R794 (Revised June 2021)

Grass Varieties

For North Dakota

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Contents

Selection of the appropriate species and variety is one important step in making a grass seeding successful. Grass species and varieties differ in growth habit, productivity, forage quality, drought resistance, and 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 management planned. Planting a well-adapted selection also can provide long-term benefits and affect future productivity of the stand.

This publication is designed to assist producers and land managers in North Dakota select perennial grass species and varieties for rangeland and pasture seeding and conservation planting. A description of each species and list of recommended varieties is included if available. Variety origin and the date released also are included for additional reference.

A Plant Species Guide for Special Conditions is provided near the back of this publication to aid in selection of grass species for droughty soils, arid or wet environments, saline or alkaline areas and landscape/ornamental plantings.

Before selecting the plant species, several factors should be considered, including 1) a soil test, 2) herbicides previously used, 3) identification of the type of vegetation that grew on the location before it was disturbed, 4) weather patterns and moisture conditions, 5) planting methods recommended for each plant species, 6) forage quantity and quality characteristics desired, and 6) erosion potential.

The following are references that can assist with the process and provide additional information:

- NDSU, R1323, “Grasses for the Northern Plains Vol. I – Cool-season”
- NDSU, R1390, “Grasses for the Northern Plains Vol. II – Warm-season”
- NDSU, R563, “Forage Establishment”
- NDSU, R790, “Planting Tips”
- USDA NRCS, “ND Field Office Technical Guide (FOTG),” Section I, Herbaceous Vegetation Establishment Guide
- USDA NRCS, “Five Keys to Successful Grass Seeding” Seeding”

Introduced Grasses

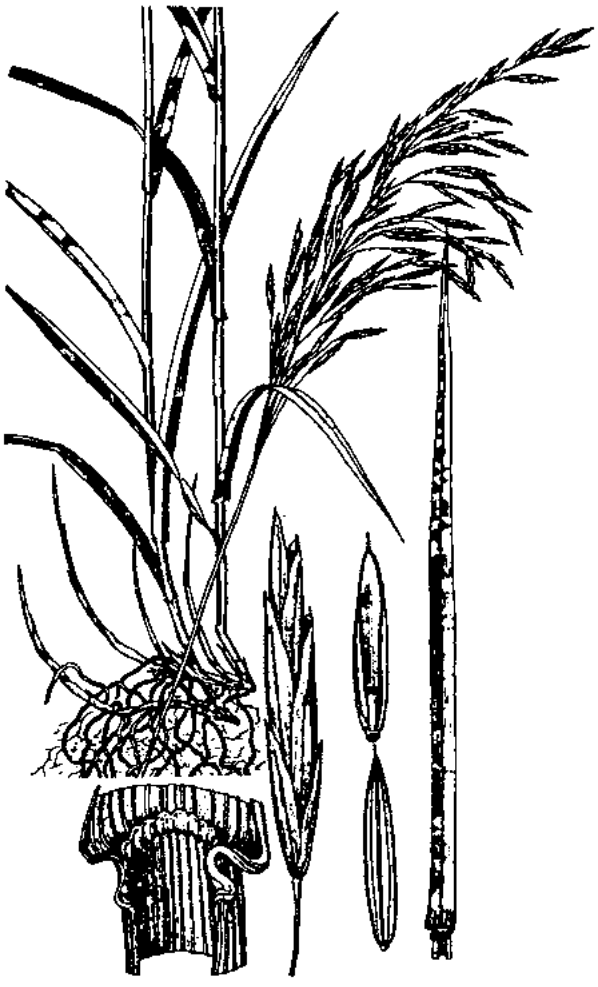
Introduced (tame) grasses are species that did not exist naturally in the region. They were brought to this country for different purposes or escaped unintentionally.

Introduced grasses can be used for a variety of conservation purposes, such as improved pasture and hay land, 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 that have been performance-tested.

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 provinces of Alberta, Saskatchewan and Manitoba.



