United States Department of Agriculture

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

'VAVILOV'
Siberian wheatgrass
Agropyron fragile (Roth) P. Candargy

Vavilov Siberian wheatgrass. Photo by Aberdeen PMC.

'Vavilov' Siberian wheatgrass (*Agropyron fragile* [Roth] Candargy) is a cultivar developed by the USDA-ARS Forage and Range Research Lab at Utah State University released in cooperation with the Utah Agricultural Experiment Station and the USDA Natural Resources Conservation Service in 1994.

Description
Siberian wheatgrass is a long-lived, introduced, drought tolerant, cool season bunchgrass. Plants are 10 to 43 inches tall with leaves averaging 0.08 to 0.16 inches wide and 3 to 6 inches long. The upper leaf surface is deeply grooved, and the lower surface is smooth. The spikes are 1.2 to 6 inches long and 0.2 to 0.8 inches wide. Spikelets are appressed or diverging from the rachis at less than 35 degrees. Lemmas are usually unawned but sometimes are mucronate and glabrous to minutely pubescent on the back. Vavilov is a tetraploid (2n=4x=28).

Source
The parental germplasm for Vavilov was derived from sources originating at the Vavilov Research Institute of Plant industry (St. Petersburg, Russia), Stavropol Botanical Garden (Stavropol, Russia), Eskisehir Plant Breeding Station (Eskisehir, Turkey) and from selections of cultivar 'P-27'. Selections were made based on green color retention and vegetative vigor during late summer under extreme drought conditions on a range site in Box Elder County, Utah. The resultant population was subjected to three cycles of selection for vegetative vigor, response to drought, resistance to disease and insects, emergence from deep seeding, and seed yield.

Conservation Uses
Siberian wheatgrass is adapted for non-irrigated seedings where annual precipitation averages 8 to 14 inches and where the frost-free period is generally less than 160 days. It is well adapted to sandy, sandy loam, loam and silt loam droughty soils. Siberian wheatgrass has been seeded in areas with as little as 5 inches annual precipitation with some success. Siberian wheatgrass tolerates cold but will not tolerate long periods of standing water, poorly drained soils, or excessive irrigation.

Grazing/hayland/rangeland: Siberian wheatgrass is a preferred feed for cattle, sheep, horses, elk, deer, and antelope in spring and also in fall if "green-up" or regrowth occurs. Siberian wheatgrass is not considered a desirable feed during the summer, but it does maintain greenness and palatability later into the growing season than crested wheatgrass.

Erosion control/reclamation: Drought tolerance, a fibrous root system, and good seedling vigor make Siberian wheatgrass an ideal species for reclamation and soil stabilization in areas receiving 8 to 16 inches annual precipitation.

Greenstrips: Vavilov can be used in greenstrips (vegetative firebreaks). Siberian wheatgrass is more drought tolerant, retains its greenness later in the season, and produces less biomass than most crested wheatgrass varieties, making it a good alternative.

Area of Adaptation and Use
Vavilov is more drought tolerant and better adapted to sandy soils than crested wheatgrass. It is best adapted to 8 inches or more annual precipitation and elevations below 7,000 feet.

Establishment and Management for Conservation Plantings
Siberian 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 seeding rate is 6 pounds pure live seed (PLS) per acre. Best results are

obtained from seeding in very early spring on heavy to medium textured soils and as dormant seeding in late fall on medium to light textured soils. Late summer (August to mid-September) seedings are not recommended unless irrigation is available. For critical area erosion control, the seeding rate for Siberian wheatgrass should be increased to 12 pounds PLS per acre or 50 PLS seeds per square foot. Mulching and light irrigation on highly disturbed, droughty areas are beneficial for stand establishment.

Siberian wheatgrass establishes quickly. Under favorable conditions it provides good weed competition. It should not be seeded with native species except at low seeding rates (generally less than 2 pounds per acre).

Ecological Considerations
Siberian wheatgrass is a highly competitive introduced species. Where Siberian 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. Siberian 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 Siberian wheatgrass has been very successful under cultivated conditions. Row spacing of 24 to 36 inches when irrigated and 36 inches under dryland conditions (14+ inches annual precipitation) are recommended. The recommended seeding rate for seed production in 36 inch row spacing is 2.7 pounds PLS/ac. 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 rogueing or light rates of herbicide after the five-leaf stage. Fertilizer is generally not recommended during establishment. If soil test 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 14+ inch annual rainfall areas. Average production of 400 to 500 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 windrowing at hard dough stage and combining with pickup attachment about 5 to 7 days following windrowing operation. Seed is generally harvested in mid-July to mid-August.

Availability
For conservation use: Vavilov Siberian wheatgrass is available from the commercial seed market.

For seed or plant increase: ARS Forage and Range Laboratory maintains Breeder and Foundation seed and certified seed is available.

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

Citation
Release Brochure for ‘Vavilov’ Siberian wheatgrass (*Agropyron fragile*). 2023. USDA-Natural Resources Conservation Service, Aberdeen PMC. Aberdeen, Idaho.

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