

TECHNICAL NOTES

US DEPT. OF AGRICULTURE
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PLANT MATERIALS No. 26

IDENTIFICATION OF GRASSES for Eastern Oregon and Washington

by Scott M. Lambert
USDA NRCS
Washington State University
Pullman Washington

The grass identification information provided in this technical note includes plant ecology and leaf and seedhead characteristics. It is not intended to show all plant identification features. Technical review by Roy Carlson (OR), Jeff Repp (OR), Gerald Rouse (WA), Mark Stannard (WA), Bob Gillaspay (WA) and Kevin Guinn (WA).

Native Grass species included:

bluebunch wheatgrass
thickspike wheatgrass
basin wildrye
Sandberg's bluegrass
Idaho fescue
mountain bromegrass
needle-and-thread grass

beardless bluebunch wheatgrass
slender wheatgrass
blue wildrye
big bluegrass
prairie junegrass
Indian ricegrass

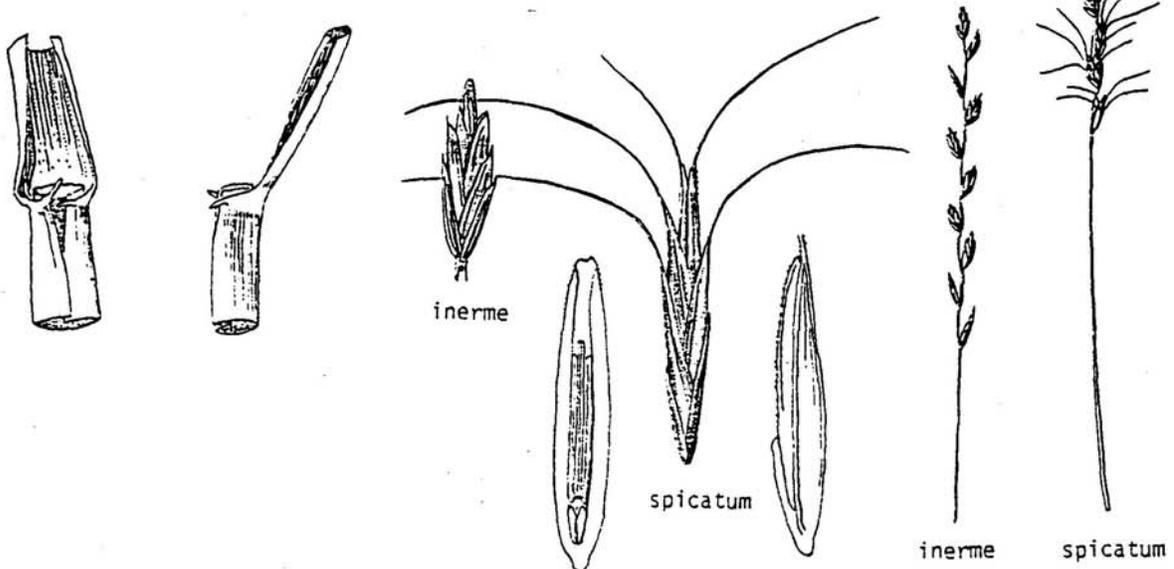
For comparison purposes a few commonly found alien grass species are included: crested wheatgrass, Siberian wheatgrass, intermediate wheatgrass, pubescent wheatgrass, tall wheatgrass, sheep fescue.

BLUEBUNCH WHEATGRASS (*Pseudoroegneria spicata* ssp. *spicata* [Pursh] A. Love) A long-lived, awned, cool-season bunchgrass, up to three feet tall. It naturally occurs in grasslands and dry prairies of Oregon and Washington. It is a major grass component of the shrub-steppe plant communities in the Pacific Northwest. Bluebunch wheatgrass is a very widespread and common species in the grasslands, prairies, and desert shrublands of western North America, from southern British Columbia south to California, east to Montana and New Mexico. It has great morphological and genetic variation within the numerous ecotypes. It is more drought tolerant than a related subspecies, beardless bluebunch wheatgrass. New growth in the spring is earlier than most other native grasses. It requires from eight to almost 30 inches annual precipitation on sandy loam to silt loam, well-drained, neutral to very slightly basic pH. Bluebunch wheatgrass seed: 120,000 to 150,000 seeds per pound. There are approximately 3.2 seeds per square foot for every one pound seeded per acre. The single species seeding rate is seven to eight pounds per acre using a seed drill. MLRAs: B6, B7, B8, B9, B10, B11, D23, E43. Ecoregions: Columbia Basin, Blue Mountains, Snake River Plains, High Desert (Great Basin), Northern Rocky Mountains. Suitable to grazing: excellent.

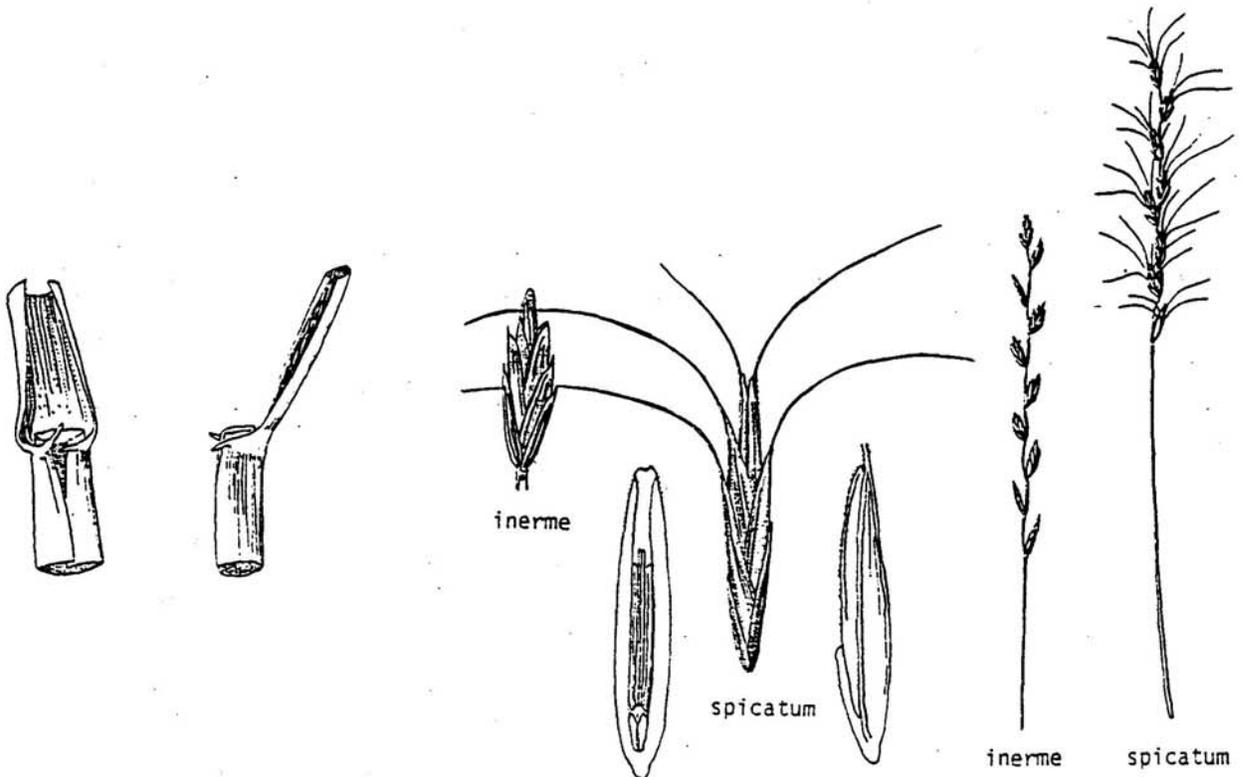
Cultivars: 'Goldar' bluebunch wheatgrass was released by the Aberdeen, Idaho Plant Materials Center (USDA NRCS), and is available from commercial seed vendors; it requires twelve to 20 inches annual precipitation at mid to high elevation. Original seed collected from near Anatone, Washington on a Ponderosa pine- big sagebrush upland site at 3300 feet elevation. Ecoregion: Blue Mountains and Northern Rocky Mountains.

'Secar' Snake River wheatgrass (taxonomically described as *Elymus lanceolatus* ssp. *wawawaiensis* or sometimes as a bluebunch wheatgrass subspecies), released by the Pullman Plant Materials Center. It is available in good quantities from commercial seed vendors. Good seedling vigor, drought tolerant, but moderately slow to establish. Snake River wheatgrass naturally occurs on well-drained, sandy loam or silt loam soils; from eight to 16 inches annual precipitation. Seed for Secar was originally collected on the Lewiston Grade, along the Idaho-Washington border, at 1800 to 2000 feet elevation on a sandy loam soil. Ecoregion: Columbia Basin.

IDENTIFICATION OF BLUEBUNCH WHEATGRASS: a large, moderately tall, perennial bunchgrass; the culms are tufted; auricle present; the leaf blades are flat to slightly rolled; naturally occurs in prairies, grasslands, and shrub-steppe. Inflorescence and seed: the spikelets are not compressed, with bent awns.



BEARDLESS BLUEBUNCH WHEATGRASS (*Pseudoroegneria spicata* ssp. *inermis* [Scribn. & J.G. Smith] A. Love). A long-lived, awnless, cool-season bunchgrass, up to three feet tall. It is found growing on a wide range of prairie soils, on loam, silt loam, and sometimes clay loam. The average annual precipitation is from 14 to 25 inches. Beardless bluebunch wheatgrass provides late spring herbage and cures well for native grass hay. It is also very useful for erosion control, grassland planting, and wildlife habitat restoration. Beardless bluebunch wheatgrass has approximately 125,000 seeds per pound. One pound of pure live seed (PLS) spread across provides 3.1 seeds per square foot. The single species seeding rate is eight pounds per acre using a seed drill. It usually has low seedling vigor, often takes two to three years to become established. 'Whitmar', released by the Pullman Plant Materials Center (USDA NRCS), is the only commercially available cultivar. The original seed was collected from a Palouse Prairie site near Colton, Washington. MLRA: B8, B9, E43. Ecoregions: Columbia Basin (Palouse Prairie), Blue Mountains, Northern Rocky Mountains. Suitable to grazing: fair. IDENTIFICATION OF BEARDLESS BLUEBUNCH WHEATGRASS: a perennial bunchgrass that is very similar to **bluebunch wheatgrass**; but is not awned.



