



## Cooperative Extension Service

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# Commonly Used Hay & Pasture Grasses for North Dakota

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### CRESTED WHEATGRASS (*Agropyron desertorum*)

There are two distinct types of crested wheatgrass - standard crested wheatgrass and fairway crested wheatgrass (*Agropyron cristatum*). The standard type is considered more drouth resistant, slightly higher yielding, possesses more slender seedheads and is now referred to as crested wheatgrass. Fairway crested wheatgrass is leafier, finer stemmed and shorter growing.

Crested wheatgrass is a cool-season, winter hardy, long-lived, drouth resistant, perennial bunchgrass introduced from Russia. It is a valuable grass for hay and pasture, especially in west and west central North Dakota and on drier sites throughout the state. Growth begins early in the spring and provides excellent pasture from early May until late June. It is an excellent pasture choice to provide deferment or delayed use of the slower growing native pasture grasses in the spring. Crested wheatgrass should be grazed heavy enough to prevent bunches or clumps of dead vegetation (wolf plants) from forming. If grazed heavy in the spring, early fall grazing should be delayed until after the first killing frost to permit recovery of food reserves in lower crown and roots.

Crested wheatgrass makes high quality, palatable hay when harvested shortly after the heads appear. Palatability and feed value decline rapidly as the plant approaches maturity.

Nordan and Summit are two distinct varieties of crested wheatgrass. The variety Nordan appears to have more seedling vigor under North Dakota conditions. Fairway crested wheatgrass is recommended for dryland lawns, golf fairways and airports. Parkway is a variety of fairway crested wheatgrass released by the Canada Department of Agriculture.



Crested Wheatgrass

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544.3  
N9  
5  
3  
7  
8x  
= 415-2

## SMOOTH BROMEGRASS

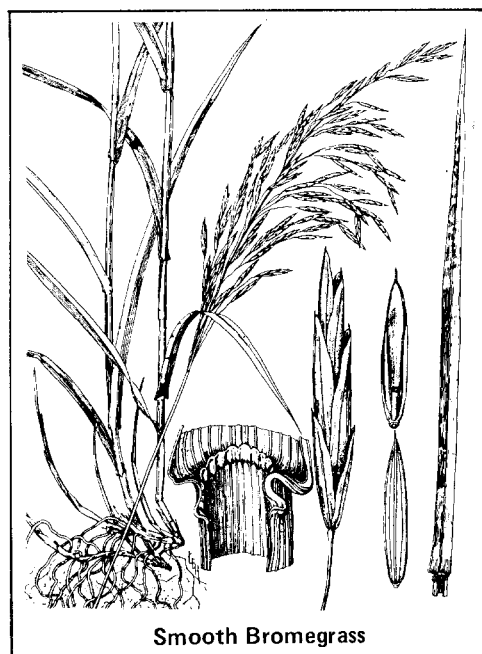
(*Bromus inermis*)

Smooth bromegrass is a cool-season, winter hardy, long-lived perennial sod forming grass introduced from Hungary. There are two different types of smooth bromegrass, the 'southern types' and the 'northern types'. Southern types are noted for having an aggressive sod formation, whereas the northern types produce more open stands.

Bromegrass provides excellent hay and pasture forage under soil and moisture conditions of the eastern two-thirds of North Dakota. It provides excellent quality pasture from about May 15 throughout the grazing season. Growth slows down during July and August, especially if temperatures are high and soil moisture is limiting. Close grazing in the spring will delay regrowth forage because crown buds are not developed enough to produce new tillers. Stands may become unproductive in three to four years if not fertilized.

In addition, bromegrass is an excellent soil binding grass due to its sod forming characteristics. It is widely used in grassed waterway seed mixtures.

Blair, Baylor and Fox are southern type varieties; Carlton is a northern type and Magna is intermediate in type between northern and southern varieties.



Smooth Bromegrass

## SLENDER WHEATGRASS

(*Agropyron trachycaulum*)

Slender wheatgrass is a short-lived, cool-season, native perennial bunchgrass. Its primary use in North Dakota is in seed mixtures. The seeds germinate quite rapidly and the seedlings are vigorous and fast growing. It is most useful in short term hay and pasture mixtures because plants lose vigor and disappear in two to three years. Two to 3 pounds of slender wheatgrass in a seed mixture will insure success of establishing an acceptable forage stand.

