

Grass Varieties

For North Dakota



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Selection of the appropriate species and variety is an important step in making a grass seeding successful. Grass species and varieties differ in growth habit, productivity, forage quality, drought resistance, tolerance to grazing, winter hardiness, seedling vigor, salinity tolerance and many other characteristics. Therefore, selection should be based on the climate, soils, intended use and the planned management. Planting a well-adapted selection also can provide long-term benefits and affect future productivity of the stand.

This publication is designed to assist North Dakota producers and land managers in selecting perennial grass species and varieties for rangeland and pasture seeding and conservation planting. Each species is described following a list of recommended varieties (releases). Variety origin and the date released are included for additional reference.

A Plant Species Guide for Special Conditions, found near the end of this publication, is provided to assist in selection of grass species for droughty soils, arid or wet environments, saline or alkaline areas and landscape/ornamental plantings. Several factors should be considered before selecting plant species. These include 1) a soil test, 2) herbicides previously used, 3) the type of vegetation that grew on the planting site before it was disturbed, 4) weather patterns and moisture conditions, 5) planting methods recommended for each plant species, 6) forage quantity and quality, and 6) erosion potential.

Additional information can be found in the following references:

- NDSU, R-1323, "Grasses for the Northern Plains Vol. I – Cool-season"
- NDSU, R-1390, "Grasses for the Northern Plains Vol. II – Warm-season"
- NDSU, R-563, "Forage Establishment"
- NDSU, R-790, "Planting Tips"
- USDA NRCS, "ND Field Office Technical Guide (FOTG)," Section I, Herbaceous Vegetation Establishment Guide
- USDA NRCS, "Five Keys to Successful Grass Seeding"

Introduced Grasses

Introduced (tame) grasses are species that did not exist naturally in the region. They were brought to this country for different purposes or escaped unintentionally. Introduced grasses can be used for a variety of conservation purposes, such as improved pasture and hayland, waterways, conservation cover, filter strips and wildlife habitat. All introduced grass species listed in this publication are cool-season grasses. Primary growth periods are spring and fall. Some species require a higher level of management and fertility to provide long-term protection of the soil and optimum herbage performance.

Use recommended varieties whenever possible.

Certified seed assures varietal identity and genetic purity. An alternative is to use common seed of adapted varieties harvested in North Dakota, South Dakota, Minnesota, Nebraska, Montana, Wyoming and the Canadian provinces of Alberta, Saskatchewan and Manitoba.

■ Bromegrass

Meadow (*Bromus biebersteinii*)

Varieties	Date Released	Varieties	Date Released
Cache	2004	Fleet	1987
MacBeth	2001	Paddock	1987
Montana	2000	Regar	1966
AC Knowles ¹	2000		

¹Meadow brome x smooth brome hybrid

Meadow bromegrass is a long-lived bunchgrass with short rhizomes. It is better suited for pasture than hayland because of its growth habit. It does not become as sod-bound as smooth bromegrass. It has good seedling vigor and establishes readily. Forage quality is excellent. Leaves are dominantly basal and hairy. Under favorable moisture, leaves remain green and continue to grow after the seed crop is mature. Meadow bromegrass is winter-hardy but provides less forage than smooth bromegrass under drought stress. It is suggested for use with alfalfa for hay and pasture on good moisture sites. Meadow bromegrass has excellent regrowth potential when moisture is adequate. The bunchy growth habit and fast regrowth are beneficial to wildlife.

Smooth (*Bromus inermis*)

Types	Varieties	Date Released	Types	Varieties	Date Released
Northern	Bravo	1983	Southern	AC Rocket	2001
	Jubilee	1979		Alpha	1995
	Polar	1965		Badger	1990
	Carlton	1961		York	1989
Intermediate	Signal	1983	Radisson	1989	
	Magna	1968	Cottonwood	1979	
	Manchar	1943	Rebound	1978	
			Beacon	1976	
		Barton	1973		
		Baylor	1962		
		Saratoga	1955		
		Lincoln	1942		



Smooth Bromegrass

Smooth brome grass is a long-lived, sod-forming grass used extensively for hay, pasture and soil conservation. It is not recommended for wildlife habitat or planting near native grassland communities where invasive species are a concern. Its aggressive rhizome spread limits its compatibility with other species. Northern and intermediate types develop less aggressive sod and may maintain the alfalfa component of a mixture longer. Southern types are earlier in maturity. It is an excellent hay and pasture grass for the eastern two-thirds of North Dakota and on better soils westward. Close grazing in the spring delays regrowth from crown buds. Stands become unproductive in three to four years if not fertilized. It is used extensively for grassed waterways and other soil and water conservation practices.

Rebound was selected for rapid recovery after haying or grazing. Cottonwood was developed for its drought tolerance.

■ Fescue

Hard (*Festuca brevipila*)

Varieties	Date Released
Discovery	1996
Aurora	1985
Reliant	1981
Durar	1949

Hard fescue is a semierect, densely tufted, drought-tolerant bunchgrass. It is highly competitive, persistent and shade-tolerant with an extensive root system. It is a special-use grass primarily for revegetation of disturbed areas, roadsides, ditch banks and conservation planting, and for turf around farmyards, airports and other heavy-use areas. Mowing is more difficult because of the tufted growth habit and the high silica content in the leaves. It is not preferred for grazing, although it tends to stay green longer than most other cool-season species. Shallow planting not more than ¼ inch deep is critical. Seedlings develop slowly the first year.

Reliant and Aurora are varieties that are shorter than Durar and are well-suited for low-maintenance turf. Blue fescue, a related species, is a popular, drought-tolerant ornamental.

Tall (*Schedonorus phoenix*)

Tall fescue is a robust bunchgrass introduced from Europe. It has been widely planted in parts of the Midwest for forage and erosion-control. Tall fescue is adapted to more humid and higher rainfall areas. It is subject to winter injury in drier, more arid regions. It is not recommended for pasture or hayland in North Dakota.

