanded, basal part of the pistil

Ovate, Ovoid Shaped like an egg with the broadest portion towards the base

Overflow sites Land that water flows across occasionally

Overlap To extend over and cover part of an adjacent structure

P

Paired Two, together

Palatable Acceptable in taste and texture for consumption

Pale Not bright; dim; deficient in color

Palea The second bract of a floret, two-nerved

Panicle Inflorescence with a main axis and rebranched branches

Papery Having the texture of writing paper

Papillose Having minute nipple-shaped projections on the surface

Pasture Land used primarily for production of adapted, introduced or native species in a pure stand, grass mixture, or grass-legume mixture that is managed intensively (e.g., fertilization, weed control, renovation, and/or irrigation) for grazing animals

Pedicel The stalk of a spikelet or single flower in an inflorescence

Pedicellate Having a pedicel

Pedicelled Borne on a pedicel

Peduncle The stalk of a flower cluster or spikelet cluster

Perennial Lasting more than two years; applied to plants or plant parts which live more than two years

Perfect Applied to flowers having both stamens and pistil

Pericarp Fruit coat or wall; wall of a ripened ovary

Perigynium An inflated sac that encloses the achene in the genus *Carex*

Persistent Remaining attached

Pilose With long soft, straight hairs

Pistil A combination of the stigma, style, and ovary; the female reproductive organ of a flower

Pistillate Applied to flowers bearing pistils only; unisexual flowers

Pit A small depression in a surface

Plains Flat to rolling land usually dominated by grasses

Prairie A virtually treeless landscape in which the main natural vegetative features are a dominance of grasses together with forbs, shrubs, and grass-like plants

Preference First choice; selection of certain plants or plant parts by grazing animals

Primary First

Primary unilateral branch A branch that originates from the central or main axis of a panicle inflorescence with spikelets arranged on one side

Procumbent Prostrate; lying flat on the ground; trailing but not taking root

Projection A bump; and abrupt protuberance on the surface

Prominent Readily noticeable; projecting out beyond the surface

Prostrate Lying flat on the ground; procumbent

Prow Shaped like the bow of a ship

Pubescent Covered with short, soft hairs

Pyramidal Triangular in outline; shaped like a pyramid

R

Raceme An inflorescence in which the spikelets or flowers are pediceled on a rachis

Racemose Raceme-like branch of the inflorescence

Rachilla A small axis; applied especially to the axis of a spikelet

Rachis The axis of a spike, spicate raceme, or raceme inflorescence or pinnately compound leaf

Rame A single panicle branch or some grasses where spikelets are paired on the branch, as in big bluestem

Rangeland Land on which the potential natural plant community is predominantly grasses with forbs, grass-like plants, and shrubs suitable for grazing and browsing

Rebranch Forming secondary branches; branching again

Reduced Smaller than normal; not functional

Reduced flower A flower that is either staminate or neuter; rudimentary flower

Reflexed Bent downward or backward from the apex

Remote Widely spaced

Resinous Producing any of numerous viscous substances such as resin or amber

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Restoration Returning the contour of the land and the vegetation to its original condition

Retrorse Pointing downward toward the base

Revegetation Replacing current vegetation or starting vegetation on denuded land

Rhizomatous Having rhizomes

Rhizome An underground stem with nodes, scale-like leaves, and internodes

Right-of-way Usually vegetated land along roads, highways, railroad tracks, pipelines, or transmission lines

Rigid Firm; not flexible

Robust Healthy; full-sized

Rock garden A garden laid out among rocks or decorated with rocks with plants that usually are not given supplemental water

Rosette A basal, usually crowded, whorl of leaves

Rough Not smooth; surface marked by inequalities

Rounded Having an arched apex rather than a pointed and angled apex

Rudiment Imperfectly developed organ or part, usually non-functional

Rudimentary Underdeveloped

Rugose Wrinkled or folded; having horizontal folds in the surface

Rumen The large first compartment of the stomach of a ruminant animal

S

Sac A pouch or bag-like cavity

Saline A sodic soil containing sufficient soluble salts to impair its productivity

Saw-toothed Toothed edge with teeth pointing toward the tip

Scabrous Rough to the touch; short, angled hairs requiring magnification for observation