It possesses tolerance to saline (salty) and sodic (alkali) soil conditions. When grown on relatively dry sites, it may be equal to tall wheatgrass in tolerance to saline or sodic soil conditions.

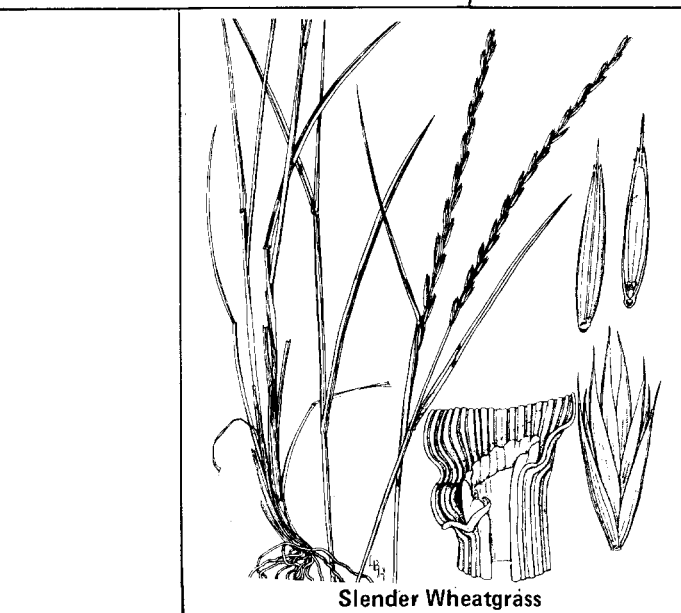
Primar is a variety developed in the state of Washington and Revenue is a Canadian variety.

## INTERMEDIATE WHEATGRASS

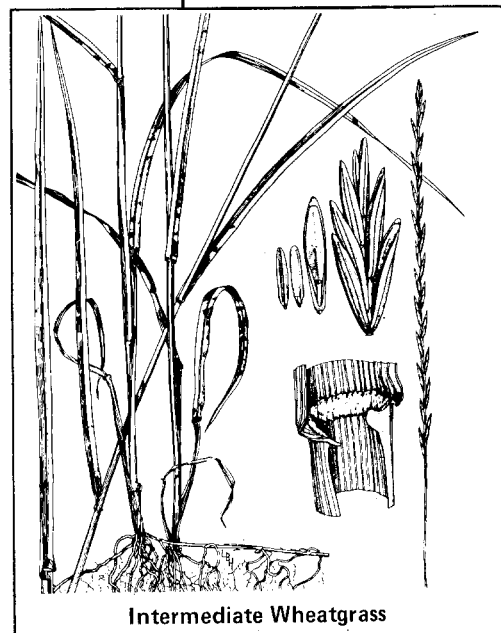
(*Agropyron intermedium*)

Intermediate wheatgrass is a cool-season, sod-forming grass introduced from the USSR. It is a vigorous, fast growing grass, similar to slender wheatgrass. Its primary use should be in short rotations for either hay or pasture. Intermediate wheatgrass is best adapted to areas with 15 inches or more of precipitation. Like slender wheatgrass, it is an "insurance" grass in seed mixtures, or it may be used as the primary grass with alfalfa. Forage production generally declines after three growing seasons.

Varieties available include Chief, Oahe, and Ree.



Slender Wheatgrass



Intermediate Wheatgrass

Pubescent wheatgrass (*Agropyron trichophorum*) is closely related to intermediate wheatgrass. The primary difference is the pubescence or short, stiff hairs on the seedheads. North Dakota tests show almost identical performance of the two species. Mandan 759 is a variety developed at the Northern Great Plains Research Center, Mandan, N.D. This variety is reported to produce higher forage and seed yields than other varieties tested at Mandan.

## TALL WHEATGRASS (*Agropyron elongatum*)

Tall wheatgrass is a coarse, tall, late maturing, cool-season, perennial bunchgrass introduced from Turkey and the USSR. The major use in North Dakota is in reclaiming saline-alkali soils with high water tables. Canadian studies show that it produces forage yields similar to Russian wildrye and Altai wildrye under moderate to strongly saline soil conditions, but excels in forage yielding ability under very strongly saline conditions. As the grass matures, it becomes coarse and unpalatable to livestock. Under grazing management a minimum stubble height of 6 inches should be maintained. On new seedlings this can be accomplished by cutting the first crop for hay, leaving a 6-inch stubble which tends to prevent close grazing the following season. Palatability of the hay is fair to good.