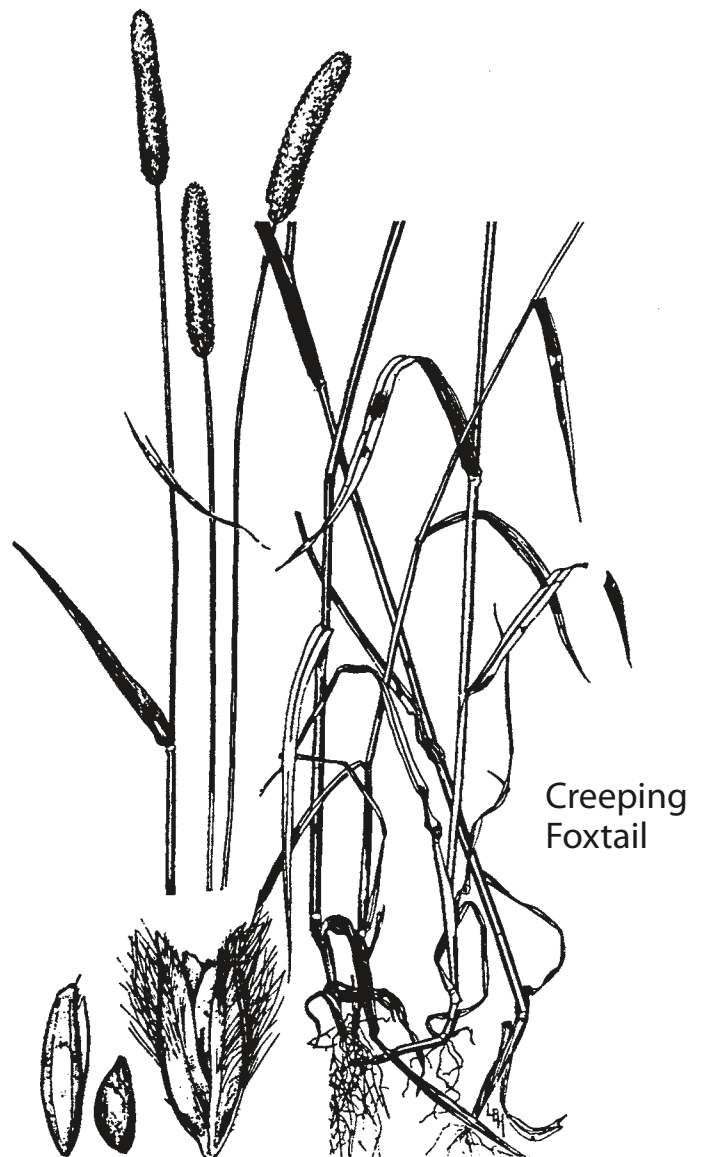
■ Orchardgrass

(*Dactylis glomerata*)

Varieties	Date Released	Varieties	Date Released
Kayak	2005	Orbit	1975
Ambassador	1989	Kay	1970
Justus	1988	Chinook	1959
Orion	1988	Latar	1957
Napier	1976		

Orchardgrass is a long-lived bunchgrass that commonly forms clumps by tillering. Most of the foliage is produced by basal leaves. It often is used in pasture and hay mixes with other species because it establishes rapidly. Regrowth is excellent with adequate moisture. Winter injury may occur without reliable snow cover. It is used mainly where precipitation exceeds 20 inches and the growing season exceeds 120 days, which limits it primarily to the southeastern portion of North Dakota.

Chinook, Kay and Kayak are the most winter hardy varieties.



■ Foxtail

Creeping (*Alopecurus arundinaceus*)

Varieties	Date Released
Retain	1979
Garrison*	1963

*North Dakota release

Creeping foxtail is an early maturing, highly palatable, sod-forming grass that grows best on wet or imperfectly drained soils. It tolerates long periods of flooding in early spring. A uniformly moist soil is beneficial for seedling emergence and successful establishment. The light, fluffy seed tends to clog grain drills. Seed is available in a pelletized form. Its primary use is for hay, pasture and conservation planting on wet or imperfectly drained soils. This species can be invasive on wet sites. The seed is very light and is easily transported to other wet sites.

The variety Retain has higher seed yields and less seed loss due to shattering. Garrison tends to have higher forage yield.

■ Wheatgrass

Crested (*Agropyron* sp.)

Types	Varieties	Date Released
Standard (<i>A. desertorum</i>)	Nordan*	1953
	RoadCrest	1998
	Summit	1953
	Fairway (<i>A. cristatum</i>)	NU-ARS-AC2
Douglas		1994
Ephraim		1983
Ruff		1972
Parkway		1969
Fairway		1927
Hybrid (<i>A. desertorum</i> x <i>cristatum</i>)	HyCrest II	1996
	HyCrest	1984

*North Dakota release

Crested wheatgrass is an early maturing, long-lived, drought-tolerant bunchgrass with excellent seedling vigor and ease of establishment. It is used primarily for hay and early spring pasture. The fairway types are shorter, leafier and less likely to form large clumps with age. The standard types are generally taller and thicker-stemmed, and produce more forage.

The variety Fairway frequently is used in dryland lawns. Ephraim has lower forage yields but was selected for its slowly developing sod-forming characteristic, which is useful as a low-maintenance ground cover. RoadCrest has a short stature and finer leaves and is moderately rhizomatous. HyCrest and HyCrest II are high-yielding varieties of hybrid crested wheatgrass developed by crossing standard and fairway types.



Crested
Wheatgrass

Green (RS hybrid) (*Elymus hoffmannii*)

Varieties	Date Released
AC Saltlander	2004
NewHy	1991

It is classified as a hybrid between bluebunch wheatgrass and quackgrass. Green wheatgrass has good forage quality and remains succulent for livestock for longer periods in the growing season than most other wheatgrasses. It can be grazed in the fall. It stockpiles well and tends to maintain a high level of productivity. Its moderate vegetative spread is much less than quackgrass. Salinity tolerance is high and similar to that of tall wheatgrass. Seed quality and germination generally are lower than other wheatgrass species.

NewHy has established readily and performed well in trials in North Dakota. AC Saltlander was specifically selected to tolerate root-zone salinity.