Scale Reduced leaves at the base of a shoot or a rhizome; a thin chaff-like portion of the bark of woody plants: a thin, flat structure

Scaly Having scales

Screen planting A wall of sufficiently tall plants that serves as a living wall to effectively block undesirable views

Season-long Throughout one season; frequently used to describe grazing during the growing season

Second glume The uppermost of the two glumes; odd-veined, empty bract of the spikelet

Seed A ripened ovule

Seeding Planting seeds; an area planted with seeds

Segment A part of a structure which may be separated from the other parts

Serrate Saw-toothed with the teeth angled toward the apex; sharp teeth

Sessile Without a pedicel or stalk

Setaceous Slender and bristle-like; bristle-like hairs

Shade An area where the sunlight is partially to fully blocked each day

Sharp Tapering to a point

Sheath The lower part of the leaf that enclosed the culm; typically open or split and overlapping at all or part of the margins

Shiny Lustrous; possessing a sheen

Shoot A young stem or branch

Silky Fine, lustrous, long hair; resembling silk in appearance or texture

Slender Having little width in proportion to height or length; long and thin

Smooth Without wrinkles or creases or protuberances; a continuously even surface

Sod-forming Creating a dense mat

Solid Not hollow or containing spaces or gaps

Solitary Alone; one by itself

Sparse Scattered; opposite of dense

Species Taxonomic division of a genus; a class of individuals having a common genetic makeup and appearance

Specimen planting A planting that displays or exhibits a single plant with some outstanding form, texture, color, or other attribute

Spicate Spike-like

Spike An unbranched inflorescence in which the spikelets or flowers are sessile on a rachis (central axis)

Spike-like Having the appearance of a spike

Spikelet The unit of inflorescence in grasses usually consisting of two glumes, one or more florets, and a rachilla

Spine A stiff, pointed outgrowth

Split Divided lengthwise

Spot grazing Heavy, repeated grazing of localized areas

Stamen The pollen-producing structure of a flower; typically an anther borne at the apex of a filament

Staminate Flower containing only stamens, unisexual flowers

Stem The portion of the plant bearing nodes, leaves, and buds

Sterile Without functional pistils, may or may not bear stamens

Stiff Not easily bent; rigid

Stolon A horizontal, above-ground, modified propagating stem with nodes, internodes and leaves

Stoloniferous Bearing stolons

Stramineous Straw-colored; yellowish-tan

Strigose With sharp, stiff, appressed hairs

Strobilus A cone that produces spores

Stout Sturdy, strong, rigid

Sub-A prefix to denote somewhat, slightly, or in less degree

Subirrigated A site where the water table is between 0.25 and 1.5 m of the soil surface during the major part of the growing season

Subtend To underlie; located below

Summit The top or apex

Swale A low-lying depression in the land

Swollen Enlarged

Synonym A scientific name not used because it is predated by another valid name; an invalid scientific name

T

Tapering Regularly narrowing toward one end

Tawny Pale brown or dirty yellow

Teeth Pointed lobes or divisions

Tepal A segment of the perianth

Terminal Borne at or belonging to the extremity or summit

Texture Composition of the particles of the soil

Thin Having a small distance between the top and bottom or front and back surfaces; not thick

Throat An opening; hollow and tube-like

Tiller A shoot from an adventitious bud at the base of a plant

Tinged Slightly colored

Tip Apex

Tolerant Said of plants or animal that can withstand extremes

Tooth A pointed projection or division

Trampling The action of animals repeatedly stepping on plants and soil

Translucent Semitransparent; transmitting light rays only partially

Transparent Fine or thin enough to be seen through

Triangular Having three edges and three angles

Trifid An apex with three teeth and two clefts

Truncate Ending abruptly; appearing to be cut off at the end

Tuber A short, fleshy underground stem

Tufted Bunchgrass

Tumble To roll over and over as when blown by the wind

Turf A mat of short grass; a lawn

Twisted Winding or turning of one or more objects on their own axis

U

Unilateral Arranged on or directed toward one side

Unisexual Said of flowers containing only stamens or only pistils

United Two or more wholly or partially combined parts

Upland Land occupying high positions in the topography where it is not influenced by overflow of water or by the water table