THICKSPIKE WHEATGRASS (*Elymus lanceolatus* ssp. *lanceolatus* [Scribn. & J.G. Smith] Gould) A perennial, sod-forming, cool-season grass, up to two and one-half feet tall, It naturally occurs in the shrub steppe of the Columbia Basin and other aridlands in the interior Pacific Northwest. It usually grows on coarse textured soils, such as sandy loam. Thickspike wheatgrass grows on sites that receive nine to twenty inches of annual precipitation. The plants stay green long into summer and often appear to be fire tolerant. It averages 130,000 seeds per pound. One pound of pure live seed (PLS) spread over one acre provides 3.1 seeds per square foot. It is usually seeded in a mixture with other native grasses at the rate of two to three PLS pounds per acre. MLRAS: B6, B7, B8, D23. Ecoregions: Columbia Basin, East Slope of the Cascades, Snake River Basin, High Desert (Great Basin). Suitable to grazing: fair to good.

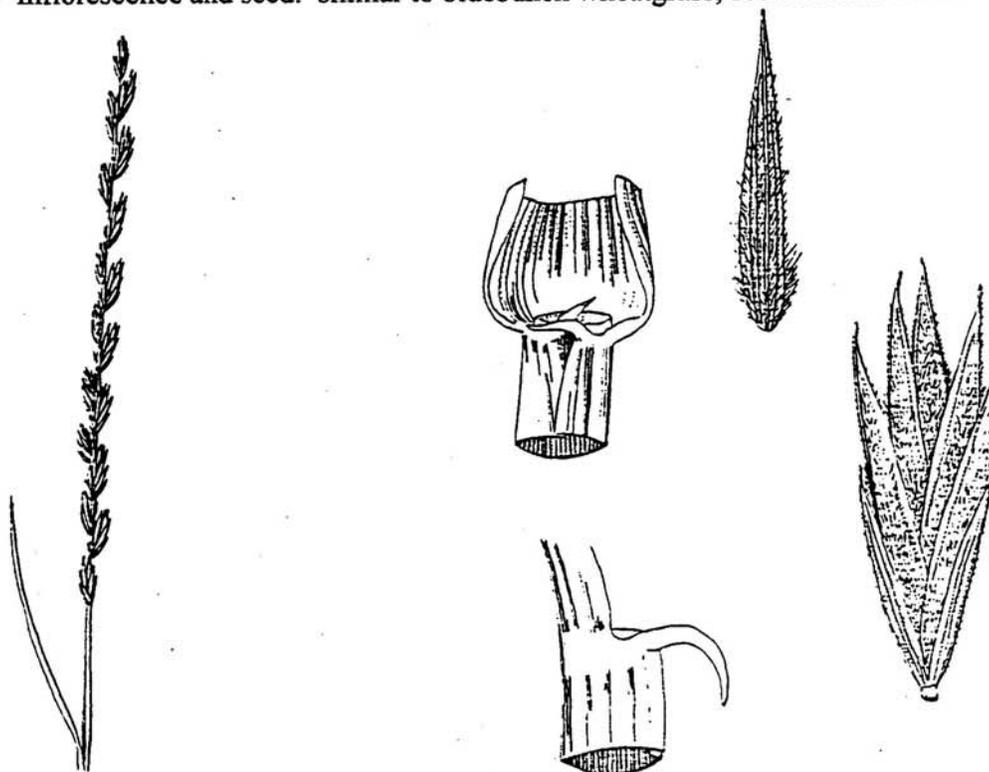
Thickspike wheatgrass cultivars: 'Schwendimar' – was released by the Pullman Plant Materials Center in 1994. It has good seedling vigor and good annual herbage production. The original seed collection was from a shrub steppe site near The Dalles, Oregon, approximately 750 feet in elevation, on sandy loam soil, at fourteen inches annual precipitation.

'Bannock' - is a bulked cultivar from sources in southern Idaho, Oregon and Washington; good forage and seed production; released by the Aberdeen, Idaho PMC.

'Critana' – is a low-growing thickspike wheatgrass cultivar with strong rhizomes, but low annual herbage production. It has been used in erosion control plantings; released by the Bridger, Montana Plant Materials Center.

'Sodar' is the only commercially available cultivar of streambank wheatgrass, a subspecies of thickspike wheatgrass. Origin of Sodar: seed collected from a sagebrush-grass site in Grant County, Oregon. Sodar was released by the Aberdeen, Idaho PMC.

IDENTIFICATION OF THICKSPIKE WHEATGRASS: is usually a moderately tall, perennial, sod-forming grass; sometimes tufted; auricle present; the blades are usually flat. Inflorescence and seed: similar to bluebunch wheatgrass; seed has short awn.



SLENDER WHEATGRASS (*Elymus trachycaulus* [Link] Gould ex Shinners) A short-lived, perennial cool-season bunchgrass; plants usually live for three to five years. It is an early seral grass with a rapid rate of establishment. It naturally occurs on grasslands and open woodlands in western North America; usually on sandy loam soils, at mid-to-high elevations with 14 inches or more mean annual precipitation; it has been established on drier sites in eastern Montana. Slender wheatgrass is shade tolerant, and slightly alkali tolerant. It has historically been used for short-term irrigated hay and pasture or as a green manure crop, often seeded in a mixture with clover. One pound of seed contains 125,000 to 160,000 seeds; about 3.3 seeds/square foot/ one pound/acre; grassland seeding rate is seven to eight lbs./acre; two lbs./acre in a seeding mixture. MLRAs: B9, E43, E44. Ecoregions: Columbia Basin (Palouse Prairie), Blue Mountains, Northern Rocky Mountains. Suitable to grazing: excellent.

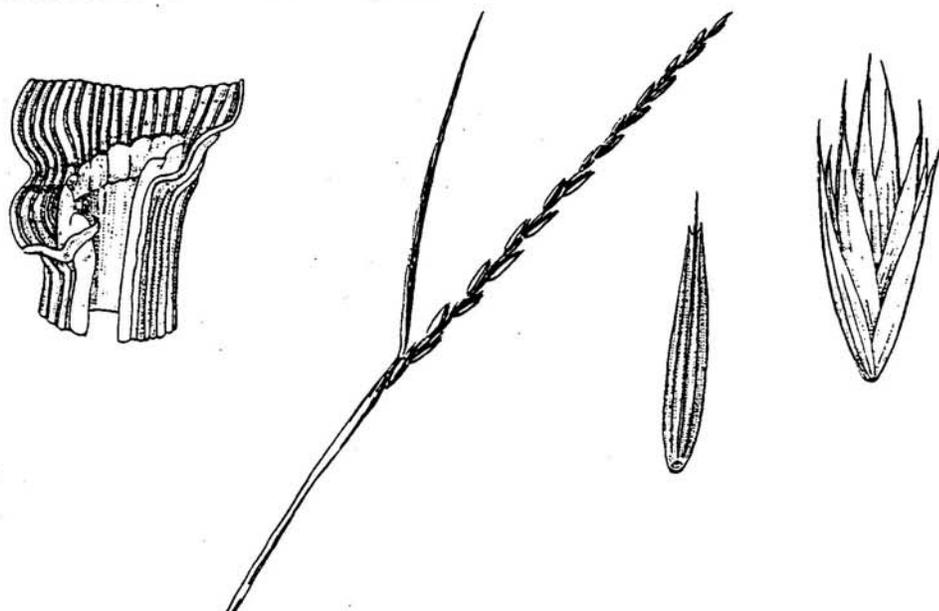
Slender wheatgrass cultivars include: 'Primar' – is an early maturing, high fodder production, strong seedling vigor, rapid plant development, heavy root production; good tolerance of alkali soil; released by the Pullman Plant Materials Center; a limited quantity of commercial seed. Primar origin: shrub-grassland in western Montana.

'Pryor' - is a cultivar from the Bridger, Montana Plant Materials Center; good drought tolerance on grassland sites with at least twelve inches annual rainfall; adapted to saline soils with up to 25 EC. Pryor has excellent seedling vigor and has better initial establishment than some other cultivars. Seed origin: Pryor Mountains, central Montana.

'Revenue' – is a slender wheatgrass cultivar, privately released from Canada; with good seedling establishment; salinity tolerance; good fodder and seed production; high leaf to stem ratios.