Intermediate (*Thinopyrum intermedium*)

Types	Varieties	Date Released
Intermediate	Manifest*	2007
	Beefmaker	2003
	Haymaker	2003
	Reliant*	1991
	Clarke	1980
	Slate	1969
	Chief	1961
Pubescent	Oahe	1961
	Manska*	1992
	Greenleaf	1966

* North Dakota release

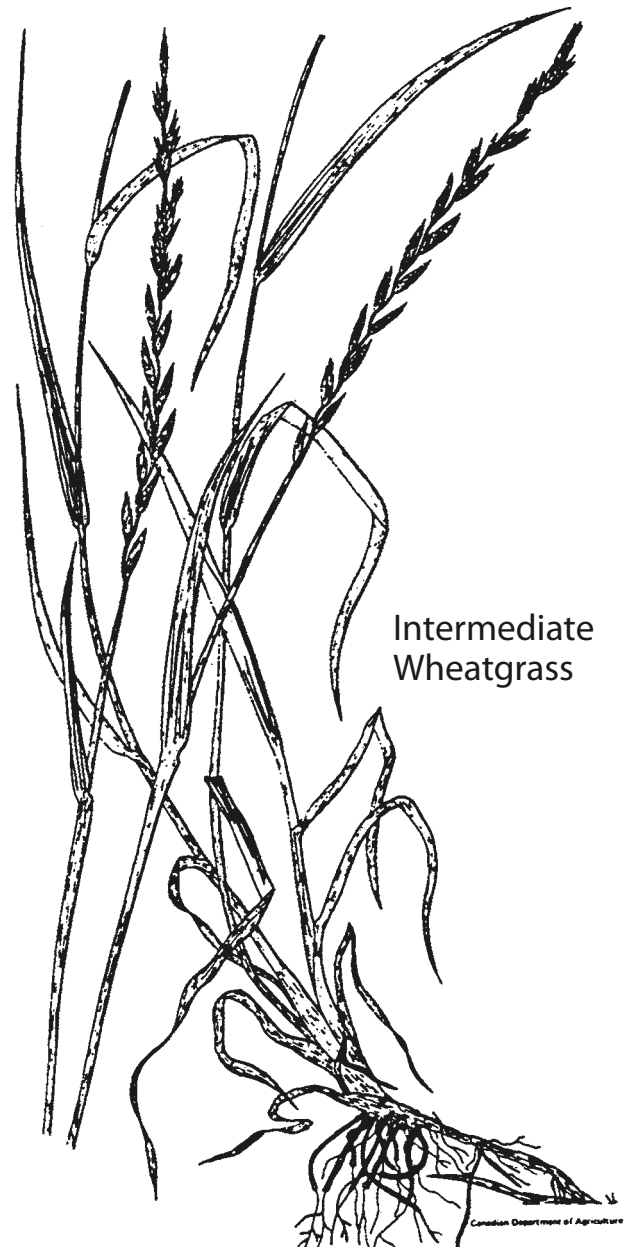
Intermediate wheatgrass is a vigorous, fast-growing, sod-forming grass. It produces an abundance of both basal and stem leaves. Varieties differ in the amount of pubescence on the seed head and leaves. The pubescent varieties are reported to be more drought-tolerant and form a sod more rapidly than intermediate varieties. This species has produced more biomass than most other cool-season species in performance trials in North Dakota. Newer releases are more productive with higher-quality forage. Both types of intermediate wheatgrass often are included in seed mixtures for hay and pasture due to their ease of establishment and fast growth. To maintain productivity, they should not be closely grazed in the spring or grazed past Aug. 1. Intermediate wheatgrass often is used in seed mixtures for wildlife habitat.

Reliant has a more bunch type growth and was developed to be less competitive with alfalfa in hayland planting. Manska, reselected from Mandan 759, has shown significantly higher forage quality and improved animal daily gain in grazing tests in Nebraska. Manifest is the newest release and has greater persistence under grazing and excellent hay yields.

Siberian (*Agropyron fragile*)

Varieties	Date Released
Vavilov	1994
P-27	1953

Similar to crested wheatgrass in appearance, Siberian wheatgrass has awnless seed heads more numerous than crested. It is drought-resistant, long-lived and well-adapted to light, droughty soils. It establishes readily and is known to withstand very heavy grazing pressure after establishment. Siberian wheatgrass generally is not recommended in areas that receive more than 14 inches of annual precipitation.



Intermediate
Wheatgrass

Tall (*Thinopyrum ponticum*)

Varieties	Date Released
Platte	1972
Orbit	1966
Jose	1965
Alkar	1951

Tall wheatgrass is a tall, coarse, late-maturing bunchgrass with large seed. It is a special-purpose grass used primarily to revegetate saline-alkali soils and provide wildlife cover. The plant normally becomes coarse and unpalatable to livestock as it matures. Palatability of hay is fair to good if cut prior to or just after heading. A 6-inch stubble height should be left. Tall wheatgrass is used in narrow, uniformly spaced barriers for soil erosion control and to manage snow for moisture conservation on cropland. It often is seeded in a mixture with intermediate wheatgrass, alfalfa and sweetclover for wildlife habitat.

Alkar is the most commonly used variety. Jose is finer-leaved and rated higher in forage quality.



Tall Wheatgrass

■ Timothy (*Phleum pratense*)

Varieties	Date Released
Winmor	1984
Timfor	1975
Itasca	1972
Toro	1972
Climax	1947
Comtal	n/a
Goliath	n/a

Timothy is a cold-hardy, short-lived bunchgrass from Europe with shallow, fibrous roots. It is palatable and nutritious. It has poor recovery with limited moisture and does not tolerate drought. Forage production and regrowth greatly benefit from irrigation and fertilizer. Stems arise from a swollen base, which is a key identification feature. Timothy is best suited to the higher rainfall area in the eastern one-third of North Dakota.

