



A Conservation Plant Released by The Natural Resources Conservation Service
Plant Materials Center, Aberdeen, Idaho

'DOUGLAS' crested wheatgrass

Agropyron cristatum (L.) Gaertn.

'Douglas' crested wheatgrass (*Agropyron cristatum* (L.) Gaertn.) is a cultivar released in 1994 by the USDA-ARS, the Utah Agricultural Experiment Station, and the USDA-NRCS.

Description

Crested wheatgrass is an introduced, cool season, perennial grass that is drought and cold resistant with an extensive root system. It has erect culms and grows from 12 to 36 inches (30 to 90 cm) tall. Crested wheatgrass spikes are 0.8 to 2.75 inches long. The spikelets are widely spreading with the glumes somewhat contoured, gradually tapering into awns 0.08 to 0.2 inches long.



'Douglas' crested wheatgrass. Photo by the Aberdeen PMC.

Source

Douglas crested wheatgrass is a hexaploid derived from hybrids between an accession collected from the former Soviet Union and four additional hexaploid accessions, three from Iran, and one from Turkey. The Soviet accession was characterized by exceptionally broad leaves and was used as the female parent source in all crosses.

Conservation Uses

Douglas has larger seed than other crested wheatgrasses and has excellent seedling vigor. It produces less forage than other cultivars but is leafier and remains green longer into the growing season suggesting improved forage preference and improved fire resistance.

Grazing/hayland/rangeland: Crested wheatgrass is commonly seeded in the arid sections of the western United States for forage production. It is a preferred feed for cattle, sheep, horses, and elk in spring and fall if additional growth occurs from late season rainfall. Crested wheatgrass produces excellent forage yields in the areas where it is best adapted.

Erosion control/reclamation: Douglas crested wheatgrass is well adapted for stabilization of disturbed soils. It competes well with other aggressive introduced plants during the establishment period. Douglas and other crested wheatgrass cultivars resist cheatgrass (*Bromus tectorum*) competition better than most native species because they germinate earlier and grow more rapidly at colder temperatures. The fibrous root system and excellent seedling vigor make Douglas crested wheatgrass suited for soil stabilization and reclamation in areas receiving 14 inches or more annual precipitation.

Wildlife: Birds and small rodents eat crested wheatgrass seeds. Deer, antelope, and elk graze it, especially in spring and fall. Upland birds and songbirds utilize stands for nesting.

Area of Adaptation and Use

Douglas crested wheatgrass is adapted for dryland seedings in a wide variety of soil types where annual precipitation is 14 to 18 inches.

Establishment and Management for Conservation Plantings

Douglas crested wheatgrass should be seeded with a drill at a depth of ½ inch or less on medium to fine textured soils and 1 inch or less on coarse textured soils. The recommended single species seeding rate is 5 pounds pure live seed (PLS) per acre or 20 PLS seeds per square foot. For mine lands and other harsh critical areas, the seeding rate should be increased to 10 pounds PLS per acre or 40 PLS seeds per square foot. Mulching and light irrigation are beneficial for stand establishment on highly disturbed, droughty areas. The best seeding results are obtained from seeding in very early spring on heavy to medium

textured soils and as dormant seeding in late fall (most commonly preferred seeding period) on medium to light textured soils. Late summer (August to mid-September) seedings are not recommended unless irrigation is available.

Crested wheatgrass is generally not compatible in mixes with native species because it is very competitive and commonly outcompetes slower-developing native species. However, when seeded at low rates (less than 2 pounds per acre) with native species, acceptable mixed stands have been achieved.

Ecological Considerations

Crested wheatgrass is a highly competitive introduced species. Where crested wheatgrass is planted as a monoculture, the resulting plant structure and habitat diversity are lower than that found in a diverse seeded or native plant community. Crested wheatgrass can persist on a site for a very long time, and it can spread by seed to invade surrounding native vegetation. When sown in mixtures with native species, it frequently becomes the dominant species.

Seed and Plant Production

Seed production of crested wheatgrasses has been very successful under cultivated conditions. Row spacing of 24 to 36 inches under irrigation and 36 inches under dryland conditions (14+ inches annual precipitation) are recommended. Early spring or late fall seedings are preferred under dryland conditions. Early spring seedings are recommended under irrigated conditions. When irrigated, spring seedings consistently yield more seed during the first year of seed production. To obtain maximum seed production under irrigation, fall plantings are not recommended.

Control weeds during stand establishment and for long term management by clipping, hand roguing or light rates of herbicide after the five-leaf stage. Fertilizer is generally not recommended during establishment. If soil test results show nitrogen and phosphorus are low, an application of 10 to 15 pounds per acre nitrogen and 20 to 30 pounds per acre phosphorus may be applied prior to planting. When irrigated, apply adequate moisture for germination, establishment, and to bring soils to field capacity. Following stand establishment, fertilize and irrigate soon after seed harvest in fall to stimulate seed head primordia development for the subsequent crop. Do not stress plants during re-growth and tillering in the fall, late boot stage, and during pollination. Avoid sprinkler irrigation during flowering.

Seed fields are productive for 4 to 5 years. Average production of 150 to 200 pounds per acre can be expected under dryland conditions in areas with 14+ inches average annual precipitation. Average production of 500 to 700 pounds per acre can be expected under irrigated conditions. The seed heads do not readily shatter, but some shatter can be expected. Harvesting is best completed by direct combining when the top of the seed head begins to shatter or by windrowing at hard dough stage and combining with pickup attachment 5 to 7 days later. Seed is generally harvested from mid-July to mid-August.

Availability

For conservation use: Douglas crested wheatgrass is available from the commercial seed market.

For seed or plant increase: USDA-ARS in Logan, Utah maintains breeder and foundation seed. A U.S. plant variety protection license specifies that seed of Douglas can only be marketed as a class of certified seed. Foundation seed is available for distribution by the Utah Crop Improvement Association.

For More Information

Aberdeen Plant Materials Center, 1691 A S 2700 W, Aberdeen, Idaho. (208) 397-4133.
<https://www.plant-materials.nrcs.usda.gov/idpmc>

Citation

Release Brochure for 'Douglas' crested wheatgrass (*Agropyron cristatum*). 2023. USDA-Natural Resources Conservation Service, Aberdeen PMC. Aberdeen, Idaho.



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

Helping People Help The Land

USDA IS AN EQUAL OPPORTUNITY PROVIDER, EMPLOYER AND LENDER