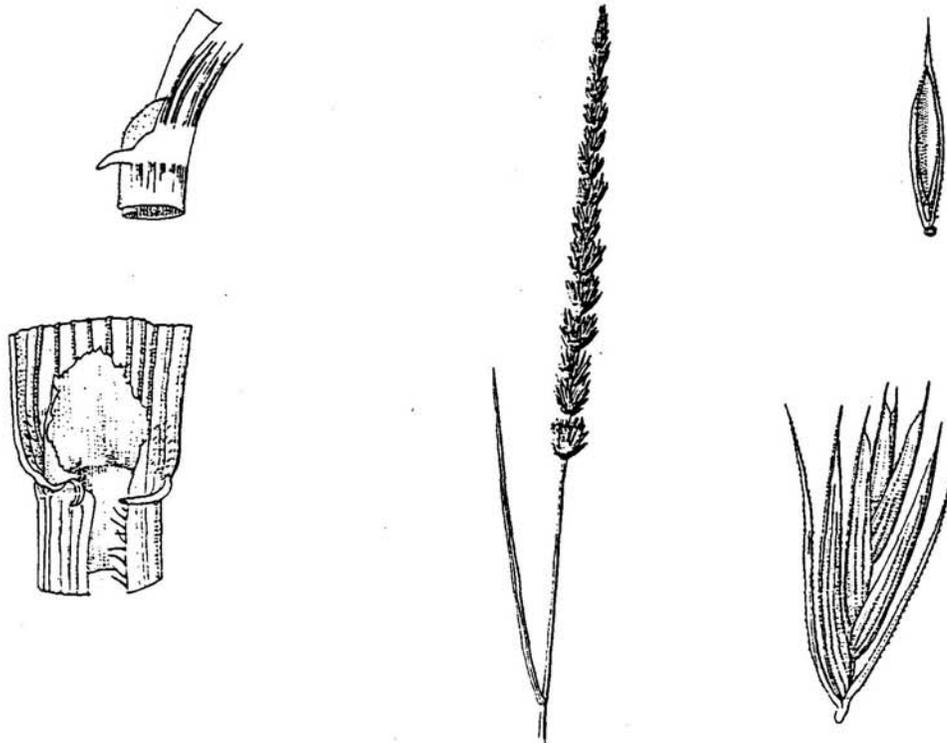
'San Luis' - was released by the Meeker, Colorado Plant Center. It has excellent seedling vigor and good salinity tolerance. Seed origin: San Luis Valley, from an arid, shrub-grass site at 7500 feet elevation in southern Colorado.

IDENTIFICATION OF SLENDER WHEATGRASS: a tall, coarse bunchgrass lacking rhizomes; in the first and second years, the plants have vigorous growth; auricle present. It is found in open woodlands, wet prairies and meadows. Inflorescence and seed: the spikelets are overlapping on a flat, parallel rachilla; hairs on the rachilla; the lemma is glabrous and curved to one side of the palea.



BASIN WILDRYE (*Leymus cinereus* [Scribn. & Merr.] A. Love) A cool season, perennial grass, may be slightly spreading, naturally occurs on grasslands and shrub steppe in eastern Oregon and Washington. Basin wildrye naturally occurs throughout rangeland in the western USA and southwestern Canada; requires eleven to 20 inches annual precipitation. Basin wildrye is commonly found on well-drained bottomlands, and less frequently on alkaline sites; it occurs on sandy loam to silt loam soils. Basin wildrye is very long-lived and has an extensive root system. It is six feet tall at maturity, with coarse, wide leaf blades. It provides excellent wildlife cover, and is useful as livestock cover, wind barriers, and is considered to be fair quality fodder for livestock and wildlife. Basin wildrye is native to most of the sites where tall wheatgrass has been planted for pastures. It stays green well into the summer with adequate soil moisture and may provide some fire suppression. One pound of pure live seed (PLS) contains 100,000 to 160,000 seeds. One pound (PLS) spread over one acre provides 3.0 seeds per square foot. The single species drilled seeding rate is seven to eight pounds per acre. It generally has fair seedling vigor, but is relatively slow to establish, often taking two to three years. MLRAs: B6, B7, B8, B10, D21, D23, D24. Ecoregions: Columbia Basin, East Slope of the Cascades, Snake River, High Desert (Great Basin), Northern Rocky Mountains. Suitable to grazing: fair to good. Basin wildrye cultivars in commercial production include: 'Trailhead' was released by the Bridger Montana Plant Materials Center (USDA NRCS). Origin of seed: foothills of the northern Rocky Mountains, central Montana. 'Magnar' is a basin wildrye cultivar from the Aberdeen Idaho PMC; seed originally collected near Nelson, British Columbia.

IDENTIFICATION OF BASIN WILDRYE: a large perennial bunchgrass; the plants with seedheads often exceed six feet in height; lacking rhizomes; rough stem; wide, long leaf blades. Inflorescence and seed: a thick spike with three to five spikelets per node.



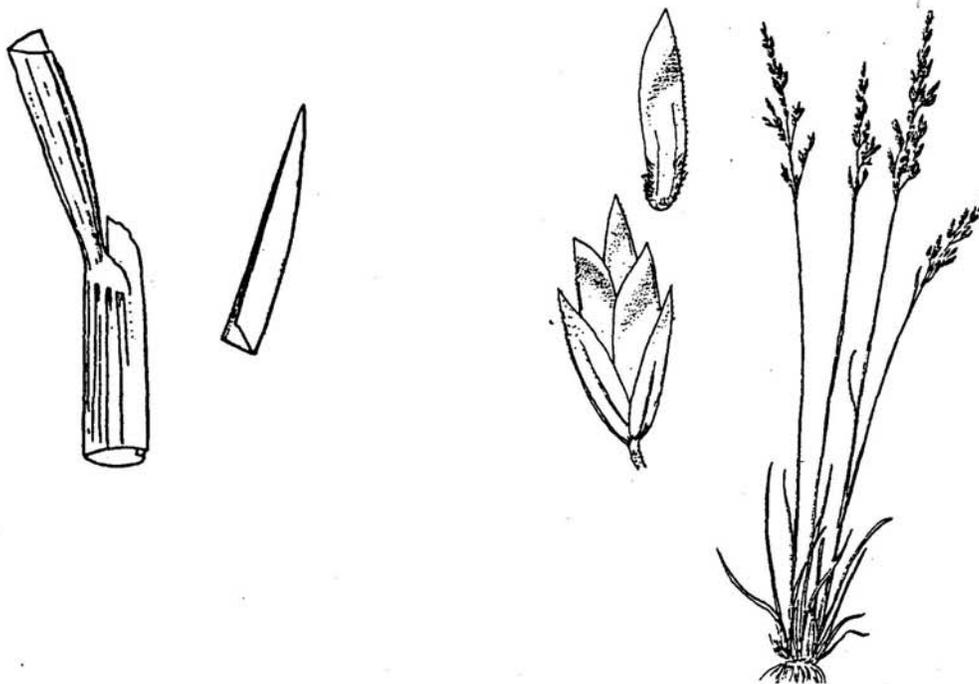
BLUE WILDRYE (*Elymus glaucus* Buckl.) a short-lived perennial grass, without rhizomes, that naturally occurs in the western USA, including Washington and Oregon. It is found in open woodlands, wet prairies, moist hillsides and along streambanks. It is suited to silt loam to sandy loam soils with at least sixteen inches annual precipitation. It rapidly grows in the spring. Suitable to grazing: fair.

IDENTIFICATION OF BLUE WILDRYE: a perennial grass without rhizomes, 18 inches to four feet in height; leaf blades and seedheads may appear reddish to purplish; ligules and auricles present but are small. In eastern Washington and Oregon, it is found in open woodlands and the Palouse Prairie. Inflorescence and seed: seedstalks may be solitary, two or three; two spikelets per rachis joint; two to six florets per spikelet.



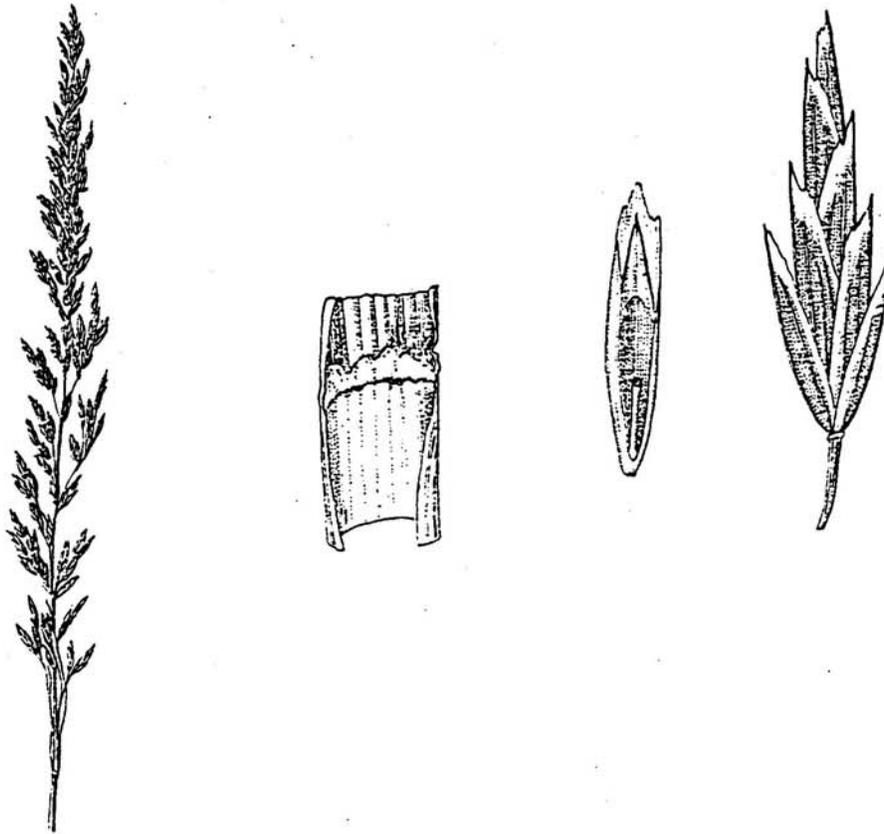
SANDBERG'S-BLUEGRASS (*Poa secunda* J. Presl.) A long-lived, low-growing bunchgrass native to the arid rangelands of western USA and Canada. It is vernal dominant, and adapted to short season moisture sites with seven to sixteen annual precipitation. Sandberg's bluegrass is actually drought-escaping by vigorously growing in early spring. It goes dormant by mid-June, remains dormant until the rainfall may begin plant regrowth in September. It is propagated from seed; 925,000 seeds per pound; twenty-one seeds/square foot/one pound/acre. Drilled seeding rate is one to two pounds per acre in a seed mixture. No cultivar is currently available commercially; a limited supply of source-identified seed is available from seed vendors. MLRAs: B6, B7, B8, B9, D21, D24. Ecoregions: Columbia Basin, Snake River, and High Desert (Great Basin). Suitable to grazing: fair.