■ Wildrye

Altai (*Leymus angustus*)

Varieties	Date Released
Mustang	2004
Pearl	1989
Eejay	1989
Prairieland	1976



Altai Wildrye

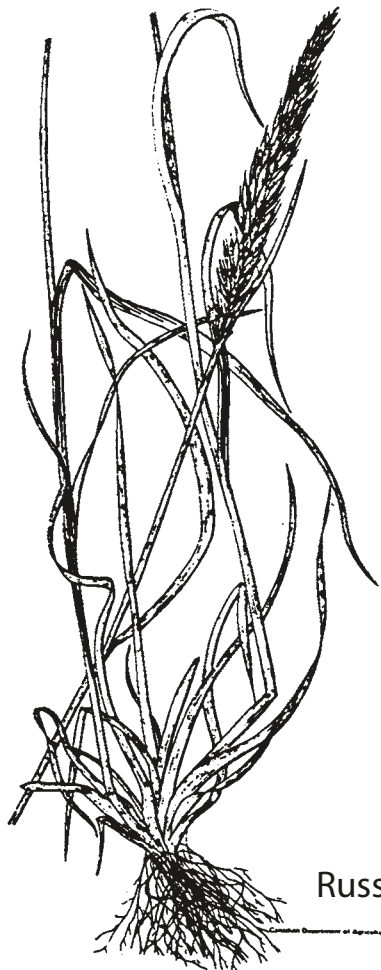
Altai wildrye is a long-lived, drought-tolerant, winter-hardy bunchgrass with coarse, erect leaves. It is a special-purpose grass used to extend the grazing season into the late fall and winter. Upright and erect stature and leaf retention after snowfall permit late fall/early winter grazing. It is adapted to loam and clay soils. Seedlings develop slowly, and stand establishment is more difficult than for many other grass species. The root system is extensive and penetrates to depths of 10 feet. It possesses moderately high tolerance to saline-alkali soils, but less than tall and green wheatgrass. Forage nutritional value is retained into late fall and winter for grazing. The seed supply is limited due to its low seed yield. Aftermath growth must be removed by clipping or grazing to maintain maximum seed yield. It is recommended as a single-species stand for grazing.

Beardless (*Leymus multicaulis*)

Varieties	Date Released
Shoshone	1980

Beardless wildrye is a strongly rhizomatous perennial grass adapted to wet, saline-alkali soils. It is suggested for use on saline-seep discharge areas. Its use is limited due to slow seed germination and seedling development. Planting in late fall as a dormant-season seeding improves seed germination. Seed may be in short supply because of low seed production.

Field tests on highly saline soils indicate that Shoshone beardless wildrye is superior to Rosana western wheatgrass in providing ground cover. Shoshone initially was thought to be a native species, but after its release, it was determined to be Eurasian.



Russian Wildrye

Dahurian (*Elymus dahuricus*)

Varieties	Date Released
Arthur	1989
James	1989

Dahurian wildrye is a short-lived perennial bunchgrass that is easy to establish. It has excellent seedling vigor, good forage production and quick recovery after haying. Dahurian wildrye is recommended for short-term hay or pasture. Stands persist only two or three years. It has been seeded in alternate or perpendicular rows with longer-lived but slower-establishing grasses to enhance early production.

Arthur and James are Canadian varieties.

Mammoth (*Leymus racemosus*)

Varieties	Date Released
Volga	1949

Mammoth wildrye is a tall, coarse, drought-tolerant grass with stout rhizomes. It is a special-use species that provides excellent erosion control on sandy soils, including inland sand dunes and blowout areas. Forage quality is poor. The leaves are attractive to grasshoppers. The large, spike seed head is showy. It is slow to establish.

Russian (*Psathyrostachys juncea*)

Varieties	Date Released	Varieties	Date Released
Bozoisky II	2004	Swift	1978
Mankota*	1991	Cabree	1976
Tetracan	1988	Mayak	1971
Bozoisky Select	1983		

*North Dakota release

Russian wildrye is an early maturing, long-lived, drought-tolerant bunchgrass with fine basal leaves and a deep, fibrous root system. The stems are nonjointing. It is a special-purpose grass used primarily to extend the grazing season into late fall. The protein content of the forage remains at relatively high levels when saved for fall grazing. It is adapted to loam and clay soils and possesses a moderately high tolerance to saline-alkali soils. Seedlings develop more slowly than many other species, but once established, Russian wildrye is highly competitive with other forage species. Russian wildrye is recommended for fall grazing in separate pastures as a single species.

Newer varieties have better establishment. Mankota was selected for improved seedling vigor, resistance to leaf diseases and 15 to 20 percent higher forage yields in good moisture sites or years. Bozoisky Select and Bozoisky II have performed well in trials in the western Dakotas.

Native Grasses

Native grass species have existed naturally in the region. Many of them have specific traits that adapt them for use in range, pasture, hayland, wildlife habitat or conservation plantings.

Performance and adaptation of native grass varieties differ by point of origin because of natural selection, which occurs due to environmental conditions such as temperature, rainfall, day length and growing season. Performance trials have shown that seed from a local source of warm-season species generally can be moved about 300 miles north or 200 miles south of its origin without serious adaptation difficulties. Cool-season grass species such as western wheatgrass and green needlegrass have much broader areas of adaptation. Movement east and west is influenced primarily by precipitation and elevation. An increase of 1,000 feet in elevation is equivalent to a move of about 175 miles north of its origin. Use recommended varieties whenever possible.

Certified seed assures varietal identity and genetic purity. An alternative is to use common seed of adapted varieties harvested in North Dakota, South Dakota, Minnesota, Nebraska, Montana, Wyoming and the Canadian provinces of Alberta, Saskatchewan and Manitoba.

Cool-Season Grasses



Reed Canarygrass

These grasses are most productive in the spring and fall during periods of cool temperatures and adequate moisture. They generally are dormant in the summer and produce little new growth. Regrowth occurs when temperatures are cooler in late summer and early fall. Growth continues with adequate moisture until the first killing frost.

■ Canarygrass

Reed (*Phalaris arundinacea*)

Varieties	Origin	Date Released
Palaton	IA	1985
Rival	Canada	1985
Venture	IA	1983
Vantage	MN, IA	1972
Rise	NE	1964
Chiefton	n/a	n/a
Marathon	n/a	n/a

Reed canarygrass is a tall, coarse, strongly rhizomatous, sod-forming grass found on wet or imperfectly drained soils and used under irrigation. It produces high forage yields. Tolerance to saline-alkali soils is low. It can withstand long periods of early spring flooding. High alkaloid content reduces palatability when grazed but is not a problem in hay. This species can be invasive on wet sites.

Chiefton, Marathon, Palaton and Venture are low-alkaloid-content varieties and are recommended for grazing. Rise and Vantage have moderate alkaloid levels compared with older varieties.