Studies under western North Dakota conditions have shown that it has potential for use in wind erosion control on cropland when grown in wide double rows spaced uniformly across a field.

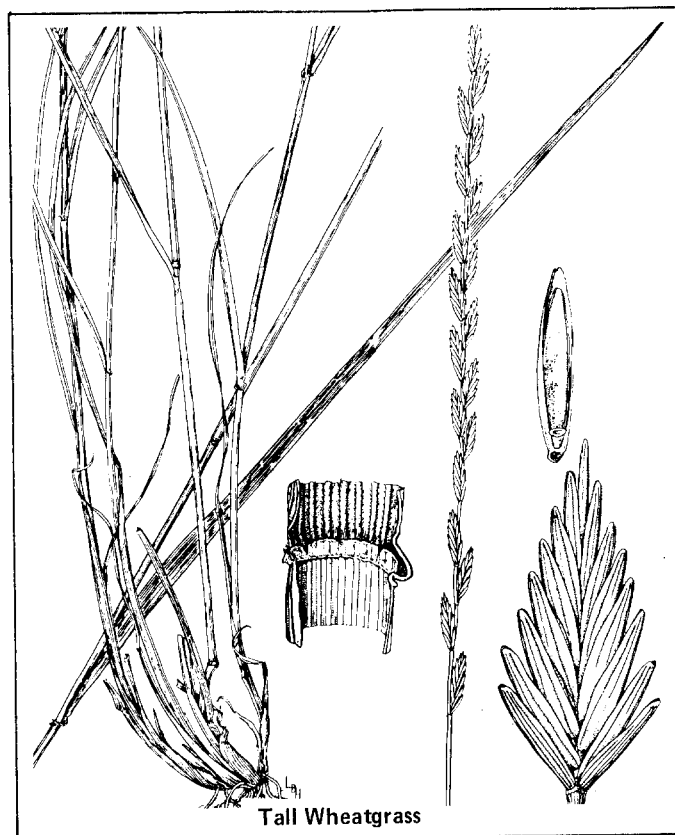
Distinct varieties of tall wheatgrass are not readily available. Alkar is a named variety developed and released by the state of Washington in 1959. Orbit is a variety released by the Canada Department of Agriculture in 1966.

## RUSSIAN WILDRYE (*Elymus junceus*)

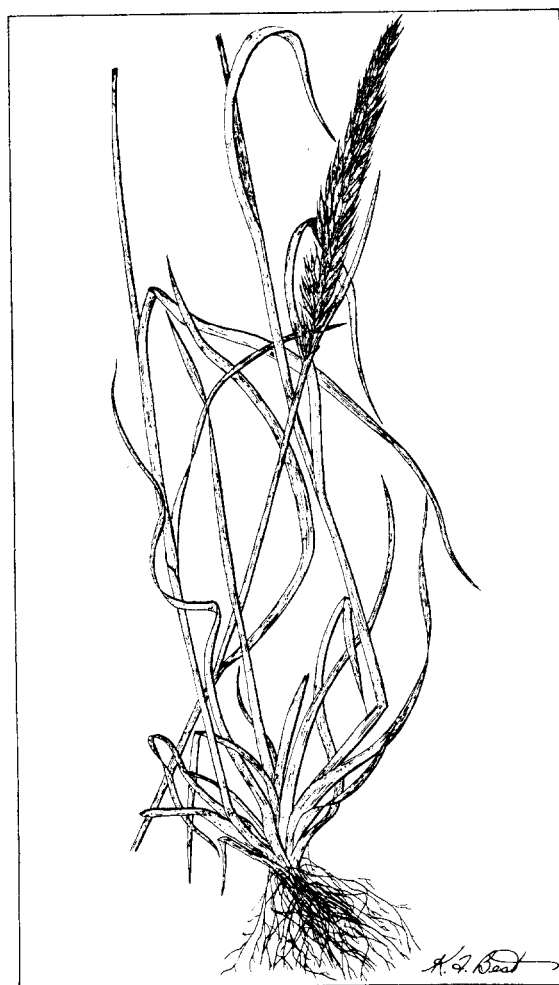
Russian wildrye is a long-lived, drouth resistant, perennial bunchgrass introduced from Siberia. It is not a hay type grass because it produces relatively short basal leaves with nearly leafless seedstalks. It is especially useful in North Dakota as a pasture grass under intensive pasture management systems. Growth begins in April, similar to crested wheatgrass, but its period of summer growth is longer than other cool-season grasses. Growth will continue following seed maturity provided soil moisture is adequate. Canadian studies have shown that the total dry matter yield is greater if grazed for a short time in late spring, then saved and grazed in late fall. Early season growth may all be saved for fall grazing if desired. This grass retains nutritive qualities and palatability late into the fall. It is best used in a separate pasture grazing unit as a single species or with a small amount of alfalfa.