IDENTIFICATION OF SANDBERG'S-BLUEGRASS: a perennial bunchgrass; the plant with seedhead is up to eighteen inches in height, may be purple tinged; ligule is present at node; leaf blades are short, boat-tipped, smooth, glossy with twin mid-rib veins; early spring growth; commonly found in the arid shrub-steppe. Inflorescence and seed: a narrow panicle, up to three inches in length.



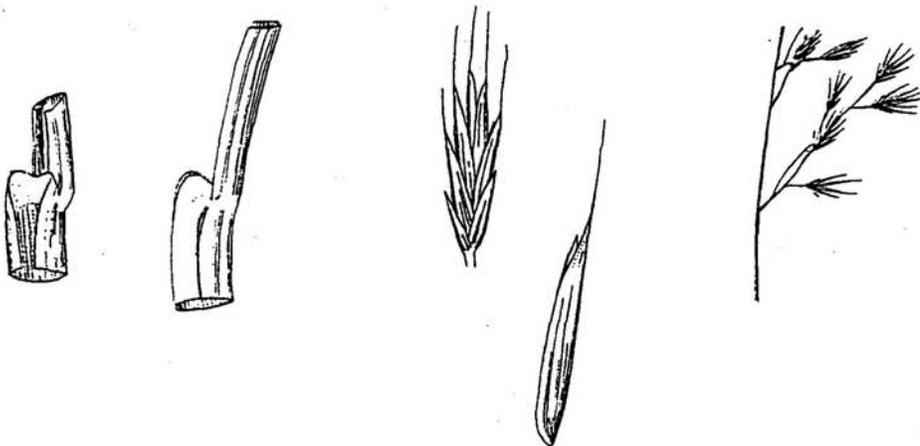
BIG BLUEGRASS (*Poa secunda* J. Presl., or *Poa ampla* Merr.) A long-lived bunchgrass naturally found on rangelands of northwestern USA. It is a component of the sagebrush-grass steppe and Palouse prairie of eastern Washington and Oregon. It occurs on loamy to silt-loam soils where the annual precipitation is nine to sixteen inches. Big bluegrass is grazed by domestic livestock and native ungulates; but it decreases in biomass production when overgrazed by livestock. Propagated by seed, twenty-one seeds/square foot/one pound PLS/acre. It is recommended to be seeded shallow in late fall or early spring with adequate moisture. Big bluegrass competes with winter annual invasive alien plants such as cheatgrass (*Bromus tectorum* L.). Major land resource areas (MLRAs): B7, B8, B9, B10. Ecoregions: Columbia Basin and portions of Snake River Basin. Suitable to grazing: fair to good. The only cultivar of big bluegrass, 'Sherman', was released by the NRCS, Pullman Plant Materials Center. It was originally collected from a native sagebrush-grass plant community in Sherman County, Oregon. It has been used for over fifty years for erosion control, herbage production, and plant community diversity. It is propagated from seed; 900,000 seeds/lb. Drilled seeding rate is one - two pounds per acre in a mix, four pounds/acre when seeded alone.

IDENTIFICATION OF BIG BLUEGRASS: a perennial bunchgrass, usually up to two feet in height, bluish-green in color; the leaf blades are flat, smooth, glossy, boat-tipped with twin mid-rib veins; ligule is present at the node. Inflorescence and seed: a narrow, dense panicle, four to five inches long; spikelet is narrow and a little compressed.



IDAHO FESCUE (*Festuca idahoensis* Elmer) A cool season, long-lived bunchgrass that naturally occurs in the Palouse prairie, sagebrush-grasslands, and rangelands of the Pacific Northwest. It is fine-leaved; the leaves are basal; plant is twelve to thirty inches in height with seedhead; low annual seed production. Good spring herbage production, palatable to domestic livestock, and elk and mule deer. Idaho fescue is much less common on native rangelands that have been heavily grazed by livestock. But with good management, it is often one of the most desirable grassland plants, as it is also excellent for soil erosion control. It does best on moderately deep to deep, fertile, silt loam to clay loams. It is tolerant of slightly saline, alkaline, and acidic soils. Idaho fescue thrives at fourteen to twenty-four inches annual precipitation; it also grows on some north aspects with deep silt loam soils in the Columbia Basin at ten inches rainfall. It is moderate in shade tolerance. Plant crowns may be damaged or killed by fire; fair tolerance to fall burning if plant is dormant. Propagated by seed, but is slow to establish, and has weak seedling vigor. 'Joseph' and 'Nezpurs' are cultivars released by University of Idaho. Commercial seed of Idaho fescue is available in limited quantities. The Pullman PMC has tested and evaluated native ecotypes of Idaho fescue from Oregon and Washington, none have been released for public conservation use. MLRAs: A2, B8, B9, B10, D23, E43, E44. Ecoregions: Columbia Basin, Blue Mountains, High Desert (Northern Great Basin), Siskiyou region, Klamath Basin, and Snake River Plains. Suitable to grazing: excellent.

IDENTIFICATION OF IDAHO FESCUE: a perennial bunchgrass; the leaf blades are rolled or folded, blue-green to dark green; the culms are often bent in loose tufts. Inflorescence and seed: a long, usually erect, spreading panicle, may be red-purple tinged; seed has short awns.



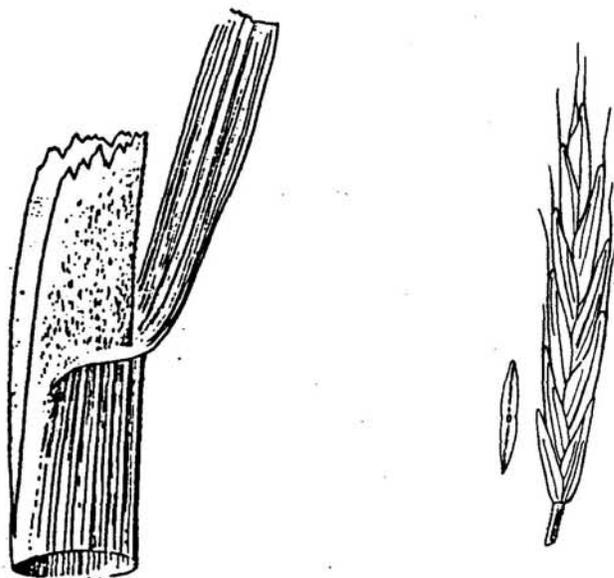
PRAIRIE JUNEGRASS (*Koeleria macrantha* [Ledeb.] J.A. Schultes) A cool-season, tufted perennial bunchgrass; one to three feet in height. It naturally occurs on moderately deep silt loam to sandy soils in prairies, sagebrush steppe, and open woodlands of Oregon and Washington. Prairie junegrass is rarely found in pure stands, but is very often a component of prairie and grassland plant communities on both sides of the Cascade Mountains. It grows on ecological sites that receive twelve to twenty inches of annual precipitation. No "native cultivar" is commercially available, but limited quantities of source identified seed may be obtained from seed vendors. As with all common or source identified seed of native plants, request Source-Identified with a certified seed tag stating the purity, germination test within previous twelve months, and weed content. It is propagated from seed; over 2,300,000 seeds per pound. One pound of pure live seed (PLS) spread across one acre provides 53 seeds per square foot. Seed one pound PLS per acre with a native seed mixture. MLRAs: A2, B8, B9, B10. Ecoregions: Willamette Valley and Puget Sound prairies, Snake River Plains, and Columbia Basin, including the Palouse Prairie. Suitable to grazing: good to fair. Prairie junegrass has been utilized as native forage for domestic livestock and native ungulates.

IDENTIFICATION OF PRAIRIE JUNEGRASS: a perennial bunchgrass, up to two feet in height; plants are tufted, pubescent; the leaf blades are straight, but usually folded; ligule is present; no visible nodes. Inflorescence and seed: a narrow panicle, up to three inches long; no awns present.