V

Variable Not always the same; not uniform

Vein A single branch of the vascular system of a plant

Velvety Soft and smooth like velvet

Verticil A whorl of parts arising from a common point or around an axis

Verticillate Multiple whorls or verticils along an axis, such as inflorescence branches

Vigor Active, healthy growth

Villous Long, soft, unmatted hairs; shaggy

Viviparous Producing bulblets or new plants instead of flowers

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W

Warm-season A category of plants with optimal growth during the warmer portions of the year

Wart A growth or large blister on the epidermis, resembling a wart on an animal

Waste place An area that is not used or managed

Wavy Margin with small, regular lobes; undulating surface or margin

Waxy Said of plant tissue covered with wax or a similar substance

Weak Frail; not stout nor rigid; partially or incompletely

Webbed Bearing fine, tangled hairs

Wetland A site where the water table is within 0.9 m of the soil surface during most of the year and is above the surface during the early growing season

Whorl A cluster of several branches or leaves around the axis arising from a common node

Wing A thin projection or border

Wiry Being thin and resilient

Woolly Long, soft, somewhat matted hairs; like wool

Z

Zig-zag A series of short, sharp bends

Ecological Sites

Grasslands in Nebraska consist of many kinds of plants and plant communities which have very different characteristics. The variability in vegetation is associated with differences in soils, topography, climate and geographic location. Species composition and vegetation production changes with the amount and distribution of rainfall. Additionally, soils on steep slopes produce a different plant community than soils on a deep upland site because of differences in soil types and soil moisture availability. Across a broad expanse of grasslands there are several different ecological sub-units, each having specific physical characteristics which differentiate one from the other. These sub-units, known as ecological sites, have been classified based on the ecological potential and ecosystem dynamics of a given land area.

Ecological sites differ based upon the ability to produce a characteristic historic climax plant community. An ecological site is the product of many environmental factors (climate, soils, and geographic location). Each ecological site can support a historic climax plant community that differs from other ecological sites in terms of (1) kinds, (2) proportions, and/or (3) amount of plants. Additionally, ecological sites differ in their response to natural and anthropomorphic disturbances such as grazing, fire, and drought. Natural areas and historic data are used to characterize the historic climax plant community of an ecological site. Twenty-four ecological sites are recognized by name in four vegetative zones of Nebraska. Plant communities within ecological sites take on different characteristics across the state because of the increasing average annual precipitation from west to east. To completely identify and name an ecological site, the vegetation zone in which it is located needs to be added.

A complete description and color photographs of ecological sites and four vegetation zones in Nebraska may be found in the Range Judging Handbook (E.C. 98–150-F). The relative positions of the 12 most important ecological sites are presented in Figure 6.

Wetland Sites occur on level bottom lands or in depressions. The land is somewhat marshy from subirrigation. The water table is within three feet (0.9 m) of the soil surface during most of the year and is generally above the surface during the early growing season. Soils range from sand to silty clay and are limy at the surface in places. The topsoil is dark and high in organic matter. This site is too wet for cultivated crops but too dry for common reed and cattails. Common native grasses include prairie cordgrass, bluejoint reedgrass, and slender wheatgrass. Native forbs make up less than 5 percent of plant composition. Shrubs, except willows, are uncommon.

Subirrigated Sites occur on nearly level bottomlands, upland basins, foot slopes and stream terraces. The water table is at a depth of 10 to 60 inches (0.25–1.5 m) during the major part of the growing season. The soils vary from fine sand to silty clay loam in the surface layer and subsoil. In most places, soils are limy at the surface. The surface is high in organic matter. Subirrigated sites are often valued for forage and hay production. Common native warm-season grasses include big bluestem, indiangrass, and little bluestem. However, vegetation on these sites in Nebraska has often been replaced by cool-season grasses as a result of the typical haying season which occurs during the mid-growing season of most warm-season grasses.

Saline Subirrigated Sites occur on nearly level bottomlands, upland basins, foot slopes and stream terraces. The water table is at a depth of 10 to 60 inches (0.25 to 1.5 m) during the major part of the growing season. Soils are strongly saline and/or alkaline near the surface, often appearing as a whitish-gray deposit. Soils vary widely in texture and depth and are often limy in places. Ground cover varies from bare soil to a diversity of plants, depending on the amount of salt in the soil. Where the salt content is low, many of the same species common to the subirrigated site will grow. Soils that are high in salt content support only salt tolerant plants such as inland saltgrass, alkali sacaton, switchgrass, alkali cordgrass, western wheatgrass, sedges, and rushes.