Smooth Bromegrass

Bromegrass

Meadow *(Bromus biebersteinii)*

Varieties	Date Released	Varieties	Date Released
High West	2017	Montana*	2000
Arsenal	2015	Fleet*	1987
Cache*	2004	Paddock*	1987
MacBeth*	2001	Regar*	1966

*Recommended varieties for the northern Plains

Meadow bromegrass is a long-lived bunchgrass with short rhizomes. It is better suited for pasture than hay land because of its growth habitat. 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
Northern	Bravo	1983
	Jubilee	1979
	Polar	1965
	Carlton	1961
Intermediate	Signal	1983
	Magna	1968
	Manchar	1943

Varieties		Date Released
Southern	AC Rocket	2001
	Alpha	1995
	Badger	1990
	York	1989
	Radisson	1989
	Cottonwood	1979
	Rebound	1978
	Beacon	1976
	Barton	1973
	Baylor	1962
	Saratoga	1955
	Lincoln	1942

Smooth bromegrass 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. At the time of this publication, varieties commercially available were Lincoln, Rebound, Manchar and Charlton.

Fescue

Hard *(Festuca brevipila)*

Varieties	Date Released
Discovery	1996
Aurora	1985
Reliant	1981
Durar	1949

Hard fescue is a semi-erect, 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. It is a more difficult grass to mow 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 newer 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 an introduced robust bunchgrass from Europe. It has been widely planted in parts of the Midwest as a forage and erosion-control plant.

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 hay land in North Dakota.

Orchardgrass

(Dactylis glomerata)

Varieties	Date Released
Kayak	2005
Ambassador	1989
Justus	1988
Orion	1988
Napier	1976

Varieties	Date Released
Orbit	1975
Kay	1970
Chinook	1959
Latar	1957

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. It is not recommended for pasture or hay land in North Dakota.

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 during seedling emergence for successful establishment. The light, fluffy seed tends to clog in 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 *(A. desertorum)*		
	Kirk	1987
	Nordan*	1953
	RoadCrest	1998
	Summit	1953
Fairway *(A. cristatum)*		
	NU-ARS-AC2	2002
	Douglas	1994
	Ephraim	1983
	Ruff	1972
	Parkway	1969
	Fairway	1927
Hybrid *(A. desertorum x cristatum)*		
	AC Goliath	2003
	HyCrest II	1996
	HyCrest	1984

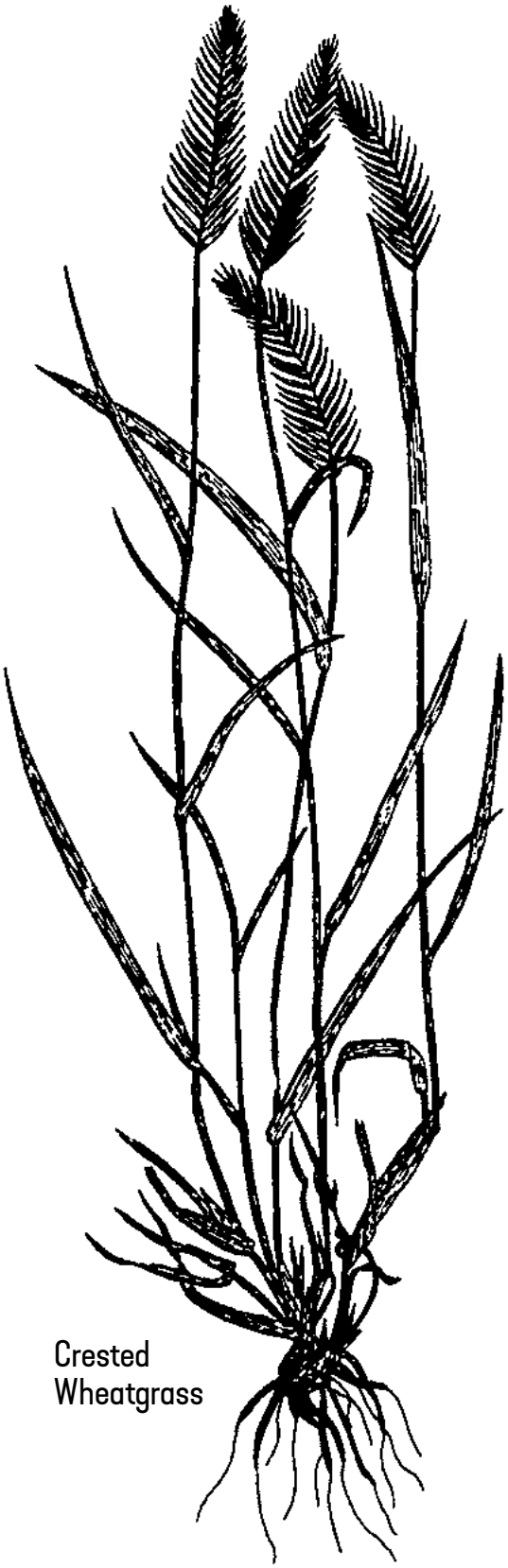
*North Dakota release

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 and pastureland. 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. AC Goliath, HyCrest and HyCrest II are high-yielding varieties of hybrid crested wheatgrass obtained 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 with quackgrass. Salinity tolerance is high and similar to that of tall wheatgrass. Seed quality and germination generally are lower than in 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 while providing a good-quality hay option.