■ Junegrass

Prairie (*Koeleria macrantha*)

Varieties	Origin	Date Released
(Being developed)	ND, SD, MN	pending

Prairie junegrass is a short-lived, drought-tolerant, fibrous-rooted bunchgrass growing in small tufts. Condensed panicle seed heads open during flowering and become plumelike. They contract back to a narrow spike shape after flowering. Prairie junegrass is common in mixed-grass and shortgrass prairies on well-drained open and rocky sites. It is considered good forage in early spring. It is an important range plant, although plants usually are scattered and seldom abundant in solid stands. Because of the fine leaves and drought tolerance, selections are being made for use as a low-maintenance ground cover. Seed from northern sources is available.

■ Needlegrass

Green (*Nassella viridula*)

Varieties	Origin	Date Released
Fowler	AB, Canada	2009
AC Mallard	AB, SK, Canada	2002
Lodorm*	ND	1969

* North Dakota release

Green needlegrass is an early maturing, drought-tolerant bunchgrass adapted to a wide range of soils. It is nutritious and palatable forage. Seeds have curved awns about 1 inch long. They are not so sharply pointed as to pose a problem for grazing animals. Seed harvested from native stands has a high level of dormancy. It is widely used in rangeland seeding.

The variety Lodorm was released because of less seed dormancy after harvest compared with native seed.



Green Needlegrass

Canadian Department of Agriculture

■ Wheatgrass

Bluebunch (*Pseudoroegneria spicata*)

Varieties	Origin	Date Released
Anatone	WA	2003
P-7 Selected Germplasm	ID,NV,OR,UT,WA, BC Canada	2001
Goldar	ID	1989
Secar	ID	1980
Whitmar	WA	1946

Bluebunch wheatgrass is a long-lived, drought-tolerant, highly palatable and nutritious bunchgrass. It is adapted to gravelly and shallow soils. This species is sensitive to overgrazing. It is best adapted to the droughty soils of western North Dakota. Bluebunch wheatgrass is subject to severe leaf and stem rust in eastern North Dakota.

Slender (*Elymus trachycaulus*)

Varieties	Origin	Date Released
FirstStrike	CO, WY	2007
Adanac	SK, Canada	1990
Pryor	MT	1988
Revenue	Canada	1970
Primar	MT, WA	1946

Slender wheatgrass is a short-lived, cool-season bunchgrass. It primarily is used in seed mixtures of introduced and native grasses due to its excellent seedling vigor, ease of establishment and fast growth. Plants lose vigor and decline in abundance within three to four years. Slender wheatgrass in mixtures improves stand productivity, especially during the first production year, until other grasses become better established. The percent of a mixture generally should be kept at 10 percent or less because of its competitive ability. It possesses a high tolerance to saline-alkali soils.



Bluebunch Wheatgrass



Slender
Wheatgrass

Thickspike/streambank
(*Elymus lanceolatus*)

Varieties	Origin	Date Released
Bannock	OR, ID, WA	1995
Elbee	AB, Canada	1980
Critana	MT	1971
Sodar	OR	1954

Thickspike wheatgrass, called northern wheatgrass in Canada, is a strongly rhizomatous, sod-forming grass found on rough, broken buttes and, to a limited extent, sagebrush flats in native grasslands. It is similar to western wheatgrass but is more drought-tolerant. This species has been used extensively for revegetation of disturbed areas, roadsides, runways for small airplanes and other critical areas that receive little or no maintenance. Stem and leaf rust may be a problem on some sites and in the eastern half of North Dakota. Authorities recognize thickspike and streambank as the same species.



Western Wheatgrass

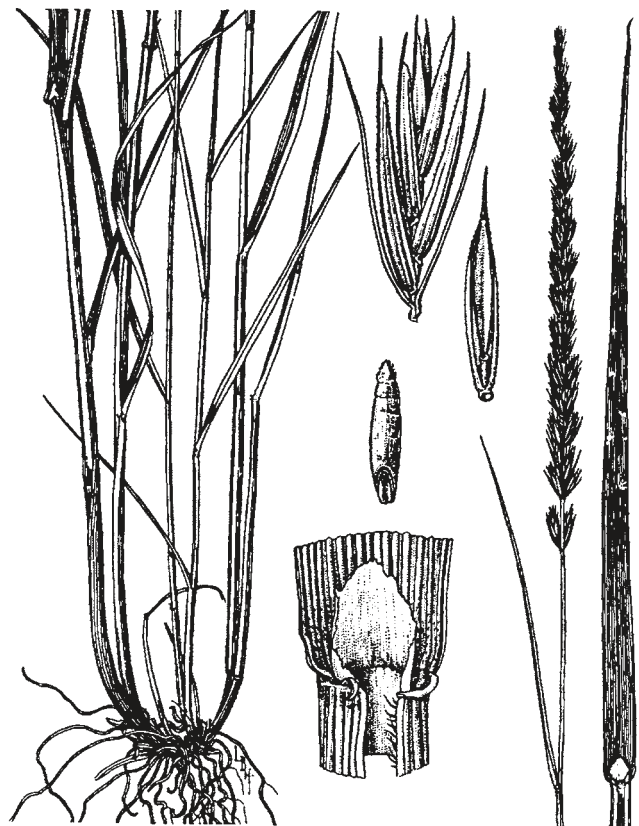
Western (*Pascopyrum smithii*)

Varieties	Origin	Date Released
Recovery	Synthetic	2009
Rodan*	ND	1983
Walsh	SK, Canada	1983
Flintlock	NE	1975
Rosana	MT	1972

*North Dakota release

Western wheatgrass, North Dakota's state grass, is a long-lived, drought-resistant, sod-forming grass found throughout the state, especially on medium- to fine-textured soils. It is known to spread aggressively on clay sites. Western wheatgrass has a high level of tolerance to saline-alkali soils and can withstand periodic flooding. Stands are slow to develop from seed. It is widely used in seed mixtures for rangeland seeding, revegetation of saline-alkali areas and in critical-area planting for erosion control. It is palatable and nutritious.

Rodan is similar to the variety Rosana in adaptation but is more productive on coarse-textured soils and areas of higher rainfall. Walsh is adapted to fine-textured, moderately saline-alkaline soils.



