

GREEN NEEDLEGRASS

Nassella viridula
(Trin.) Barkworth
Plant symbol = NAVI4

Contributed by: USDA NRCS Bismarck Plant
Materials Center



USDA NRCS Plant Materials Center
Bismarck, North Dakota

Alternate Names

Feather bunchgrass, *Stipa viridula*

Key Web Sites

Extensive information about this species is linked to the PLANTS Web site. To access this information, go to the PLANTS Web site, select this plant, and utilize the links at the bottom of the Plants Profile for this species.

Uses

Rangeland/hayland: Green needlegrass is well suited for use in mixtures for range seeding, critical area establishment, mineland revegetation, wildlife habitat, and other plantings where the establishment of native vegetation is the objective. This species is nutritious, palatable, but decreases under grazing use. The awns are not as troublesome to livestock as with other needlegrasses. Green needlegrass is frequently included in seedings of mixed midgrasses, but due partly to its hard seed coat, it may be slow to germinate and become established.

Status

Please consult the PLANTS Web site and your State Department of Natural Resources for this plant's current status (e.g. threatened or endangered species, state noxious status, and wetland indicator values).

Description

General: Green needlegrass is a cool-season (C_3) native perennial bunchgrass. It grows to a height of 18 to 36 inches. The seed head is a compacted panicle, varying from 4 to 10 inches in length. Flowering occurs in early June with seed usually maturing in late June or early July. The awns are curved, sharply bent in the middle, and about one inch long. The leaves are often rolled, thread-like, 4 to 12 inches long, smooth, with prominent veins above. Auricles are absent. The ligule is a ring of hairs, and the sheath is hairy at the margins. This species has rather deep, fibrous roots which in favorable situations may extend to a depth of 10 feet or more. Green needlegrass is very resistant to disease. It occurs only sparingly in most associations of native vegetation.

Distribution: For current distribution, please consult the Plant Profile page for this species on the PLANTS Web site.

Habitat: This grass is an important native of the Northern Great Plains, and is found as far south as Arizona. Green needlegrass grows on medium to fine-textured soils in both the True Prairie and Mixed Prairie. On medium-textured soils, green needlegrass grows with western wheatgrass, needleandthread, and blue grama. On fine-textured soils, needleandthread drops out, and on even finer soils, blue grama decreases leaving green needlegrass and western wheatgrass as dominants. Green needlegrass naturally occurs on bottomlands, flat benches and overflow area along streams.

Establishment

This species is recommended for seeding mixes in the 12 to 18 inch precipitation zone. High dormancy is a characteristic of the seed of this species. Germinability improves for several years after harvest. Seedlings are slow in developing. Once established, they have good vigor. Green needlegrass has approximately 181,000 seeds per pound. The recommended seeding rate for western North and South Dakota is 6 PLS pounds per acre (25 pure live seeds per square foot). A full seeding rate for eastern

North and South Dakota is 7.5 PLS pounds per acre (30 pure live seeds per square foot).

This species is often planted as part of a mix with other native grasses. If used as a component of a mix, it is necessary to adjust the seeding rate to the percent of mix desired. On most sites in the Dakotas where this species is adapted, it is seldom more than 30 percent of the mix. This species should be planted with equipment which provides for proper seed depth, a uniform seeding rate, and good seed to soil contact. If the seed has been processed to remove the awns, it can be seeded with other grasses in the small grain or wheatgrass box of a grass drill. The seedbed needs to be firm enough to allow seed to be planted only ½ to ¾ inch deep.

Management

Hayland: Due to its early spring green-up, green needlegrass is an important component of natural plant communities. This species is harvested for hay in native grass mixtures. In some areas, it makes up an appreciable portion of the yields of native hay from upland areas or from flats, on loamy to heavy clay soils. The hay is of good quality and is readily eaten by livestock. The time of peak forage production for green needlegrass is from mid to late August. In studies carried out in North and South Dakota, the five-year average for forage production varied from 700 lb/ac on a fine sandy loam to 1,100 lb/ac on a clay loam. Crude protein is good during the early growing season. A study at Hettinger, North Dakota, indicated a range from 19 percent on April 26, to 5 percent on August 24.