Intermediate *(Thinopyrum intermedium)*

Types	Varieties	Date Released
Intermediate	Manifest*	2007
	Beefmaker	2003
	Haymaker	2003
	Rush[1]	1994
	Reliant*	1991
	Clarke	1980
	Slate	1969
	Chief	1961
	Oahe	1961
Pubescent	Manska*	1992
	Greenleaf	1966
	Luna	1934

*North Dakota release

[1]Limited North Dakota production trials indicate Rush intermediate wheatgrass is less productive than other approved intermediate varieties; therefore, Rush will be used for conservation cover plantings only. In addition, Rush is a protected plant variety (PPV) and should be available only as commercial certified seed as designated by a blue seed tag.

Intermediate wheatgrass is a vigorous, fast-growing, sod-forming grass. It produces an abundance of 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, do not closely graze in the spring and do not graze past Aug. 1. Intermediate wheatgrass often is used in seed mixtures for wildlife habitat.

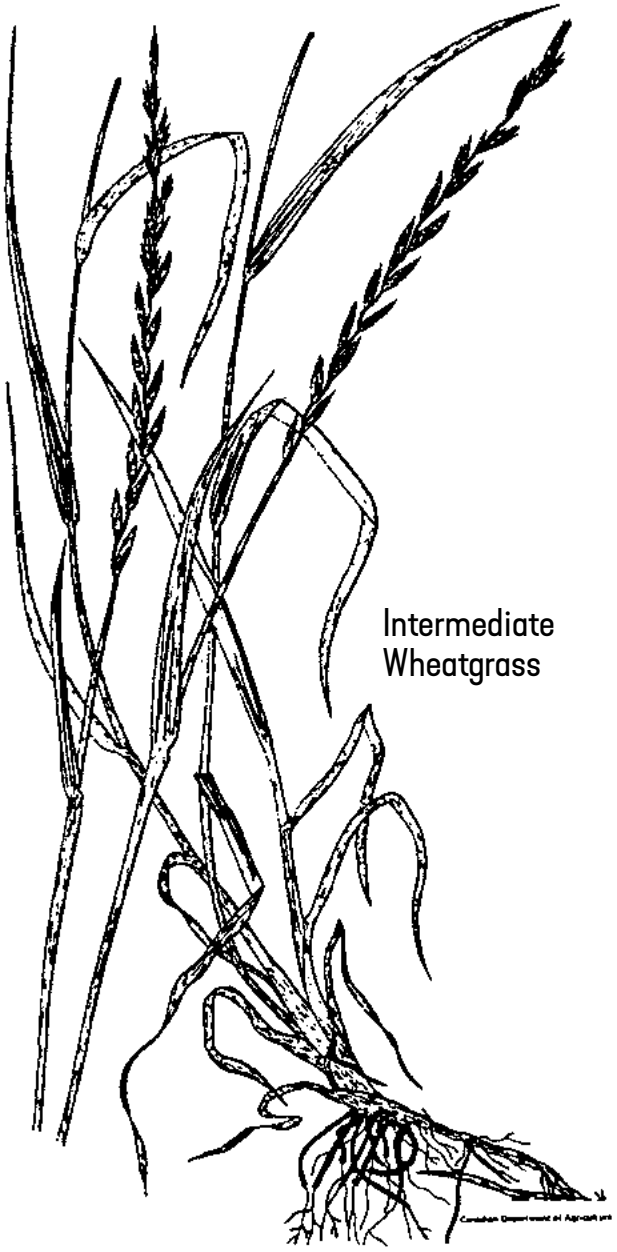
Reliant is more of a bunch type, developed to be less competitive with alfalfa in hay land planting. Manska, reselected from Mandan 759, has shown significantly higher forage quality and improved animal daily gain in grazing tests in Nebraska. Manifest is the newest release and has greater persistence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

Siberian *(Agropyron fragile)*

Varieties	Date Released
Stabilizer	2011
Vavilov II	2008
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. Vavilov II expands the genetic base of the Vavilov, with increased seedling establishment and stand persistence during drought, and well as being adapted to a wide range of ecological sites receiving as little as 7 to 8 inches of precipitation.