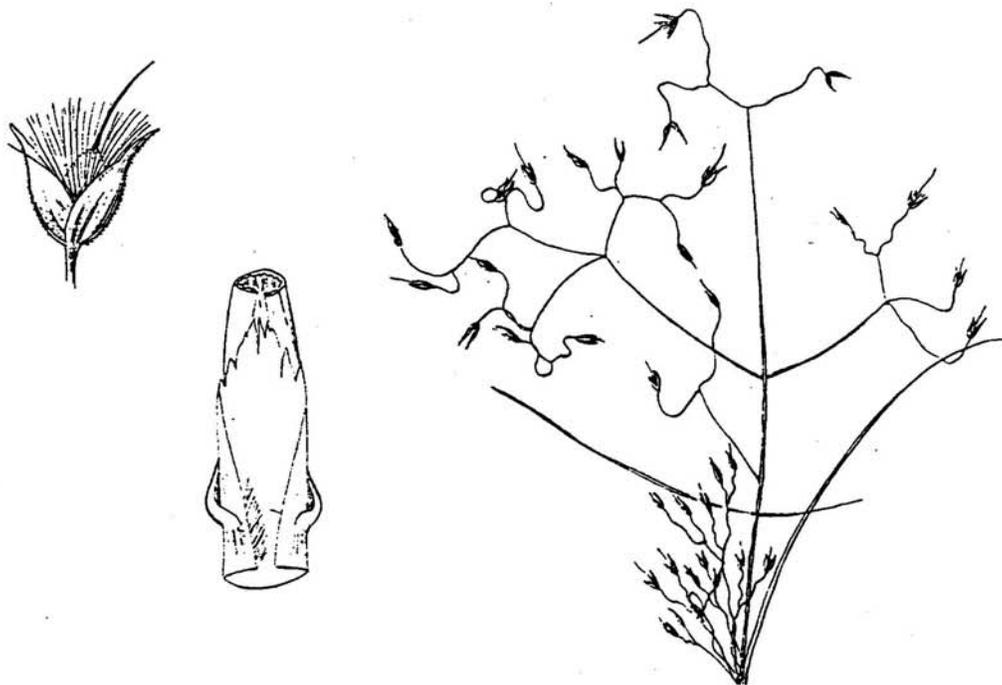
MOUNTAIN BROMEGRASS (*Bromus marginatus* Nees. ex Steud.) A short-lived perennial, cool-season grass that naturally occurs at middle to high elevations on moderately deep to deep loam soils in the western USA. It has moderately coarse culms and broad leaves. Mountain brome grows rapidly on suitable moist, fertile silt loam soils which receive at least sixteen inches of annual precipitation; but does well also on some infertile, coarse, moderately dry soils in eastern Oregon and Washington. It is tolerant of some soil salinity, but is intolerant of flooding and does not respond well to irrigation. It has good shade tolerance. It is propagated from seed, usually sown in the spring. Major land resource areas (MLRAs): B9, B10, E43. Ecoregions: Columbia Basin (Palouse Prairie), Northern Rocky Mountains and Blue Mountains. Suitable to grazing: good palatability to domestic livestock and wild ungulates when the leaves are green. 'Bromar' mountain brome is a cultivar released by the Pullman PMC; it was selected from a native population in western Montana. Bromar has been used in seed mixes for native plant species diversity, critical area planting for erosion control, and in crop rotations when mixed with legumes for "green manure". It is especially useful for reseeding sites after wildfires. The maximum seed and herbage production is in the second growing season. One pound of seed (pure live seed) contains approximately 75,000 seeds; 1.7 seeds/sq. ft./lb./acre. Drilled seeding rate is twelve pounds/acre when seeded alone.

IDENTIFICATION OF MOUNTAIN BROME: a tall, perennial grass with rhizomes, rapid spring growth; pubescent leaves; coarse stems three feet in height. Inflorescence and Seed: open panicle; seven short bearded florets per spikelet; flattened spikelets about 1.5 inches long with distinct pedicels; awn tips are dark.



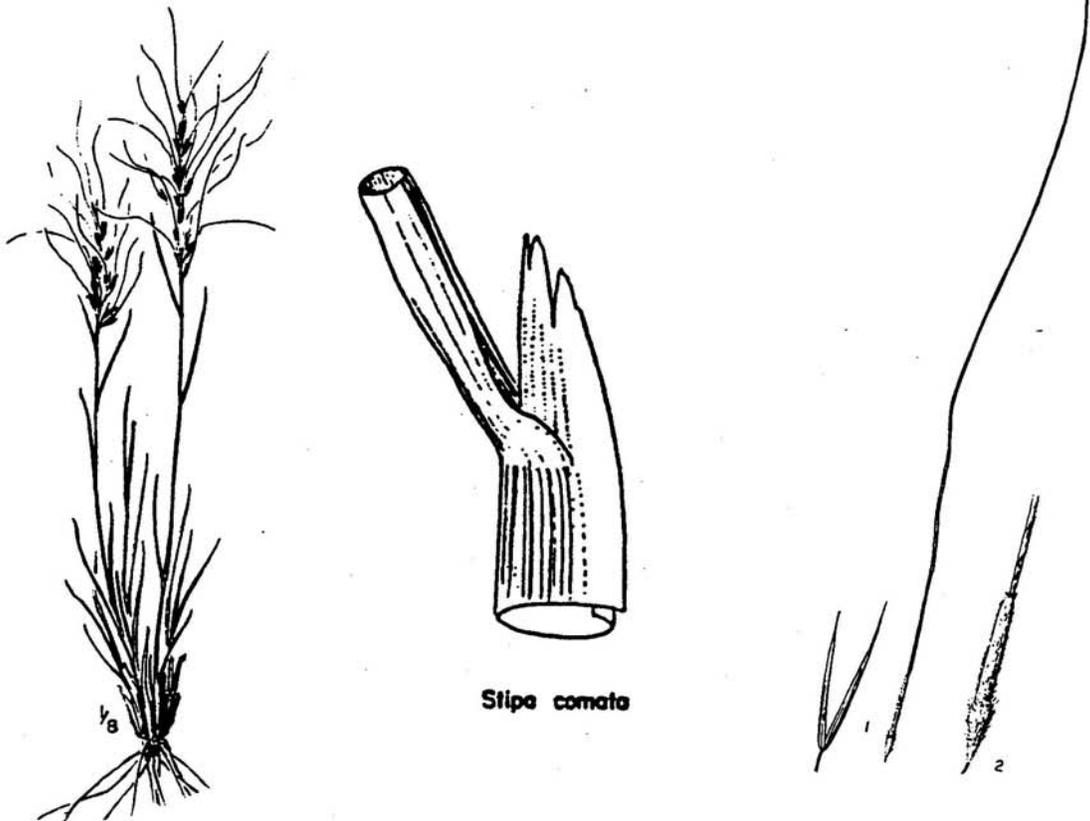
INDIAN RICEGRASS (*Oryzopsis hymenoides* [R. & S.] Ricker) A cool season, drought tolerant, perennial bunchgrass commonly found on sandy soils of the arid rangelands of North America, including the shrub steppe of Oregon and Washington which receives six to fifteen inches of annual precipitation. It is tolerant of weak alkalinity and salinity; occurs on sands to sandy loam soils. It is shade intolerant, grows in full sunlight. It has good tolerance to fire when dormant. It has an indeterminate flowering period which causes seed maturation throughout the growing season. Indian ricegrass seed is very high in protein and fat content, edible to humans as well as animals. It is propagated from seed; 160,000 to 180,000 seeds per pound; 3.8 seeds/square foot/one pound/acre. The drilled seeding rate is six-seven pounds/acre, or one-two pounds per acre in a seed mix. MLRAs: B6, B7, B8, D21, D23. Ecoregions: Columbia Basin, East Slope of the Cascades, Snake River, High Desert. Suitable to grazing: excellent. Cultivars available for eastern Washington and Oregon: 'Nezpar' from the Aberdeen, Idaho Plant Materials Center; original seed collection was from near Whitebird, Idaho. 'Rimrock' is from the Bridger, Montana PMC; original seed collection in Yellowstone County, Montana.

IDENTIFICATION OF INDIAN RICEGRASS: a perennial bunchgrass, up to two feet in height; densely tufted; the leaf blades are rolled; it is found on sands to sandy loam soils in the arid shrub-steppe. Inflorescence and seed: the panicle is spreading and open; spikelets are at the tips of long thin branches, appear fringed with long, dense hairs. The seed is moderately large, dark grayish-brown to almost black; a hard lemma; the awn is usually broken off; the seed has the appearance of miniature bulbs.



NEEDLE-AND-THREAD GRASS (*Stipa comata* Trin. & Rupr.) A cool-season, perennial, tufted bunchgrass; one to three feet in height. It is widespread in the arid regions of Oregon and Washington, principally restricted to sandy soils receiving six to sixteen inches of annual precipitation. The long awned seed can be injurious to animals, but provides winter forage to native animals and domestic livestock. It is propagated from seed; estimated at 150,000 seeds per pound. One pound pure live seed (PLS) spread across one acre provides 3.4 seeds per square foot. No cultivar is available, but limited quantities of needle-and thread grass may be available from commercial seed sources. MLRAs: B6, B7, B8, B10, D21, D23, D24. Ecoregions: Columbia Basin, East Slope of the Cascades, Snake River, Klamath Basin, and High Desert (Great Basin). Suitable to grazing: fair.

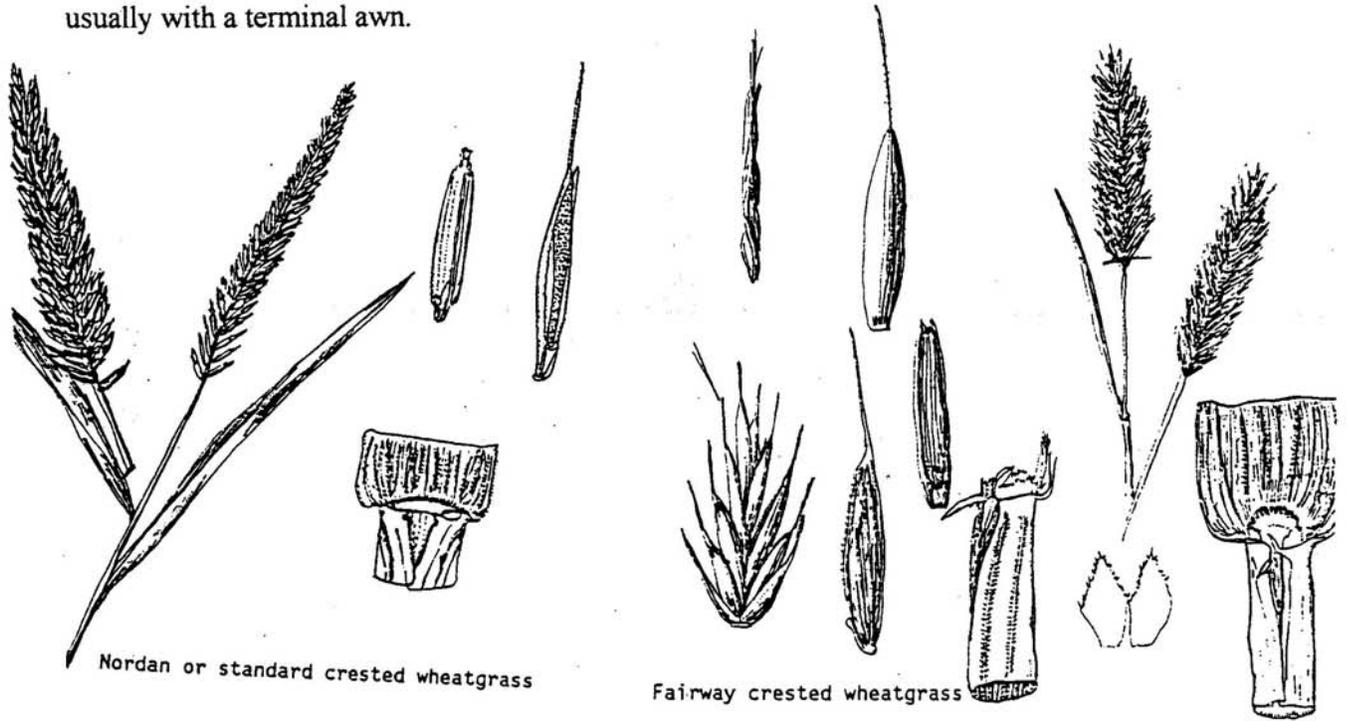
IDENTIFICATION OF NEEDLE-AND-THREADGRASS: a perennial bunchgrass, without rhizomes; grows in small tufts; plants with seedheads are one to three feet in height; conspicuous bifid ligule; usually occurs on sands to sandy loam soils in the arid shrub-steppe. Inflorescence and seed: a loose, spreading panicle, four to eight inches long; a large, prominent flag leaf below the panicle; one floret per spikelet; long, papery glume up to one inch in length; the hard seed coat is formed by the lemma and palea; long awn on the lemma is twisted and up to five inches in length. The seed has a sharp point with hairs near the point.