Basin Wildrye

■ Wildrye

Basin (*Leymus cinereus*)

Varieties	Origin	Date Released
Continental	MT, BC, Canada	2008
Washoe	MT	2004
Trailhead	MT	1991
Magnar	SK, Canada	1979

Basin wildrye is a large, coarse, deep-rooted bunchgrass native to much of the western United States. It performs best on flood plains or areas receiving additional moisture; however, basin wildrye performed well on sandy soils in western North Dakota. It is long-lived and relatively poor in seed production. Seedlings develop slowly, and stand establishment is difficult. Basin wildrye is a tall grass that provides excellent standing forage for livestock, and nesting and escape cover for wildlife, especially during winter months. It generally is not recommended for spring and summer forage production because it has an elevated growing point and is easily damaged by overgrazing. Basin wildrye does not grow well on coarse, shallow or heavy clay soils. This grass is susceptible to leaf and stem rusts in the eastern half of North Dakota.

Canada (*Elymus canadensis*)

Varieties	Origin	Date Released
Mandan*	ND	1946

*North Dakota release

Canada wildrye is a short-lived bunchgrass with large, coarse leaves, excellent seedling vigor and fair palatability if grazed or hayed before heading. It often is used as an early successional component of prairie mixes. It is used for the establishment of quick cover on light- and medium-textured soils. It tolerates moderate salinity and is shade-tolerant. The nodding, awned seed heads of Canada wildrye are showy, and the grass often is used for decorative and landscape plantings. The sharp bristlelike awn can become embedded in the skin of animals and cause problems.

Virginia (*Elymus virginicus*)

Varieties	Origin	Date Released
Omaha	NE	n/a

Virginia wildrye is a broadly adapted, short-lived bunchgrass with a fibrous root. It is nutritious and palatable. The seed head is erect and has shorter awns than Canada wildrye. The bristlelike awns can become embedded in the skin of animals. It is found naturally in riparian areas that are partially shaded. It does well in full sun and establishes readily from seed. Virginia wildrye is good for high-quality, short-rotation pasture or hayland in the higher-rainfall, eastern one-third of North Dakota.



Canada Wildrye

Warm-Season Grasses

These grasses are most productive in the summer during periods of higher daytime temperatures and longer periods of daylight. They begin growth about one month later than cool-season grasses. Warm-season grasses produce most of their forage biomass during the summer months. Growth is complete by early fall, but vegetation often remains green until killed by frost.

■ Bluestem

Big (*Andropogon gerardii*)

Varieties	Origin	Date Released
Sunnyview ¹	SD	1992
Bison*	ND	1989
Bonilla ^{1*}	SD	1987

¹Better adapted for the southern half of North Dakota

*North Dakota release

Big bluestem is a dominant species of the tall-grass prairie and on good moisture sites westward. Plants are often more than 6 feet tall, with short, scaly rhizomes. Seed stalks produce three- to six-fingered “turkey foot” spikes. Leaves are numerous with coarse hairs. The forage is highly palatable and nutritious before it matures. It provides excellent quantity and quality summer pasture and hayland. Stands will thin if pastures are closely grazed. It frequently is seeded for prairie restoration.

Little (*Schizachyrium scoparium*)

Ecotype	Origin	Date Released
Badlands*	ND, SD	1996
Itasca*	ND, SD, MN	2001

*North Dakota release

Little bluestem is a drought-tolerant bunchgrass of the mixed-grass prairie. It is seldom more than 3 feet tall. It often is found on dry hillsides in natural settings. Palatability decreases rapidly after heading. It often is included as a minor component of rangeland seed mixtures and is well-adapted to limey soils of both wet and dry sites. This species also performs well on the coarse, shallow soils of droughty uplands. Little bluestem turns reddish on maturity, with fuzzy, white seed heads. It is gaining popularity as an ornamental plant for dry landscapes.



Big Bluestem

Sand (*Andropogon hallii*)

Varieties	Origin	Date Released
Goldstrike	NE	1973
Garden	NE	1957

Sand bluestem is a tall, perennial, sod-forming grass adapted to sandy areas. It is similar to big bluestem in appearance, except for the blue coloration and the dense yellow hairs on the seed heads. Its primary use is on deep sandy range sites and for revegetation of blowout areas.

Garden is more persistent than Goldstrike. No northern varieties are available at this time.



Little Bluestem

Buffalograss

(*Bouteloua dactyloides*)

Ecotype/Varieties	Origin	Date Released
Bowie	Synthetic	2001
Cody	Synthetic	1997
Tatanka	NE	1996

Buffalograss is a short, stoloniferous, dense, sod-forming grass. It is dioecious, having separate male and female plants. Reproduction is from seed as well as above-ground stems called stolons. Buffalograss is palatable and nutritious as forage, but it primarily is used as a low-maintenance turfgrass for lawns, golf courses and dryland landscaping. It mixes well with blue grama.

Varieties of southern origin (Texas, Oklahoma, Kansas) lack winter hardiness in North Dakota.

Cordgrass

Prairie (*Spartina pectinata*)

Germplasm	Origin	Date Released
Red River*	ND, SD, MN	1998

*North Dakota release

Prairie cordgrass is a tall, coarse grass with strongly spreading, tough, scaly rhizomes. This species occupies wet soils and may grow in pure stands bordering sloughs, ditches and wet prairies. It may be grazed by cattle in late spring; however, prairie cordgrass seldom is utilized after the boot stage. The primary use is wildlife cover, lakeshore restoration, streambank stabilization and buffer strips. Plants can be established from rhizomes or seed. The species is moderately tolerant to salinity. Stands establish slowly from seed because of seed dormancy and low seedling vigor. Germination may extend across many months. Plants started from rhizomes are more saline-tolerant and generally produce seed heads the first year.

■ Grama

Blue (*Bouteloua gracilis*)

Ecotype	Origin	Date Released
Bad River*	SD	1996

*North Dakota release

Blue grama is a short, drought-tolerant, tufted grass that spreads from basal tillers. It is found in the mixed-grass prairie and short-grass plains. Seed heads are comblike. It is widely distributed on medium- to fine-textured soils throughout the state. Although limited in forage production, its fine leaves are nutritious and highly palatable. Its primary use is in rangeland seed mixtures, low-maintenance turf areas and roadsides. A planting depth of ¼ inch or less is critical for successful establishment. Its unique seed head makes it desirable as an ornamental. It sometimes is called mosquito grass in the nursery trade.