Silty Overflow Sites occur on bottomlands which receive additional water from periodic overflow or run-off from higher elevations. The water table is more than 60 inches (1.5 m) below the surface. Soil textures vary from silty clay loam to silt in the surface layer and from very fine sandy loam to clay subsoils. Because of the greater amount of water overflow, forage production is typically greater on these sites than associated adjacent ecological sites. Common native grasses include big bluestem, little bluestem, and western wheatgrass.

Sands Sites occur mainly on gentle to rolling upland

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slopes, but also may be found on stream terraces and bottomlands. Soils are deep, excessively drained and are subject to severe wind erosion when the protective vegetation cover is destroyed. Soil textures range from loamy sand to sand in the surface layer and from loamy sand to coarse sand in the subsoil. The dark, upper part of the soil profile is usually less than 6 inches (15 cm) deep and relatively high in organic matter. The sands site is the most widespread range site in the Sandhills. Common native grasses include sand bluestem, prairie sandreed, little bluestem, and needleandthread.

Sandy Sites occur on nearly level to moderately steep slopes. Sandy sites occur on dry, flat valleys between choppy or rolling sand dunes. The soils are well drained and have fine sandy loam to fine sand in the surface layer, with fine sandy loam to fine sand in the subsoil. The underlying soil material varies widely. More than 6 inches (15 cm) of the upper soil profile is often of darker color due to organic matter accumulation. This topsoil may be over 12 inches (30 cm) thick. Common native grasses include prairie sandreed, needleandthread, and sand bluestem. Under excessive grazing pressure, these desirable species can be replaced with lower growing warm-season grasses and invasive annual grasses.

Choppy Sands Sites occur on steep, rough dunes with irregular slopes that are typically greater than 20%. Soils are deep, loose, excessively drained with a fine sand surface layer and subsoil. Ground cover and soil profile development is even less than on sands site. Dark coloring from organic matter in the surface soil is at a minimum and seldom over 2 to 3 inches (5–8 cm) deep. Wind erosion can lead to the development of blowouts where vegetation is sparse or absent. Narrow ridges and broken surfaces (catsteps) are characteristic of the site. Similar to the Sands and Sandy ecological sites, common native grasses on Choppy Sands sites are sand bluestem, little bluestem, and prairie sandreed.

Silty Sites occur on nearly level to steep uplands and stream terraces. Soils are well drained but not to the extent of sand and sandy sites. Soil textures range from very fine sandy loam to silty clay loam in the surface layer and sub-soil. This is most common ecological site outside the Sandhills region and includes the loess plains and hills that are south and east of the Sandhills, along the Republican River, on the upland plains and gentle slopes of southwestern Nebraska, and the shortgrass prairie in the Panhandle. Most silty sites in the eastern and southern parts of the state have been converted to crop production. Common native grasses include blue grama, sideoats grama, and little bluestem.

Limy Upland Sites occur on nearly level to steep uplands, footslopes, and stream terraces. The soils are deep or moderately deep and range from fine sandy loam to clay loam in the surface layer and subsoil. The soils have an abundance of lime in the surface layer. Common native grasses include big bluestem, little bluestem, and blue grama.

Thin Loess Sites occur on steep to very steep uplands that contain many catsteps and land slips. The soils are deep and have a silt loam surface layer. Subsoils are limy. Thin loess sites are located on canyons or hillsides associated with the major drainage ways south and east of the Sandhills, but are not restricted to these areas. In farming areas, row crop production predominates on the more level areas with the rougher terrain remaining in native grass. Similar to Limy Upland sites, common native grasses include big bluestem, little bluestem, and sideoats grama.

Clayey Sites occur on nearly level to strongly sloping uplands. Soil texture ranges from silt loam to clay in the surface layer and silty clay in the subsoil. Soils are deep but water penetration and movement in the soil is restricted. When wet, soils are sticky but become very hard when dry. Clayey sites in Nebraska occur primarily along the White and Niobrara rivers in Sioux, Dawes, Sheridan, Keya Paha, and Boyd counties. Some are also present in eastern Nebraska. Common native grasses include western wheatgrass, little bluestem, and big bluestem.