Stipa comata

Crested wheatgrass (*Agropyron cristatum* or *A. desertorum*) (Introduced grass)

Plant – a perennial bunchgrass, moderately tall, auricle present. Seed – spike is two to four inches long, spike has a comb-like appearance, spikelets are compressed, overlapping at about 45 degrees. Seed is long, narrow, straight, usually with a terminal awn.



Siberian wheatgrass (*Agropyron fragile* ssp. *sibericum*) (Introduced grass)

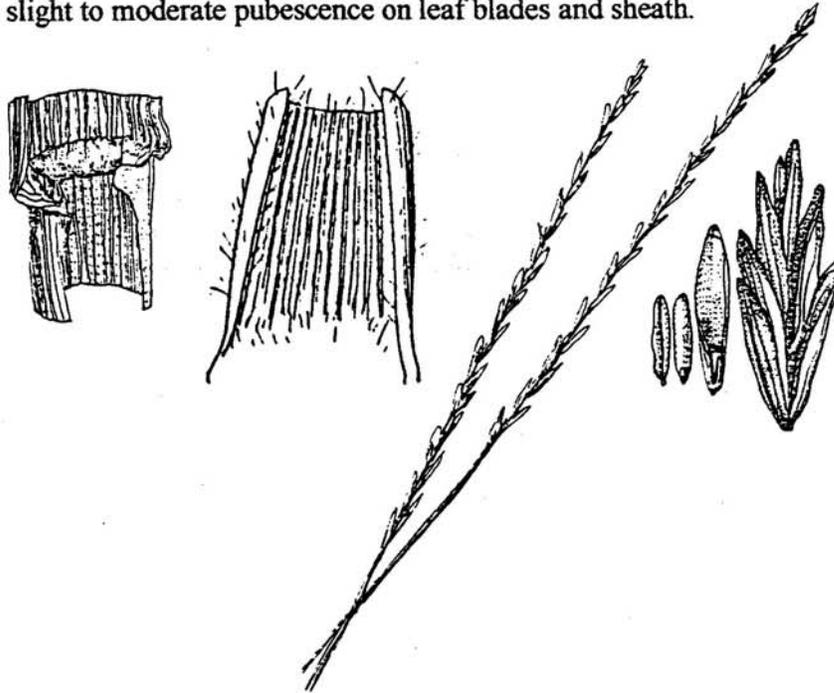
Plant – very similar to the above description, usually slightly smaller bunchgrass than crested wheatgrass, does better on sandy loam soils. Spike is narrower and may be slightly longer than crested wheatgrass, spike may appear like a long, narrow square.



Intermediate wheatgrass (*Elytrigia intermedia*) (Introduced grass)

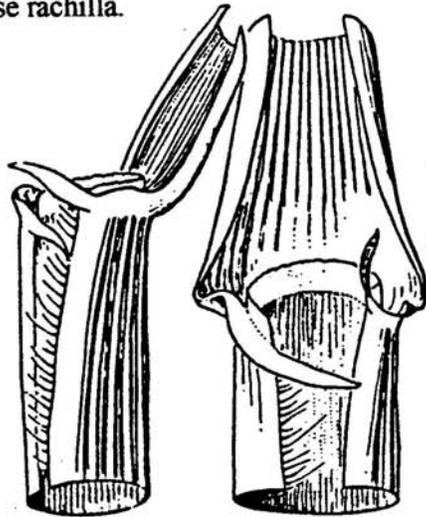
Plant – moderate sod-former, rhizomatous like quackgrass; auricle present, ligule is short. Lemma is awnless and blunt, glumes are several nerved. Seed – smaller and not twisted as much as tall wheatgrass, coarse rachilla.

Pubescent wheatgrass is also known as “hairy intermediate wheatgrass”; pubescent spikelets, slight to moderate pubescence on leaf blades and sheath.



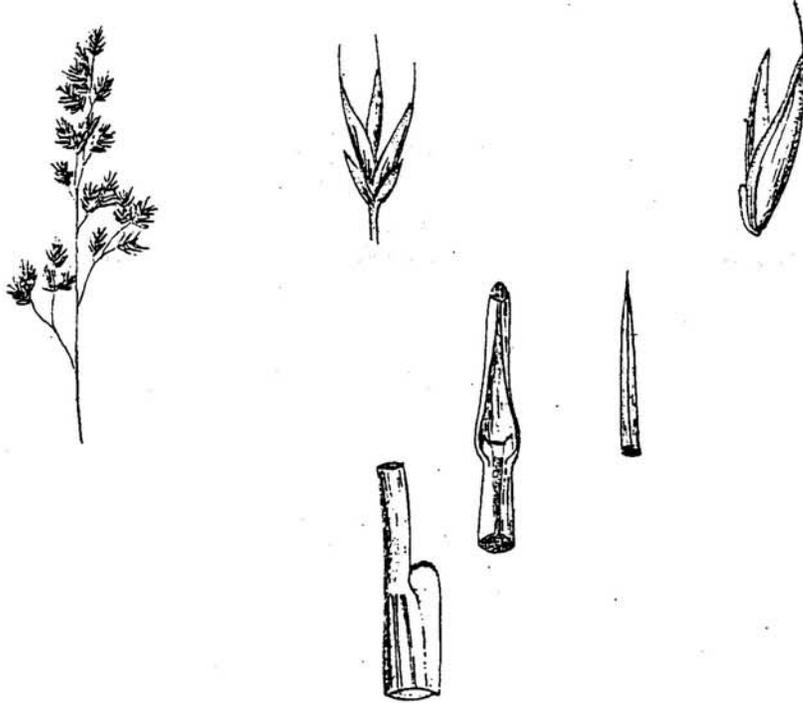
Tall wheatgrass (*Elytrigia intermedia*) (Introduced grass)

Plant – a tall, coarse, stemmy perennial bunchgrass, auricle present, glumes are rounded at tip and half as long as the spikelet. Seed – relatively large seed, often twisted, coarse rachilla.



Sheep fescue (*Festuca ovina*) (Introduced grass)

Plant – a perennial bunchgrass, culms are densely tufted, lacking auricles, leaf blades mostly basal, folded to rolled, slender and often thread-like. Contracted panicle, up to eighteen inches in height. Seed – 3-5 florets per spikelet.



APPENDIX A

REFERENCES-Grass Identification

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SCOTT M. LAMBERT

USDA NRCS
127 JOHNSON HALL, NATRS
WASHINGTON STATE UNIVERSITY
PULLMAN, WA 99164-6410

APPENDIX B

Grass Categories by Identifying Characteristics

GRASS CATEGORIES BY IDENTIFYING CHARACTERISTICS
(by Kevin Guinn, NRCS, Ephrata Washington)

Seedhead is a spike
wheatgrasses
wildryes
prairie junegrass

Seedhead is a panicle
brome-grasses
fescues
needlegrasses
Indian ricegrass

Awn from tip of glume
fescue

Awn from back of glume
brome-grasses

Has auricles
wheatgrasses

Has ligules
bluegrasses
fescues
needlegrasses
Indian ricegrass
prairie junegrass
brome-grasses

Has both auricles and ligules
wildryes
tall wheatgrass

Wide, coarse leaves
basin wildrye
tall wheatgrass

Narrow, rolled leaves
fescues

Wide, soft leaves
brome-grasses
blue wildrye

Leaves folded, boat-tipped
Bluegrasses

With rhizomes
mountain brome
pubescent wheatgrass
streambank wheatgrass
thickspike wheatgrass

Small, usually inconspicuous clumps
Sandberg's bluegrass
sheep fescue

APPENDIX C

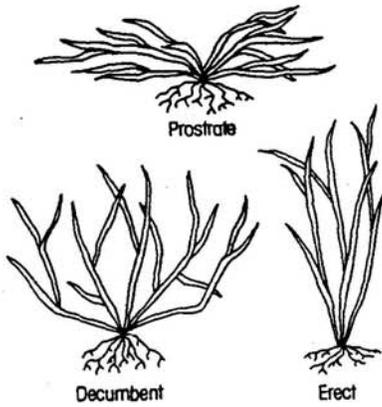
How to Identify Seedling Grasses

HOW TO IDENTIFY SEEDLING GRASSES

A variety of plant characteristics are used to identify grass seedlings. One character is seldom so different that it alone provides positive identification. If possible, examine more than one plant to determine each characteristic. A pocket knife and a good hand lens are helpful.