Bad River is darker green and establishes more readily than common seed and most other varieties of blue grama. Seed quality is better for Bad River compared with common seed.



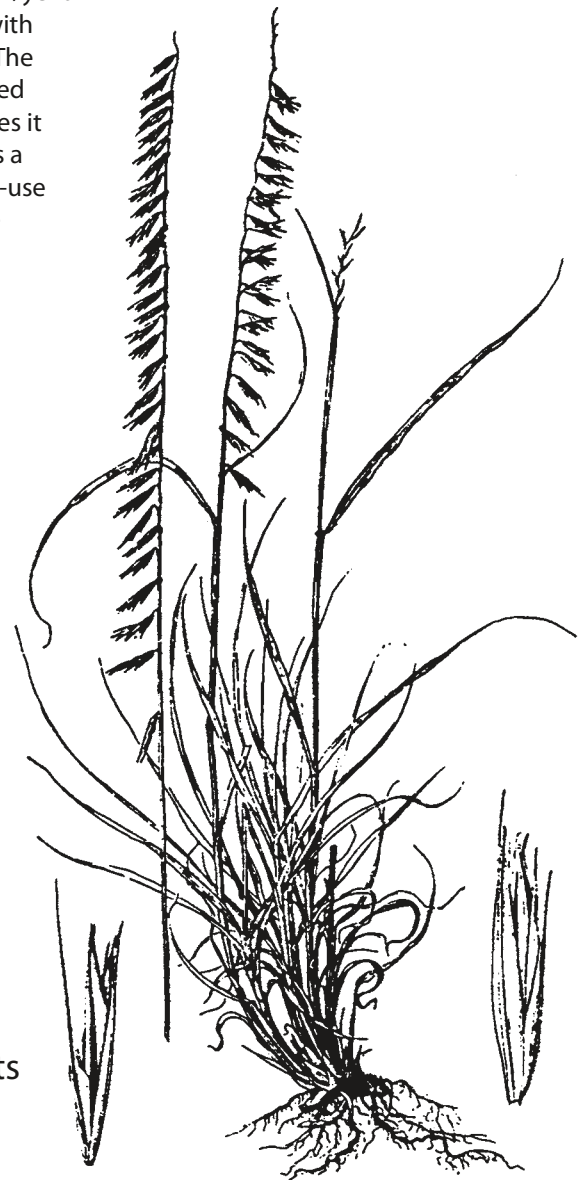
Blue Grama

Sideoats (*Bouteloua curtipendula*)

Varieties	Origin	Date Released
Killdeer*	ND	1968
Pierre*	SD	1965
Butte	NE	1958

*North Dakota release

Sideoats grama is a drought-tolerant bunchgrass that spreads from short rhizomes. Seed spikes hang from the seed stalk along one side. Leaves have stiff hairs along the margins. It is found primarily on poorly developed shallow soils, steep slopes and ridge tops, as well as overflow sites. Its primary use is in grass mixtures for rangeland seeding. Its excellent seedling vigor allows rapid establishment. In the commercial seed trade, the seed unit is a “clump” of many spikelets or seeds. Depending on the seeding rate, these clumps may plug seed cups and seed tubes in drills. Clumps can be broken apart by hammer milling. Sideoats grama is a highly palatable forage species. Leaves turn brown/yellow and curl with maturity. The unique seed head makes it popular as a low-water-use landscape plant.



Sideoats Grama

■ Indiangrass

Indiangrass (*Sorghastrum nutans*)

Varieties	Origin	Date Released
Tomahawk*	ND, SD	1988
Holt ¹	NE	1960

¹Better adapted for the southern half of North Dakota

*North Dakota release

Indiangrass is a tall grass made bunchy by short rhizomes. It is found primarily in the tall-grass prairie of southeastern North Dakota and to a limited extent on overflow and subirrigated sites in the mixed-grass prairie. It is associated with big bluestem and switchgrass. Its primary use is wildlife habitat and as a component of native range and prairie restoration mixtures. It is highly nutritious and makes excellent hay. Its forage yield and persistence is less than big bluestem in the northern Plains. It is an attractive ornamental plant, and landscaping varieties are being developed.



Indiangrass

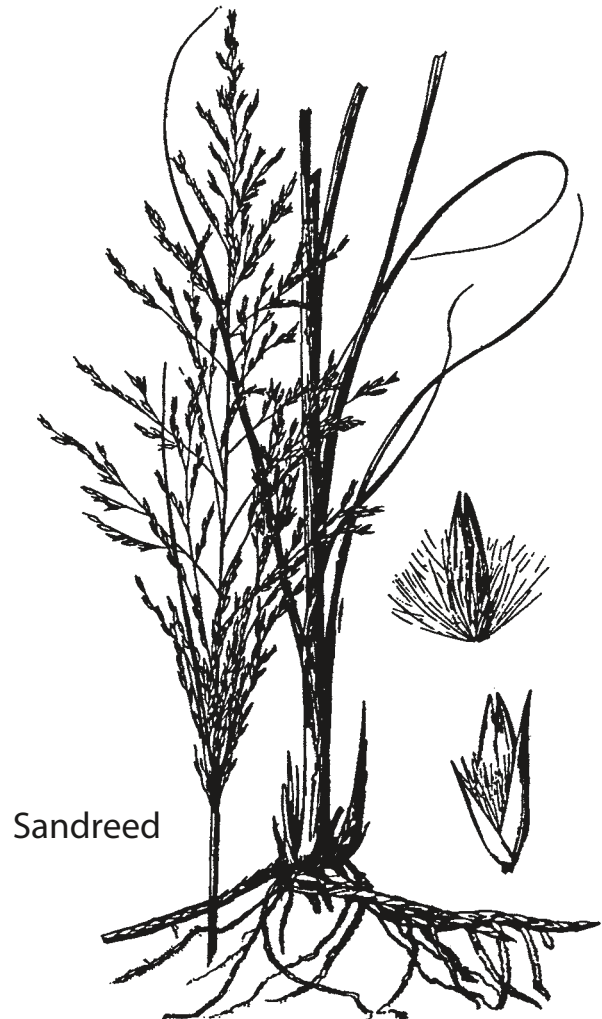
■ Sandreed

Prairie (*Calamovilfa longifolia*)

Varieties	Origin	Date Released
Bowman (ND-95)*	ND	2000
Goshen	WY	1976

*North Dakota release

Prairie sandreed is a drought-tolerant, strongly rhizomatous, sod-forming grass. The leaves are light green with a leathery texture; stems are coarse. It has good productivity on coarse-textured soils. Prairie sandreed is excellent for stabilization of sandy soils. Early growth is nutritious, but the forage value is poor after the plants head out due to high fiber and lignin content. However, once exposed to a killing frost, lignin is reduced and palatability improves. Leaf and stem rust may be a problem in wet years or in higher-rainfall areas.