Shallow Sites occur on nearly level to steep uplands. The soils are less than 20 inches (0.5 m) deep over underlying material consisting of shale, mixed sand and gravel, limestone, siltstone, or caliche. They have a loamy fine sand to clay surface layer. The effective root zone of plants is restricted to 20 inches (0.5m). The vegetation varies on shallow sites depending upon soil depth, soil texture, and topographic features. Common native grasses include blue grama, big bluestem, and sideoats grama.

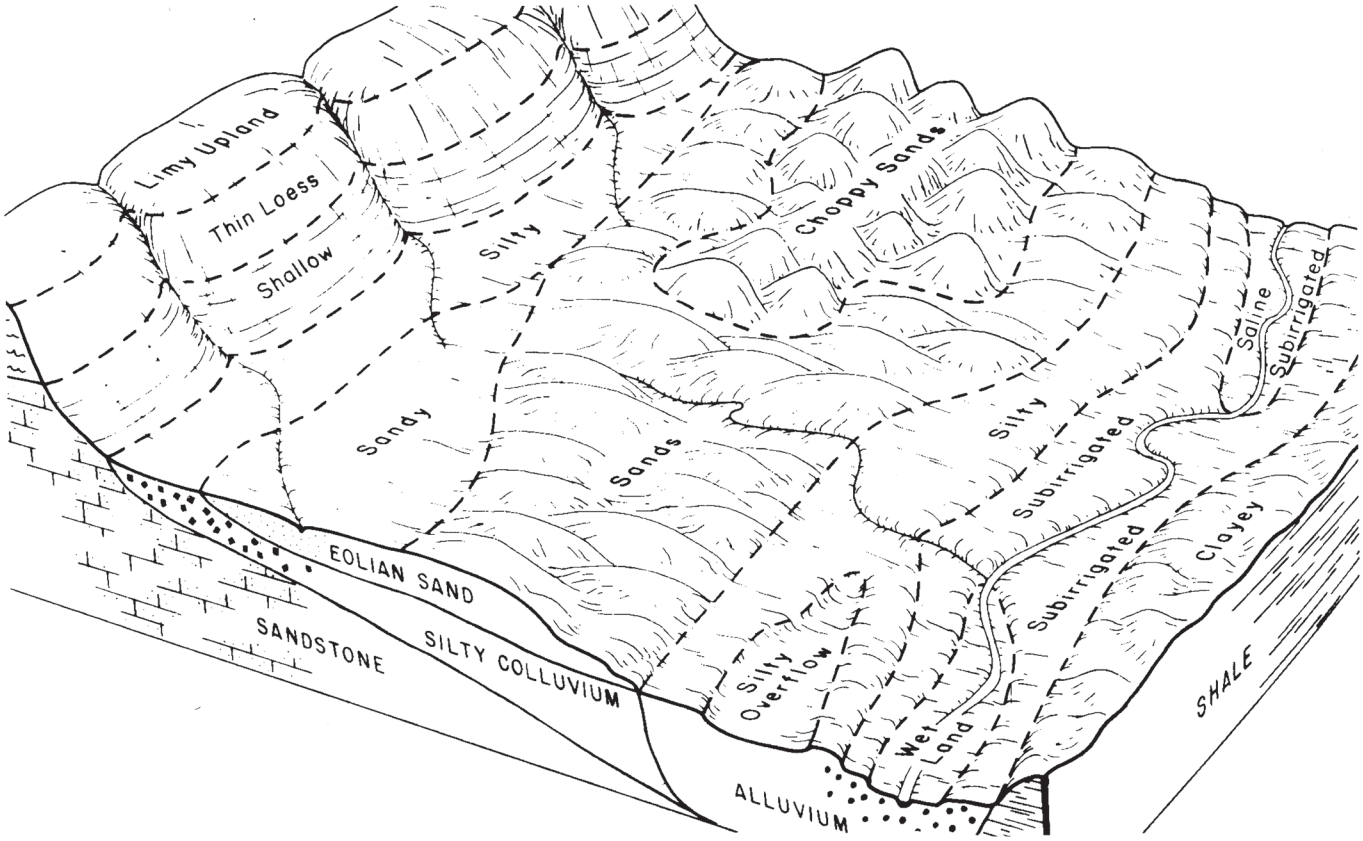

Figure 6. Diagram illustrating the position of ecological sites in relation to one another and to topographic features.