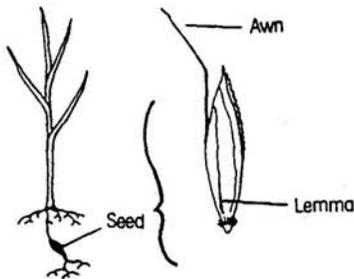
1. Growth Habit

Grass weeds grow in one of three distinct habits: (a) prostrate (flat on the ground); (b) decumbent (prostrate but with the tip growing upward); (c) erect (vertical).

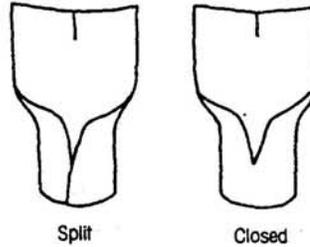


2. Seed Characteristics

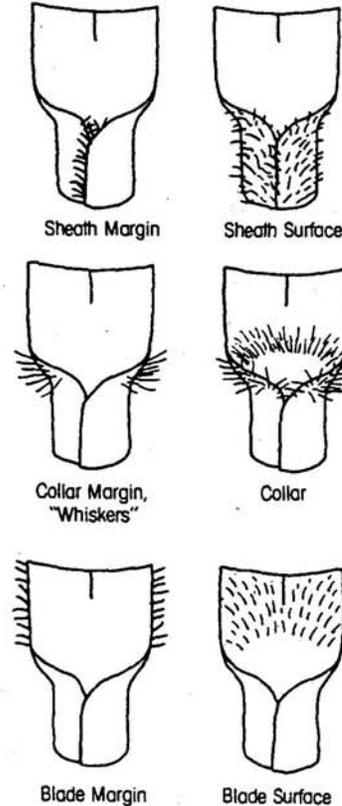
Since the seed remains attached to the growing seedling, it can be used to help in identification. Carefully dig up the seedling and remove the soil. The seed will be attached as shown below.



Types of Sheaths

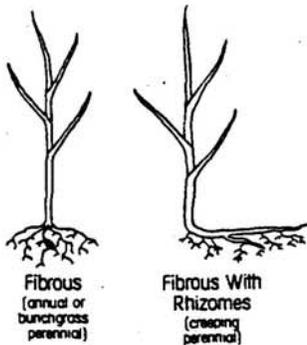


Types of Hairiness



3. Root System Characteristics

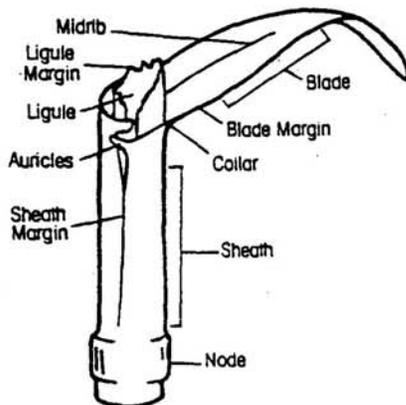
All grasses have a fibrous root system. In addition, some perennial grasses produce underground stems called rhizomes, which provide a means of reproduction and spread. What appears to be a seedling may actually be a new shoot produced from a rhizome. Seedlings of rhizomatous perennials usually begin to produce rhizomes by the fifth-leaf stage of development. Examine the root system for the characteristics illustrated below.



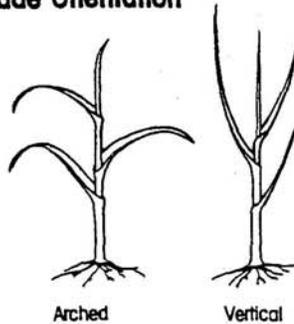
4. Foliage Characteristics

The characteristics illustrated in this section may vary or change with stage of grass development.

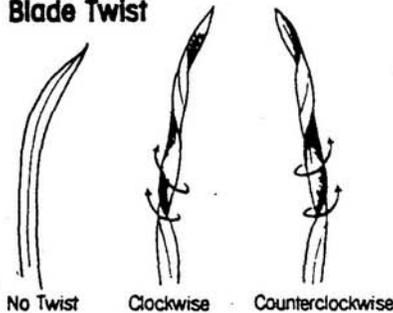
Plant Parts



Blade Orientation

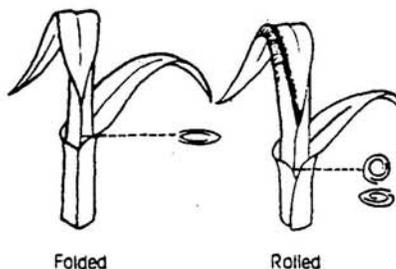


Blade Twist

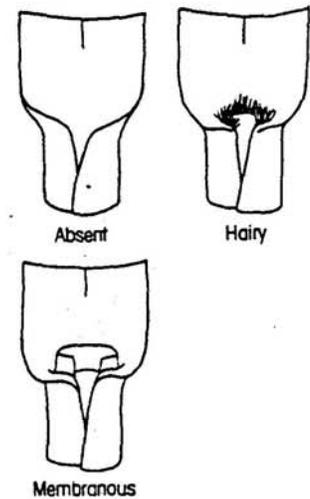


Folded Or Rolled In The Bud

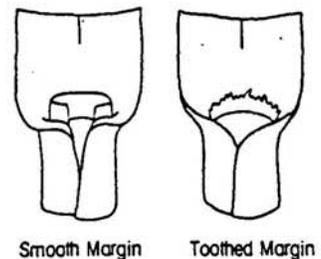
Leaf blades are either folded or rolled in the bud. Sheaths of grasses that are folded in the bud are always flat, while those of grasses with blades that are rolled in the bud may be either flat or round. One margin of the newly emerged blade will be rolled inward on grasses that are rolled in the bud, while neither will be rolled inward on grasses that are folded in the bud. This characteristic can be observed at the base of the newly emerged blade, as shown below.



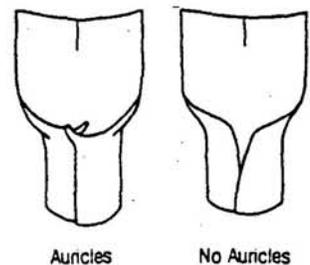
Types of Ligules



Ligule Margin



Auricles



APPENDIX D

Common CRP Grasses Vegetative Key

Table 1

Leaves					
		Folded in budshoot		Rolled in budshoot	
Auricles	Present	Rhizomes present and generally well-developed- No species	Rhizomes lacking or very poorly developed-Table 2	Rhizomes present and generally well-developed-Table 3	Rhizomes lacking or very poorly developed- Table 4
	Absent or much reduced	Rhizomes present and generally well-developed-Table 5	Rhizomes lacking or very poorly developed-Table 6	Rhizomes present and generally well-developed-Table 7	Rhizomes lacking or very poorly developed-Table 8

Table 2 Budshoot leaves folded, Auricles present, Rhizomes absent

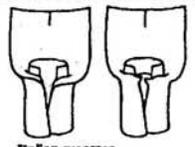
Leaf blades	glabrous			
Sheaths	Glabrous, lower sheaths reddish at base			
	Perennial ryegrass, <i>Lolium perenne</i>			
	 <p>Italian ryegrass</p>			

Table 3 Budshoot leaves rolled, Auricles present, Rhizomes present

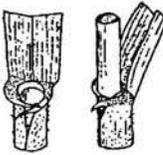
Sheaths	Lower sheaths fine hairy (at least)	Weakly ciliate margined; sheaths not hairy	Ciliate or non-ciliate; lower sheaths hirsute-pilose	Strongly ciliate margined; sheaths hairy
Leaf blades	Flat, ridged, slightly rough; 5-10 mm broad & generally hairy	Flat; 5-10 mm broad	Flat; 5-10 mm broad	Flat; 5-10 mm broad, hairy at least on the lower part near the collar
Leaf color	Bluish-green	Plants glaucous	Plants not glaucous	Plants bluish-green; glaucous
Auricles	Clawlike & clasping	Rounded to rudimentary	Clawlike & clasping	Rounded to rudimentary
Collar				
Ligule				
Rhizomes	Well-developed	Weak to none	Well-developed	Weak to none
	Thickspike wheatgrass	Intermediate wheatgrass	Quackgrass, <i>Agropyron repens</i>	Pubescent wheatgrass
	 <p>thickspike wheatgrass</p>	 <p>intermediate wheatgrass</p>  <p>intermediate wheatgrass</p>	 <p>quackgrass</p>  <p>quackgrass</p>	 <p>pubescent wheatgrass</p>