Russian wildrye requires high fertility to maintain top forage yields. It will be more productive in wide row spacings if not fertilized. If fertilized, forage yields are similar regardless of the row spacing.

Stands appear to be more difficult to establish than crested wheatgrass and smooth brome grass. Excellent stands have been established when seeded on summerfallow in early fall or in



Tall Wheatgrass



Russian Wildrye

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late fall as a dormant season seeding in clean crop stubble. Regardless of the time of seeding, a firm seedbed to permit shallow seeding has been the most successful due to low seedling vigor. It has a high tolerance to saline soil conditions.

Russian wildrye is a good grass for use in farmyards and lawns which cannot be watered. For small areas use 3 to 4 pounds per 1,000 square feet. Large areas may be double seeded with a drill set to seed one bushel of wheat or about 15 pounds of grass seed per acre.

The variety Vinall has been shown to equal commercial Russian wildrye in forage yield and produces higher seed yields. Mayak and Sawki are two varieties released by the Canada Department of Agriculture.

## WESTERN WHEATGRASS

(*Agropyron smithii*)

Western wheatgrass is a long-lived, cool-season, drouth resistant, native, perennial sod-forming grass common to North Dakota and the Great Plains area. In native grasslands it is generally found growing associated with blue grama and needlegrasses. Pure stands often are found on heavy soils where runoff water accumulates. It has a high tolerance to saline and sodic soil conditions.

It is commonly seeded in mixtures with other native species for permanent pasture. In addition, it is used in grassed waterways because of its sod-forming characteristic and in reclaiming saline or sodic soils. Germination of western wheatgrass seed is slow and new seedlings are slow to become established. Due to the slowness of establishment it should always be seeded in a mixture with other grasses.

Western wheatgrass is one of the first native grasses to begin growth in the spring. Early season growth is palatable to livestock, but the plant becomes coarse in mid-summer. Proper grazing use is important because it cannot withstand continued close grazing. It is considered a good winter grazing grass. Introduced grasses and legumes will usually produce more pounds of hay per acre.

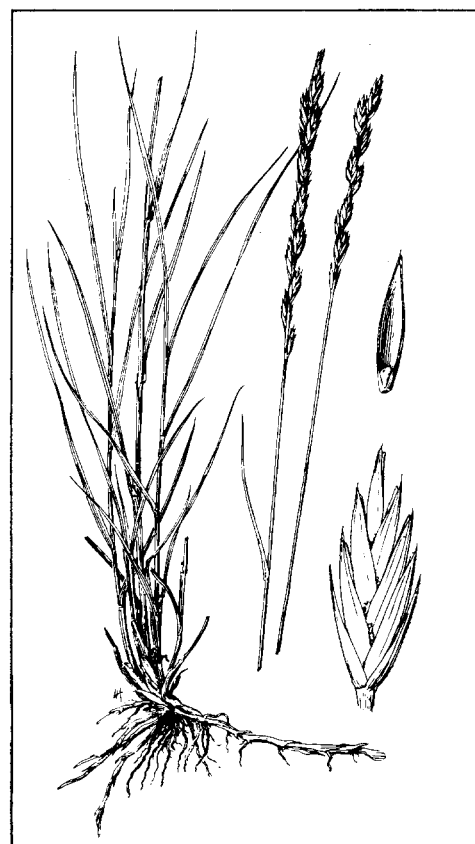
Most seed available commercially is harvested from native stands.