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

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

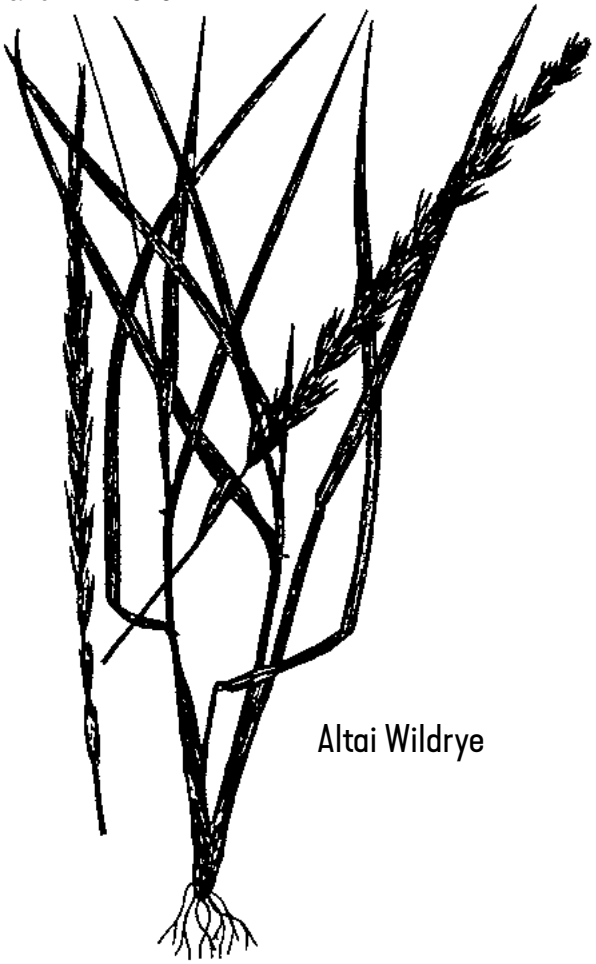
Timothy is a cold-hardy, short-lived bunchgrass from Europe with shallow, fibrous roots. It is palatable and nutritious. It has poor recovery with limited moisture and does not tolerate drought. Forage production and regrowth greatly benefit from irrigation and fertilizer.

Stems arise from swollen bases, 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.

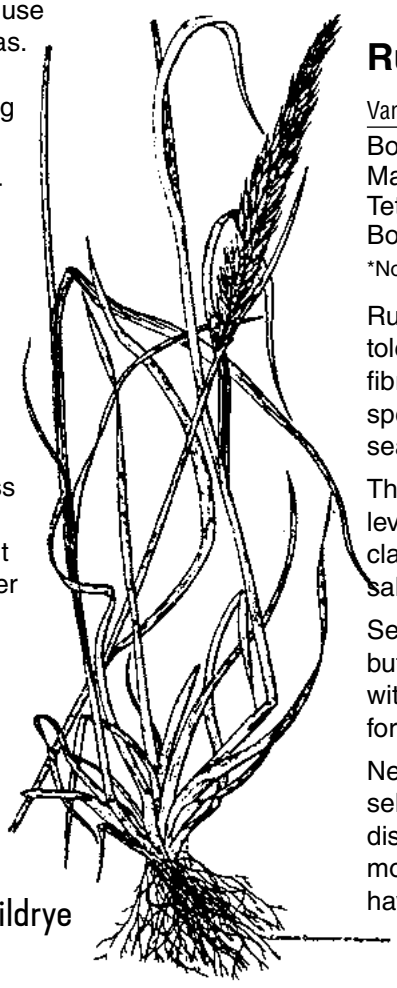
Manystem (Beardless) *(Leymus multicaulis)*

Varieties	Date Released
Shoshone	1980

Manystem 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.

Plant in late fall as a dormant-season seeding to improve seed germination. Seed may be in short supply because of low seed production.

Field tests on highly saline soils indicate that Manystem 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, with 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.