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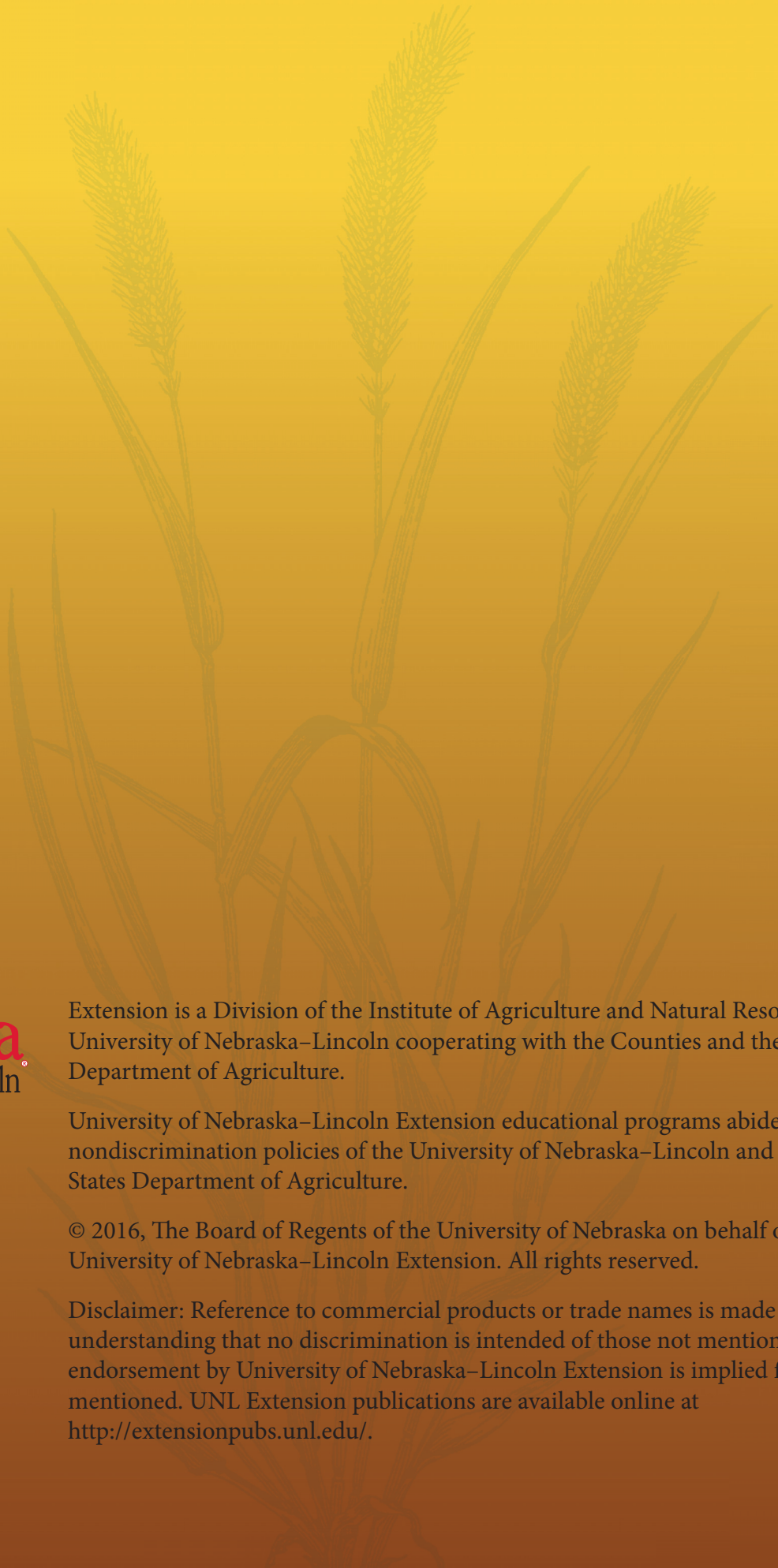

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