Registration of ‘Vavilov’ Siberian Crested Wheatgrass

‘Vavilov’ Siberian crested wheatgrass [Agropyron fragilis (Roth) Candargy] (Reg. no. CV-23, PI 583980) was developed by the USDA-ARS Forage and Range Research Lab. at Utah State Univ. and released in cooperation with the Utah Agric. Exp. Stn. and the USDA-NRCS on 1 July 1994. The cultivar was named to recognize the contribution of the N.I. Vavilov Research Institute of Plant Industry, St. Petersburg, Russia (VIR), to the germplasm resources of the USDA-ARS range grass breeding program.

The parental germplasm for Vavilov was derived from accessions originally received from VIR, Stavropol Botanical Garden (Stavropol, Russia), and Eskisehir Plant Breeding Station (Eskisehir, Turkey) and from selections from the cultivar P-27. The C0 breeding population for Vavilov consisted of 10 plants selected from a genetically broad-based population on the basis of green-color retention and vegetative vigor during the late summer under extreme drought conditions on a range site in Box Elder County, Utah. This population was subjected to three cycles of selection for vegetative vigor, response to drought, resistance to diseases and insects, seedling vigor (emergence from deep seeding), seed yield, and plant type. Open-pollinated progenies from 14 selected clonal lines in the third breeding cycle were bulked to form breeder seed.

Seedling vigor of Vavilov, as indicated by establishment in field trials and seedling emergence from deep seedings, is comparable to ‘Hycrest’ and is consistently better than P-27. It produced significantly more forage dry matter than P-27 in most evaluation trials. Limited data indicate that Vavilov had slightly lower in vitro dry matter digestibility than P-27; however, levels of Mg, Ca, and K in the forage indicate that it was less likely to cause grass tetany in grazing animals than P-27. The cultivar produced 450 kg of seed ha\(^{-1}\) when grown in rows 1 m apart on a dryland site that received 350 mm of annual precipitation. Supplemental irrigation increased seed yields \(\approx 50\%\). At 100\% purity, there are \(\approx 330,000\) seeds kg\(^{-1}\).

Vavilov is a tetraploid \((2n=4x=28)\) and is fully interfertile with cultivars of standard crested wheatgrass \([Agropyron desertorum (Fisch. ex Link) Schultes]\), as well as the cultivar Hycrest. Cytological studies show that Siberian crested wheatgrass shares the P genome with diploid \((2n=2x=14)\), tetraploid, and hexaploid \((2n=6x=42)\) forms of the crested wheatgrass complex. Siberian wheatgrass is a perennial bunchgrass characterized by long, narrow linear spikes. Genetic introgression occurs between Siberian and standard forms in nature, and a gradation between the long, narrow spike of Siberian and the shorter, wider spike of standard forms is evident in Vavilov.

In its native habitat, the Siberian form of crested wheatgrass is more drought-resistant than either standard or fairway crested wheatgrass \([Agropyron cristatum (L.) Gaertn. sensu latu]\) and is better adapted to sandy soils than other crested wheatgrass types. Vavilov is recommended for semiarid range sites receiving 200 to 450 mm of precipitation annually at altitudes up to 2100 m. Under dryland range conditions, seeding at 8 kg ha\(^{-1}\) is recommended.

Breeder, Foundation, and Certified seed classes will be established. The cultivar is available for purchase from the University of Idaho, Plant Industry, St. Petersburg, Russia (VIR), to the germplasm resources of the USDA-ARS range grass breeding program.

Registration of ‘Douglas’ Crested Wheatgrass

‘Douglas’ is the first cultivar of hexaploid crested wheatgrass \([Agropyron cristatum (L.) Gaertn. sensu latu]\) to be released in November 1994. It was developed by a research team at the USDA-ARS Forage and Range Research Lab., Utah State University, after three cycles of selection for vegetative vigor, response to drought, resistance to diseases and insects, seedling vigor (emergence from deep seeding), seed yield, and plant type. Open-pollinated progenies from 14 selected clonal lines in the third breeding cycle were bulked to form breeder seed.

Seedling vigor of Douglas, as indicated by establishment in field trials and seedling emergence from deep seedings, is comparable to ‘Hycrest’ and is consistently better than P-27. It produced significantly more forage dry matter than P-27 in most evaluation trials. Limited data indicate that Vavilov had slightly lower in vitro dry matter digestibility than P-27; however, levels of Mg, Ca, and K in the forage indicate that it was less likely to cause grass tetany in grazing animals than P-27. The cultivar produced 450 kg of seed ha\(^{-1}\) when grown in rows 1 m apart on a dryland site that received 350 mm of annual precipitation. Supplemental irrigation increased seed yields \(\approx 50\%\). At 100\% purity, there are \(\approx 330,000\) seeds kg\(^{-1}\).

Vavilov is a tetraploid \((2n=4x=28)\) and is fully interfertile with cultivars of standard crested wheatgrass \([Agropyron desertorum (Fisch. ex Link) Schultes]\), as well as the cultivar Hycrest. Cytological studies show that Siberian crested wheatgrass shares the P genome with diploid \((2n=2x=14)\), tetraploid, and hexaploid \((2n=6x=42)\) forms of the crested wheatgrass complex. Siberian wheatgrass is a perennial bunchgrass characterized by long, narrow linear spikes. Genetic introgression occurs between Siberian and standard forms in nature, and a gradation between the long, narrow spike of Siberian and the shorter, wider spike of standard forms is evident in Vavilov.

In its native habitat, the Siberian form of crested wheatgrass is more drought-resistant than either standard or fairway crested wheatgrass \([Agropyron cristatum (L.) Gaertn. sensu latu]\) and is better adapted to sandy soils than other crested wheatgrass types. Vavilov is recommended for semiarid range sites receiving 200 to 450 mm of precipitation annually at altitudes up to 2100 m. Under dryland range conditions, seeding at 8 kg ha\(^{-1}\) is recommended.

Breeder, Foundation, and Certified seed classes will be established. The cultivar is available for purchase from the University of Idaho, Plant Industry, St. Petersburg, Russia (VIR), to the germplasm resources of the USDA-ARS range grass breeding program.

References and Notes


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