Authur and James are Canadian varieties. It usually is seeded with long-lived perennials as a nurse crop for quick plant establishment and ground cover.

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

*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 in 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% 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, hay land, 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 that have been performance tested.

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 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	Iowa	1985
Rival	Canada	1985
Venture	Iowa	1983
Vantage	Minn., Iowa	1972
Rise	Neb.	1964
Chiefton	n/a	n/a
Marathon	n/a	n/a

Reed canarygrass is a tall, coarse, strongly rhizomatous, sod-forming grass on wet or imperfectly drained soils and under irrigation. It produces high forage yields. Tolerance to saline-alkali soils is low. It can withstand long periods of early spring flooding.

Itshigh 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
Keystone	n/a	n/a
Common	n/a	n/a

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	Alberta, Canada	2009
Cucharas	Colo.	2003
AC Mallard	Alberta, Saskatchewan, Canada	2002
Lodorm*	N.D.	1969

* North Dakota release

Green needlegrass is an early maturing, drought-tolerant bunchgrass adapted to a wide range of soils. It is a 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

Wheatgrass

Bluebunch *(Pseudoroegneria spicata)*

Varieties	Origin	Date Released
Anatone	Wash.	2003
P-7 Selected Germplasm	Idaho, Nev., Ore., Utah, Wash., British Columbia, Canada	2001
Goldar	Idaho	1989
Secar	Idaho	1980
Whitmar	Wash.	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.

Bluebunch Wheatgrass

Slender *(Elymus trachycaulus)*

Varieties	Origin	Date Released
FirstStrike	Colo., Wyo.	2007
Copperhead	Mont.	2007
Adanac	Saskatchewan, Canada	1990
Pryor	Mont.	1988
Revenue	Canada	1970
Primar	Mont., Wash.	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% or less because of its competitive ability. It possesses a high tolerance to saline-alkali soils.

Slender Wheatgrass

Thickspike/Streambank

(Elymus lanceolatus)

Varieties	Origin	Date Released
Bannock II	Ore., Idaho, Wash.	2015
Bannock	Ore., Idaho, Wash.	1995
Schwendimar	Ore.	1994
Elbee	Alberta, Canada	1980
Critana	Mont.	1971
AC Polar	Manitoba, Canada	1965
Sodar	Ore.	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, on 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 *(Pascopyrum smithii)*

Varieties	Origin	Date Released
Recovery	Synthetic	2009
Rodan*	N.D.	1983
Walsh	Saskatchewan, Canada	1983
Flintlock	Neb.	1975
Rosana	Mont.	1972
WR Poole	Manitoba, Canada	1965

*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 area of adaptation but is more productive on coarse-textured soils and areas of higher rainfall. Walsh is adapted to fine-textured, moderately saline-alkaline soils.