Table 4 Budshoot leaves rolled, Auricles present, Rhizomes lacking

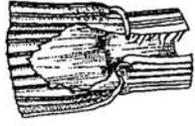
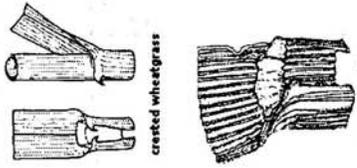
Sheaths	Open; Glabrous to scabrous	Open; Scabrous and harsh	Open; Scabrous and harsh	open	Open; split with overlapping edges	Open; split with overlapping edges	Open; puberulent
Leaf blades	> 5 mm wide, flat, leaves soft, glabrous to scabrous; smooth on both surfaces, glossy finish,	> 5 mm wide, flat, harsh, without glossy finish, leaves not coarsely ribbed above; leaves not stiff and erect but not lax	> 5 mm wide, flat, harsh, without glossy finish, leaves coarsely ribbed above; leaves stiff and erect	Rolled 1-2 mm wide; distinctly ribbed on upper surface Smooth;	Rolled 1-2 mm wide; distinctly ribbed on upper surface; lax and drooping; smooth (pubescent)	Rolled 1-2 mm wide; distinctly ribbed on upper surface; lax and drooping; generally hairy (pubescent)	Flat; 1-3 mm wide; leaves stiffly ascending; both surfaces puberulent
Leaf color	bluish-green			Green	green	Bluish-green	green
Auricles	Clasping, clawlike	Well-developed	Well-developed	Acute clasping, reddish-purplish	Acute to rounded		acute
Collar	distinct						
Ligule	0.5-1.0 mm long; truncate-lacerate	Obtuse 2-7 mm. long		0.5-1 mm. long	Very inconspicuous, <1/4 height/width; lacerate	Very inconspicuous, <1/4 height/width; lacerate	
	Blue wildrye	Basin wildrye	Tall wheatgrass	Bluebunch wheatgrass	Crested wheatgrass	Siberian wheatgrass	Bottlebrush squirreltail
	 basin wildrye			 bluebunch wheatgrass	 crested wheatgrass		 squirreltail  squirreltail

Table 5 Budshoot leaves folded, Auricles absent, Rhizomes present

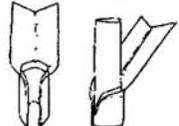
Sheath glabrous	Keeled (=oval)	Not keeled (=rounded)		
Leaf blades flat, tip boat-shaped, abruptly pointed, <=5 mm. wide, median line present, not prominently ridged on upper surface	Blade broadest at base gradually tapering to apex	Blade parallel-sided		
Leaf color	Blue-green, often glaucous	Deep-green, not glaucous		
Collar	No minute hairs on margin	Minute hairs on margin usually		
Ligule-truncate, short	Emarginate, 1 mm. long	Entire, 0.5 mm long		
	Canada bluegrass, <i>Poa compressa</i>	Kentucky bluegrass, <i>Poa pratensis</i>		
	 <p>Canada bluegrass</p>			

Table 6 Budshoot leaves folded, Auricles absent or much reduced, Rhizomes lacking

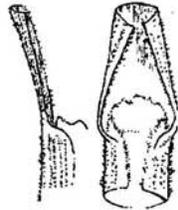
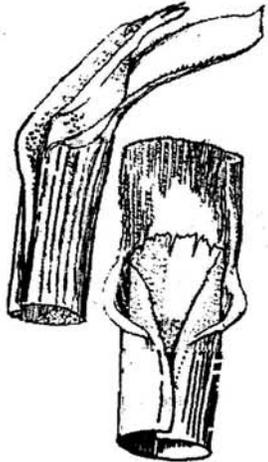
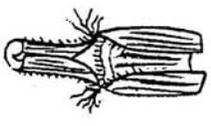
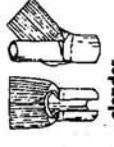
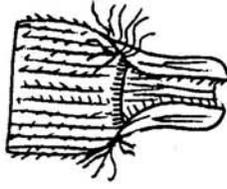
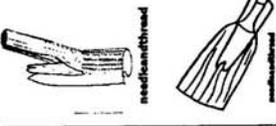
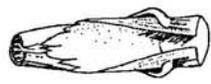
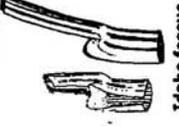
Sheaths	Partially closed, lower 1/4	Partially closed, lower 1/4	Split, open	Keeled (much compressed); glabrous; green on upper part but very pale green to white on lower part; split partway, closed below
Leaf blades	Boat-tipped	Boat-tipped	Boat-tipped and strongly prow-shaped (1-2 mm.); folded to involute (flat); margins of blades with long straight hairs (1-1.5 mm.); ridged, fine-hairy, midrib indistinct	5-12 mm. broad; v-shaped in cross-section near base, sharply keeled below; not ridged; margins smooth or scabrous
Leaf color	green	Bluish-green, glaucous		Pale green, sometimes glaucous
Auricles	Absent	absent	absent	absent
Collar	indistinct	indistinct	Sometimes collar with long straight hairs	Broad, distinct, glabrous, yellowish green, divided by the midrib
Ligule	Prominent; thin membranous and acute; 2-7 mm. long	Prominent, thin membranous; 2 mm. long; rounded-notched to lacerate	Membranous (0.5-2 mm) strongly pubescent, lacerate to ciliate margin; ligule higher on the back than on the sides	Membranous, white, 2-8 mm. long; truncate with awnlike point at apex; ciliolate; sometimes split to base
	Sandberg bluegrass, <i>Poa secunda</i>	Big bluegrass, <i>Poa secunda (ampla)</i>	Prairie junegrass, <i>Koeleria macrantha</i>	Orchardgrass, <i>Dactylis glomerata</i>
	 <p>sandberg bluegrass</p>  <p>sandberg bluegrass</p>	 <p>big bluegrass</p>	 <p>prairie junegrass</p>  <p>prairie junegrass</p>	 <p>orchardgrass</p>

Table 7 Budshoot leaves rolled, Auricles absent, Rhizomes present

Sheaths	Slightly or not keeled (=rounded); glabrous or near glabrous, closed to near the summit			
Leaf blades	4-12 mm. wide, flat; glabrous but sometimes minutely pubescent on both surfaces; almost ridgeless above; slightly keeled below; margins scabrous			
Leaf color	Dark green			
Auricles	Absent or rarely rudimentary			
Collar	Narrow, glabrous, light green, divided			
Ligule	Membranous, short (0.5 mm), obtuse, entire or slightly lacerate			
	Smooth brome, <i>Bromus inermis</i>			
	 smooth brome			

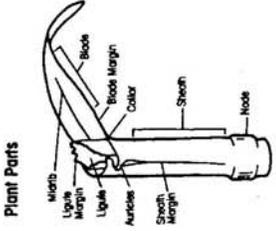
Table 8 Budshoot leaves rolled, Auricles absent, Rhizomes lacking

		Ligule a fringe of hairs; some with a membranous base but fringe \geq the base				Ligule membranous; some with a beembranous base but the fringe $<$ the base			
Sheaths	open		Open; margin long hairy (1-3 mm.)	Open; overlapping	open	Basal sheaths, firm, green, persistent	Basal sheaths bright purple		
Leaf blades	Very narrow (1-2 mm.), convolute to involute				Very long, rolled			Filiform; $<$ 4 inches long	
Leaf color									
Auricles	absent	absent	absent	absent	absent	absent	absent	absent	
Collar	whiskers		Long hairy "whiskers" (1-3 mm.)		Prominent; thickened (callous-like)				
Ligule	Short fringed ligule; $<$ 0.5 mm long	1 mm. long; finely ciliate	Short fringed ligule; $<$ 0.5 mm long	Conspicuous (1-5 mm long)	Conspicuous (5-7 mm long)	$<$ 2 mm., higher on the side than on the back			
	Red threecawn	Slender wheatgrass	Sand dropseed	needle and thread	Indian ricegrass	Idaho fescue, Festuca idahoensis	Rough fescue, Festuca scabrella	Sheep fescue, Festuca ovina	
	 red threecawn	 slender wheatgrass	 sand dropseed	 needle and thread	 Indian ricegrass	 Idaho fescue	 rough fescue	 sheep fescue	

APPENDIX E

CRP Vegetative Key-Volunteer Cereals, Annuals, and basin wildrye

CRP Seedlings Vegetative Characteristics Key



Begin Here
 examine 3d or 4th seedling blade or sheaths for characteristics
 Ligules
 blades flat; more than 5 mm (.2 inches) wide

Prominent membranous ligule
 Ligule > 2 mm. length

Blades without hair, possible hair at collar

Blades prominent midrib
 twist counterclockwise
wild oats



Blades prominent midrib
 twist clockwise

Blades flat, lack prominent midrib
basin wildrye



Collar margins hairy "whiskers"
cereal wheat

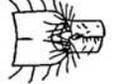


Sheaths without hair
cereal barley

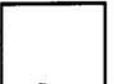


Blades with long hair on margin of blade and collar

blades twist counterclockwise
Jointed goatgrass



blades twist clockwise
wild oats

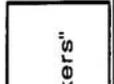


Blades hairy above and below

Auricle absent
 blades vertical, long and narrow
 twist clockwise
cheatgrass



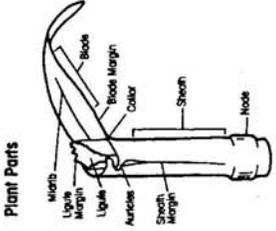
With auricles
 Blades wide
 collar margins hairy "whiskers"
cereal wheat




Counterclockwise

Clockwise

CRP Seedlings Vegetative Characteristics Key



Begin Here
 examine 3d or 4th seedling blade or sheaths for characteristics
 Ligules
 blades flat; more than 5 mm (.2 inches) wide

Prominent membranous ligule
 Ligule > 2 mm. length

Blades without hair, possible hair at collar

Blades prominent midrib
 twist counterclockwise
wild oats



Blades prominent midrib
 twist clockwise

Blades flat, lack prominent midrib
basin wildrye



Collar margins hairy "whiskers"
cereal wheat



Sheaths without hair
cereal barley



Blades with long hair on margin of blade and collar

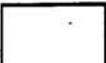
Blades with long hair on margin of blade and collar

blades twist counterclockwise
Jointed goatgrass



blades twist clockwise
wild oats

blades twist clockwise
wild oats



Blades hairy above and below

Auricle absent
 blades vertical, long and narrow
 twist clockwise
cheatgrass



With auricles
 Blades wide
 collar margins hairy "whiskers"
cereal wheat