## GREEN NEEDLEGRASS

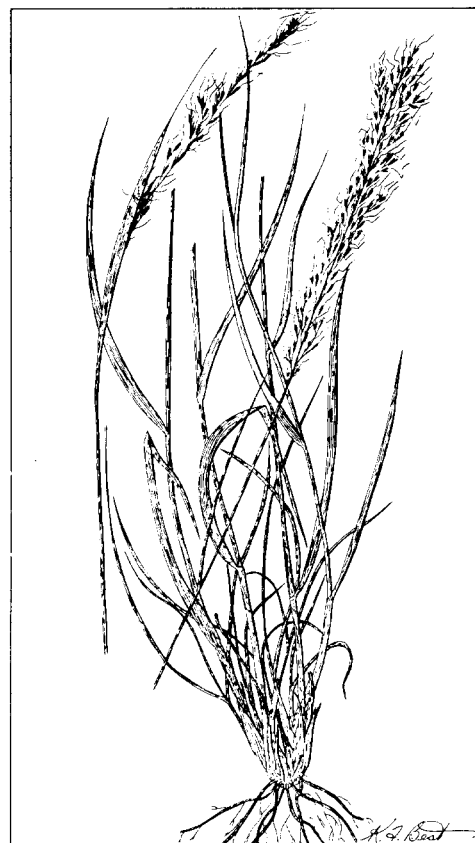
(*Stipa viridula*)

Green needlegrass, also known as feather bunchgrass, is a native, cool-season, perennial bunchgrass. It is found throughout North Dakota on native grasslands, but makes its best growth on medium to fine textured soils with favorable moisture. It is usually included in native grass seed mixtures for permanent pasture.

Green needlegrass begins growth early in the spring and provides nutritious, high quality forage for grazing livestock. It usually makes good growth throughout the summer. Proper grazing management is necessary to maintain healthy productive stands. It is sometimes planted for hay in pure stands or with alfalfa, although forage yield is usually less than mixtures of smooth bromegrass or crested wheatgrass.



Western Wheatgrass



Green Needlegrass

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The main limitation of green needlegrass and a variety named 'green stipagress' has been seed dormancy. Green stipagress is superior to the common green needlegrass in forage and seed yields, but requires fertilization to maintain yields. A relatively new variety, 'Lodorm' green needlegrass, has improved seed germination due to lower seed dormancy following harvest. Dormant season or late fall seedings are recommended. Alternate freezing and thawing, and wetting and drying improves seed germination. If green needlegrass is seeded in the spring, the variety 'Lodorm' should be used.

## REED CANARYGRASS

(*Phalaris arundinacea*)

Reed canarygrass is a long-lived, tall growing, broad-leaved, coarse, native perennial sod-forming grass. It is a special purpose grass adapted to moist or periodically flooded areas. It can withstand flooding in early spring for 50 to 60 days without serious stand deterioration. It is not tolerant to saline soil conditions.

Reed canarygrass is one of the highest forage producing grasses under irrigation. When cut for hay as the head emerges from the boot the forage is palatable and nutritious. When harvested in this manner a second cutting of leafy forage is often possible. For pasture graze heavy enough to maintain a growth no taller than 12 to 15 inches.

It is an excellent grass for use in grassed waterway seed mixtures on moist or wet soils because it forms a dense, tough sod.

Varieties available include Castor, Frontier, Grove, Ioreed and Rise.

## CREEPING FOXTAIL

(*Alopecurus arundinaceus*)

Creeping foxtail is a cool-season early maturing, long-lived, perennial sod-forming grass introduced from Eurasia. It is a special purpose grass adapted to low, wet, poorly drained soils or areas of high moisture availability. Field observations indicate it can withstand early spring flooding for 50 to 60 days, similar to reed canarygrass. It is not tolerant to saline soil conditions.

Field evaluations indicate forage palatability is excellent when used for either pasture or hay. Forage yields have been good at Fargo, but not superior to reed canarygrass. Although it matures early, growth continues into the summer, providing good grazing on adapted sites.

The variety Garrison is the most widely used. It was found growing in the early 1930's in slough areas in McLean county, near Max, N.D. SD 32 is a selection by the South Dakota Agricultural Experiment Station for resistance to seed shattering and increased forage yield.



Reed Canarygrass



Creeping Foxtail

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