Western Wheatgrass

Wildrye

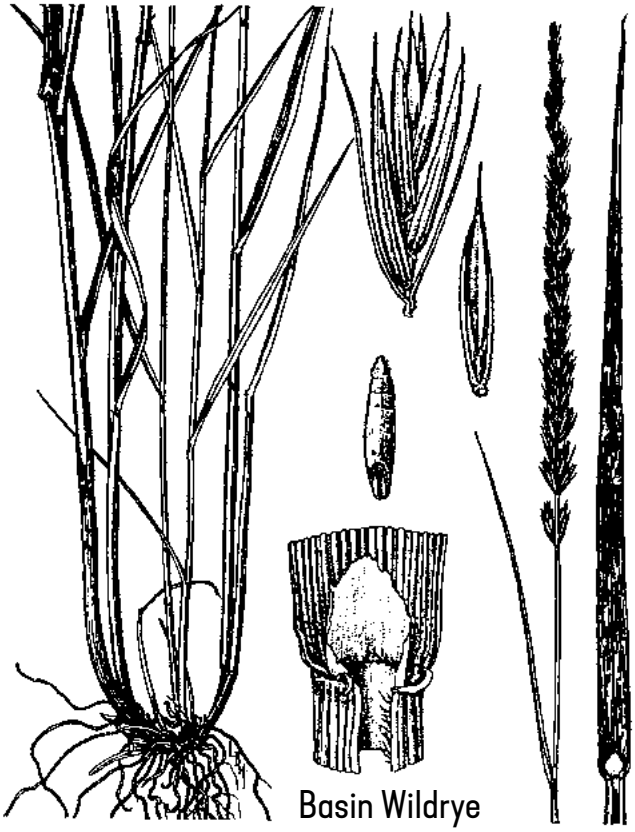
Basin *(Leymus cinereus)*

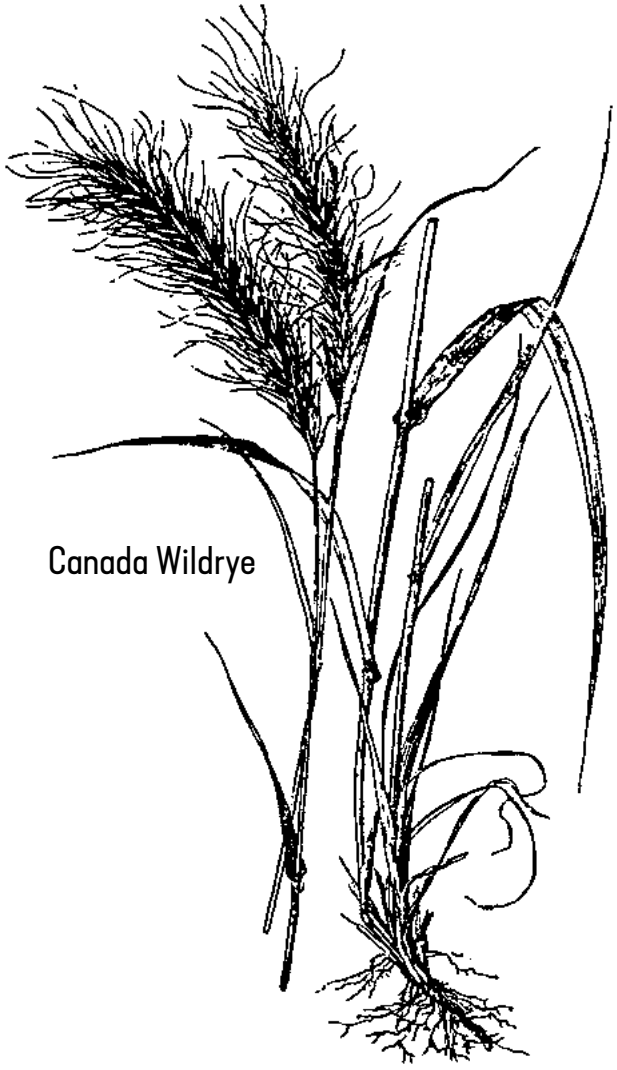
Varieties	Origin	Date Released
Trailhead II	Mont.	2016
Continental	Mont., British Columbia, Canada	2008
Washoe	Mont.	2004
Trailhead	Mont.	1991
Magnar	Saskatchewan, Canada	1979

Basin wildrye is a large, coarse, deep-rooted bunchgrass native to much of the western U.S. 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 do well on coarse, shallow or heavy clay soils. This grass is susceptible to leaf and stem rusts in the eastern half of North Dakota.


Basin Wildrye


Canada Wildrye

Canada *(Elymus canadensis)*

Varieties	Origin	Date Released
Mandan*	N.D.	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 in mixtures 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
Tober*	N.D.	2020
Omaha	Neb.	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, although the bristlelike awns still 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 hay land in the higher-rainfall, eastern one-third of North Dakota.

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
Bounty^	Minn., S.D.	2012
Sunnyview^	S.D.	1992
Bison*	N.D.	1989
Bonilla^*	S.D.	1987
Champ[1]	Neb.	1963

^Better adapted for the southern half of North Dakota
*North Dakota release
[1]Big x sand bluestem hybrid

Big Bluestem

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 hay land.

Stands will thin if pastures are closely grazed. It frequently is seeded for prairie restoration.

Little *(Schizachyrium scoparium)*

Ecotype	Origin	Date Released
Badlands*	N.D., S.D.	2001
Itasca*	N.D., S.D., Minn.	1996

*North Dakota release

Little bluestem is a drought-tolerant bunchgrass of the mixed-grass prairie 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 course, shallow soils of droughty uplands.

Little bluestem turns reddish on maturity, with fuzzy, white seed heads. It is gaining in popularity as an ornamental plant for dry landscapes.