Sandreed

■ Switchgrass

Switchgrass (*Panicum virgatum*)

Varieties	Origin	Date Released
Dacotah*	ND	1989
Forestburg ¹ *	SD	1987
Sunburst ¹	SD	1983
Summer ¹	SD	1964

¹Better adapted for southern North Dakota

*North Dakota release

Switchgrass is a tall, rhizomatous grass often growing in large clumps. It is found primarily in the tall-grass prairie of southeastern North Dakota and on good moisture sites westward. It is used in wildlife habitat plantings and for summer pasture. The forage yield is excellent, but quality is only fair and not as good as big bluestem. Switchgrass is reported to be toxic to horses, sheep and goats when grazed in pure stands. The toxicity can cause photosensitivity and affect internal organs and liver function. No problems have been reported for cattle. The seed is small and must be planted no deeper than ¼ inch into a firm seedbed. The showy, open panicle seed head adds to the interest in switchgrass as an ornamental.

Forestburg and Sunburst, of South Dakota origin, are similar in maturity, appearance and productivity. Dacotah is a shorter upland type of North Dakota origin. It is two to three weeks earlier maturing than Forestburg. Varieties are being developed as bioenergy crops.



Switchgrass

Plant Species Guide

for Special Conditions

■ Saline- or Alkaline-tolerant Grasses

Wheatgrass

- Green (RS hybrid)
- Slender
- Thickspike
- Tall
- Western

Wildrye

- Altai
- Beardless
- Canada
- Russian

■ Drought-tolerant Bunchgrasses

Grama

- Blue
- Sideoats

Green needlegrass

Hard fescue

Little bluestem

Prairie junegrass

Wheatgrass

- Bluebunch
- Crested
- Green (RS hybrid)
- Siberian
- Slender

Wildrye

- Altai
- Russian

■ Drought-tolerant Sod-forming Grasses

Buffalograss (stolons)

Grama

- Blue (basal tillers)
- Sideoats (short rhizomes)

Mammoth wildrye

Prairie sandreed

Wheatgrass

- Green (RS hybrid)
- Intermediate (moderately tolerant)
- Pubescent (moderately tolerant)
- Thickspike/Streambank
- Western

■ Sand-stabilizing Grasses

Prairie sandreed

Sand bluestem

Wheatgrass

- Siberian
- Western (moderately adapted)

Wildrye

- Canada
- Mammoth
- Virginia

■ Flood-tolerant Grasses

Creeping foxtail

Prairie cordgrass

Reed canarygrass

Smooth bromegrass (moderately tolerant)

Switchgrass

Wheatgrass

- Slender
- Tall
- Western

Wildrye

- Canada (moderately tolerant)
- Virginia

■ Ornamental/Landscape-accent Grasses

Bluebunch wheatgrass

Bluestem

- Big
- Little
- Sand

Grama

- Blue
- Sideoats

Green needlegrass

Hard fescue

Indiangrass

Prairie cordgrass (invasive rhizomes)

Prairie junegrass

Prairie sandreed (invasive rhizomes)

Switchgrass

Wildrye

- Canada

Seeding Rate Guide

Most grass species in North Dakota are seeded at a rate of 25 to 30 seeds per square foot. The lower rates generally are recommended in the western part of the state or on drier sites. The higher rates generally are recommended in the eastern part of the state or on sites with more favorable moisture conditions. Adjustments are made for some species based on seed size, seedling vigor and seed conditioning. These rates are for drill planting with a row spacing of 12 inches or less, the recommended row spacings for most grass planting purposes. Seeding rates are shown in pure live seed (PLS) pounds per acre (lb/ac).

Species/Variety	lb/ac PLS
■ Introduced Grasses	
Bromegrass	
Meadow	13.5 – 16.5
Smooth	6.5 – 8
Fescue	
Hard	3 – 4
Foxtail	
Creeping	3.5
Orchardgrass	3.5
Timothy 1	
Wheatgrass	
Green	10 – 14
Crested	6 – 7
Intermediate	
Intermediate	8.5 – 10
Pubescent	8.5 – 10
Siberian	6 – 7.5
Tall	11 – 13.5
Wildrye	
Altai	16 – 19
Dahurian	8.5 – 10
Mammoth	20 – 24
Russian	6 – 7.5

Acknowledgements

Line Drawings

The authors have used line drawings from the following publication:

Hitchcock, A. S. Manual of the Grasses of the United States. Publication No. 200. Second Edition revised by Agnes Chase. 1950. USDA.

Nomenclature

Scientific names are from USDA NRCS, The PLANTS database, National Plant Data Center.

Species/Variety	lb/ac PLS
■ Native Cool-season Grasses	
Canarygrass	
Reed	3.5
Junegrass	
Prairie	1
Needlegrass	
Green	6 – 7.5
Wheatgrass	
Bluebunch	8
Slender	5 – 5.5
Streambank	7
Thickspike	7
Western	8 – 10
Wildrye	
Basin	8
Beardless	7.5 – 8.5
Canada	6.5 – 7.5
Virginia	10
■ Native Warm-season Grasses	
Bluestem	
Big	6 – 7.5
Little	4 – 4.5
Sand	9.5 – 12
Buffalograss (bur)	23 – 26
Cordgrass	
Prairie	7
Gramma	
Blue	2 – 2.5
Sideoats	6 – 7.5
Indiangrass	5.5 – 7
Sandreed	
Prairie	4 – 5
Switchgrass	3.5 – 4.5

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