Pasture: Green needlegrass is not recommended for a solid seeding for grazing use. It is best used in pasture mixes. Growth begins in early spring, and cattle will seek it out. Growth continues in the fall when moisture conditions are favorable. It makes excellent recovery after grazing. It seems to stand up fairly well for winter grazing. This species will decrease under grazing use.

Seeds and Plant Production

Seed production: Seed yields from green needlegrass fields vary from about 125 lb/ac on dry land to more than 250 lb/ac for irrigated fields. Older references indicate that this species can be grown in either rows or in a solid seeding. Studies have shown that seed dormancy in this species is inversely related to maturity. This can be critical since seed in the lower panicle is still immature when that in the upper branches has ripened and started to shatter. The difference of a few days in harvest date can make a

difference in amount of seed dormancy. Harvest should begin when the majority of the seed heads are black, or at the first sign of shattering. Seed harvest must be timed carefully to avoid excesses in both shattering and immaturity. Seed ripens from late June to mid-July. If seed is harvested with a seed stripper, more than one pass can be made through the field. Once harvested, the seed should be processed to remove awns. This will make the seed much more flowable through a drill.

Cultivars, Improved, and Selected Materials (and area of origin)

Many older references mention a variety of green needlegrass named ‘**Green Stipa.**’ This variety is no longer available, and was replaced by ‘**Lodorm,**’ which was released by the Montana, North Dakota and South Dakota Experiment Stations, along with the Plant Science Research Division of the Agricultural Research Service, Mandan, North Dakota. Lodorm originates from a bulk collection made in a native stand north of Bismarck, North Dakota, in 1935. It is a heterogeneous population of highly self-pollinated individuals. It was selected for low seed dormancy after harvest. Seed is commercially available, and the USDA, NRCS Plant Materials Center, Bismarck, North Dakota, maintains Foundation seed.

‘**AC™ Mallard**’ was developed as a northern hardy ecovar of green needlegrass for use in western Canada. Seed is available from Proven Seed/Agricore United.

‘**Cucharas Germplasm**’ was released in 2003 for use in the central Great Plains. It shows an improvement in germinability over Lodorm. Seed is available from the Utah Crop Improvement Association.

References

- Alderson, J. and W.C. Sharp. 1994. *Grass varieties in the United States*. Agricultural Handbook No. 170. USDA, SCS, Washington, D.C.
- Bergman, H.F. 1912. *Flora of North Dakota*. North Dakota Soil and Geological Survey, Bismarck.
- Clarke, S.E., J.A. Campbell and W. Shevkenek. 1950. *The identification of certain native and naturalized grasses by their vegetative characters*. Publication No. 762. Department of Agriculture, Canada.

Johnson, J.R. and G.E. Larson. 1999. *Grassland plants of North Dakota and the Northern Great Plains*. Bulletin 566 (rev.). South Dakota State University, Brookings.

Larson, K.L. and J.F. Carter. 1970. Lodorm green needlegrass – A new variety for revegetating rangeland. *North Dakota Farm Research* 27: 6-8. Fargo.

Sedivec, K.K. and W.T. Barker. n.d. *Selected North Dakota and Minnesota range plants*. EB-69. North Dakota State University Extension Service, Fargo.

Smith, S.R. and S. Smith, editors. n.d. *Native grass seed production manual*. USDA, Natural Resources Conservation Service, Ducks Unlimited Canada, Manitoba Forage Seed Association, University of Manitoba, Winnipeg.

Prepared By and Species Coordinator:

Michael Knudson

USDA NRCS Plant Materials Center

Bismarck, North Dakota

Edited:27Jun2005 MJK; 28Jun2005 RLN

For more information about this and other plants, please contact your local NRCS field office or Conservation District, and visit the PLANTS Web site <<http://plants.usda.gov>> or the Plant Materials Program Web site <<http://Plant-Materials.nrcs.usda.gov>>

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call (202) 720-5964 (voice or TDD). USDA is an equal opportunity provider and employer.