Sand *(Andropogon hallii)*

Varieties	Origin	Date Released
Goldstrike	Neb.	1973
Itasca*	Neb.	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	Neb.	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 a 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*	N.D., S.D., Minn.	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 for wildlife cover, lakeshore restoration, streambank stabilization and buffer strips. Plants can be established from rhizomes or seed.

The species is rated as moderately tolerant to salinity. Stands establish slowly from seed because of seed dormancy and low seedling vigor.

Germination may be spread throughout 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*	S.D.	1996

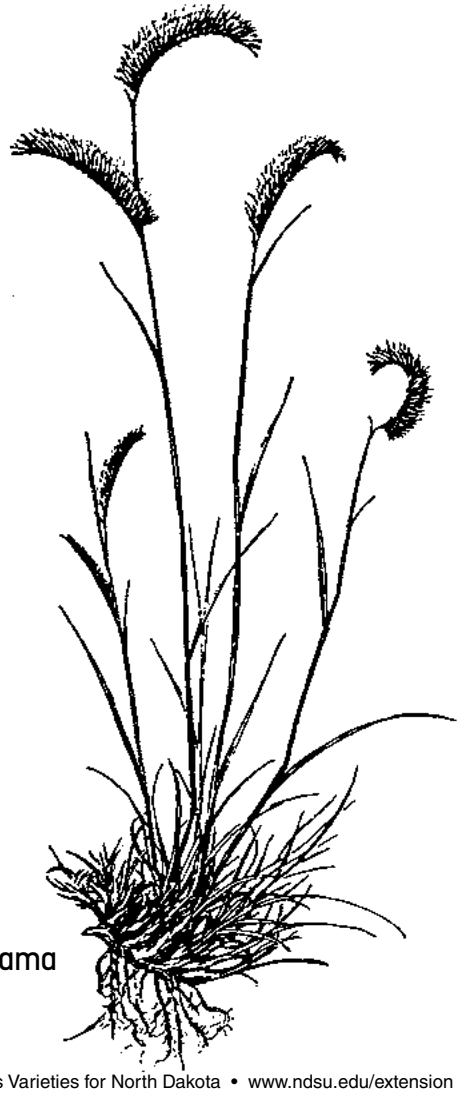
*North Dakota release

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 comb-like.

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 not more than ¼ inch is critical for successful establishment. Because of its unique seed head, it is used 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 also is better for Bad River compared with common seed.



Blue Grama

Sideoats *(Bouteloua curtipendula)*

Varieties	Origin	Date Released
Killdeer*	N.D.	1968
Pierre*	S.D.	1965
Butte	Neb.	1958

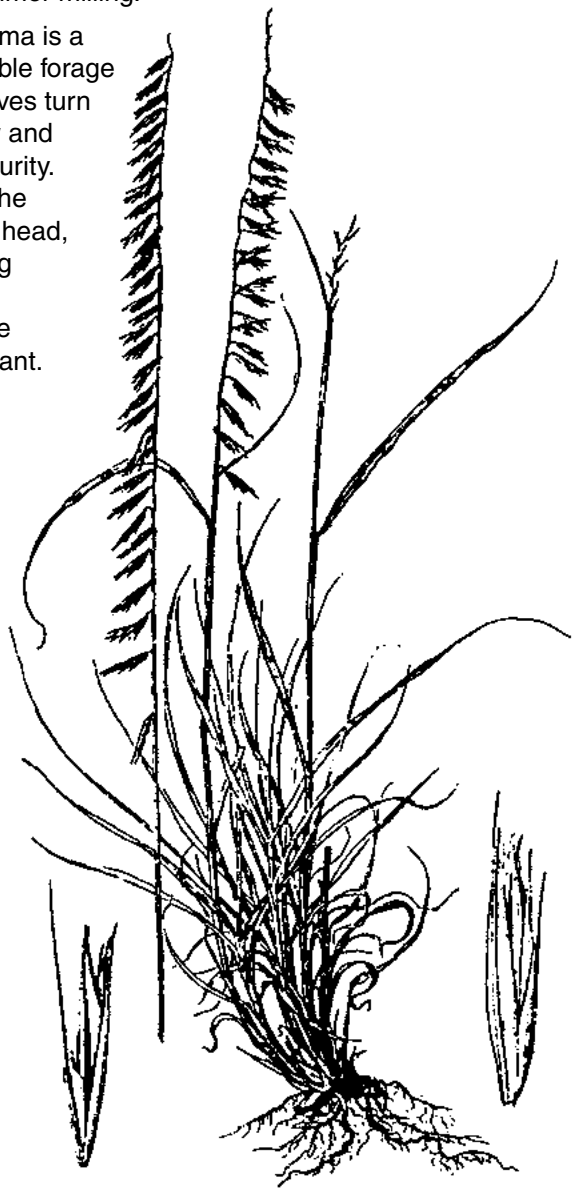
*North Dakota release

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 commonly is left in "clumps" of many spikelets or with seeds still attached. 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. Because of the unique seed head, it is becoming popular as a low-water-use landscape plant.



Sideoats Grama

Indiangrass

Indiangrass *(Sorghastrum nutans)*

Varieties	Origin	Date Released
Tomahawk*	N.D., S.D.	1988
Holt^	Neb.	1960

^Better 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 in wildlife habitat and as a component of native range and prairie restoration mixtures. Although it is highly nutritious and makes excellent hay, its forage yield is less than for big bluestem in the northern Plains.

Indiangrass also is less persistent in a stand than big bluestem. It is an attractive ornamental plant, and landscaping varieties are being developed.

Indiangrass

Sandreed

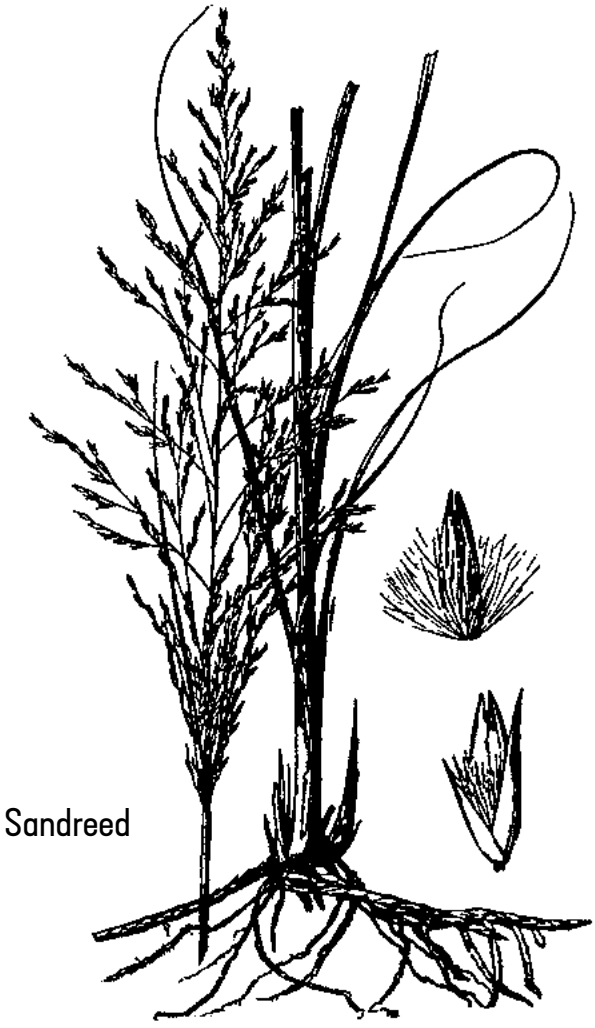
Prairie *(Calamovilfa longifolia)*

Varieties	Origin	Date Released
Koch	Mich.	2009
Bowman	(ND-95)* N.D.	2000
Goshen	Wyo.	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
Liberty	Neb.	2013
Dacotah*	N.D.	1989
Forestburg^*	S.D.	1987
Sunburst^	S.D.	1983
Summer	S.D.	1963

^Better 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 for 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 into a firm seedbed no deeper than ¼ inch. 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 that is two to three weeks earlier maturing than Forestburg. Liberty is developed as a bioenergy crop.

Switchgrass

Plant Species Guide
for Special Conditions

Saline- or Alkaline-tolerant Grasses

Wheatgrass
- Green (RS hybrid)
- Slender
- Thickspike/Streambank
- Tall
- Western

Wildrye
- Altai
- Beardless
- Canada
- Dahurian
- 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

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
Grama	
Blue	2–2.5
Sideoats	6–7.5
Indiangrass	5.5–7
Sandreed	
Prairie	4–5
Switchgrass	3.5–4.5

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.

For more information on this and other topics, see www.ndsu.edu/extension

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