

PLANT MATERIALS TECHNICAL NOTE

SIBERIAN WHEATGRASS *Agropyron fragile* (Roth) P. Candargy An Introduced Conservation Grass for Use in Montana and Wyoming

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Figure 1. Siberian wheatgrass.

General Description

Siberian wheatgrass (*Agropyron fragile*) is a long-lived, cool-season, drought-tolerant, introduced, and winter hardy bunchgrass with an extensive root system (see Figure 1). It is native to the Steppes of central Eurasia and was introduced into the United States in 1906. Siberian wheatgrass produces new growth in the spring about 10 days after *Poa* species and about two weeks earlier than most native wheatgrasses. Related species include the following: 'Fairway' crested wheatgrass (*Agropyron cristatum*), standard crested wheatgrass (*Agropyron desertorum*), and crested wheatgrass hybrid (*A. cristatum* X *A. desertorum*). Siberian wheatgrass is very similar to Fairway and standard crested wheatgrass, but has finer leaves and stems. It also has both narrower and awnless glumes and lemmas. The spikelets are more ascending, which gives the spike a narrow, oblong, sub-cylindrical shape (see Figure 2).

Adaptation or Range

Siberian wheatgrass is more drought-tolerant than crested wheatgrass and is more productive in areas receiving less than 13 inches precipitation. It does well on sandy soils underlain by a

hardpan. Siberian wheatgrass produces more forage than crested wheatgrass in arid climates and on moderately coarse-textured and desert soils. For best production, good winter and early spring moisture is needed.



Figure 2. Siberian wheatgrass seed.



Figure 3. Siberian wheatgrass pasture.

Limitations

Siberian wheatgrass is not well adapted to areas in Montana or Wyoming with more than 13 inches of annual rainfall or where cool, short seasons with ample moisture prevail. It tolerates only a short period of spring flooding, is intolerant of high water tables, and has only a fair tolerance of alkali salts and acidity.

Palatability of Siberian wheatgrass drops off markedly in the summer as the plant matures and becomes dormant. With good summer rainfall, growth continues and palatability is maintained.

Ease of Establishment

Siberian wheatgrass is easy to establish as seedlings are vigorous once the planted seeds have germinated. It remains green about two weeks longer in the summer than standard crested wheatgrass, with the difference more noticeable where late spring showers occur.

The best seeding results are obtained from planting 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.

Siberian wheatgrass should be seeded with a drill at a depth of $\frac{1}{2}$ -inch or less on medium- to fine-textured soils and 1 inch or less on coarse-textured soils. The seeding rate recommended for Siberian wheatgrass is 5 pounds pure live seed (PLS) per acre or 24 PLS seeds per square foot. If used as a component with a legume, alternate row plantings are recommended, i.e., grass, alfalfa, grass, alfalfa. For mine lands and other harsh critical areas, the seeding rate for Siberian wheatgrass should be increased to 10 pounds PLS per acre or 48 PLS seeds per square foot.

Conservation Uses

Erosion control/reclamation

Siberian wheatgrass is well adapted for the stabilization of disturbed soils as it competes well with other aggressive, introduced plants during the establishment period. It is generally not compatible in mixes with native species, because it commonly out-competes slower developing native

species. However, when seeded at low rates with native species, including bluebunch wheatgrass (*Pseudoroegneria spicata*), Snake River wheatgrass (*Elymus wawawaiensis*), Sandberg bluegrass (*Poa secunda*), and big bluegrass (*Poa ampla*), outstanding mixed stands have been achieved. Its drought tolerance, fibrous root system, and excellent seedling vigor make Siberian wheatgrass ideal for reclamation in areas receiving 8 inches or more annual precipitation. This grass can also be used in urban areas where irrigation water is limited to provide ground cover, weed control, and to stabilize ditch banks, dikes, pipelines, power lines, and roadsides.

Use for Hay

Although it is seldom planted for hay production, Siberian wheatgrass does produce good quality hay in dry areas. However, harvesting should occur before or just after heading as quality and palatability rapidly deteriorate after that growth stage.

Use for Pasture

Due to its early and late green-up capability, this plant is especially good for early spring and early fall pasture (see Figure 3). It is palatable to all classes of livestock and wildlife, and is a preferred feed for cattle, sheep, and horses during these two times of the year. In spring, protein levels can be as high as 18%, which decreases to about 4% when dormant. Siberian wheatgrass is commonly utilized for winter forage by cattle and horses, but protein supplements are required to ensure good animal health. Once stands are established, it is noted for the ability to withstand very heavy grazing pressure (65-70% utilization).

Wildlife

Birds and small rodents eat Siberian wheatgrass seeds. In the spring and fall, deer, antelope, and elk graze it and song and upland birds utilize stands for nesting.

Seed Production

Seed production of Siberian wheatgrass is relatively easy, and yields of about 100 to 200 pounds of seed per acre on dryland and about 400+ pounds per acre in irrigated fields may be expected.

Releases

'Vavilov II' was developed by the Agricultural Research Service (ARS) and the Forage and Range Laboratory in cooperation with the United States Army, Utah State University, and the NRCS Plant Materials Center (PMC), Aberdeen, ID. It was released in 2008 and is not recommended for pasture use in Montana and Wyoming. Vavilov II was selected for reseeding sandy soils on disturbed rangelands dominated by annual weeds and to withstand vehicular traffic found on military training sites. It has superior seedling establishment and stand persistence compared to 'Vavilov'.

'Vavilov' was selected for seedling vigor from collections originating from the former USSR and Turkey, and 'P-27' by the ARS in Logan, Utah. The ARS and Utah Agricultural Experiment Station released it in 1994. The seedling vigor is similar to 'Hycrest' and 'CD-II' crested wheatgrass and is consistently better than P-27. It is more drought tolerant and better adapted to sandy soils than other crested wheatgrasses. It grows best in areas having 8 inches and above annual precipitation, and elevations below 7,000 feet.

'P27' was released by the Aberdeen and Pullman PMCs, and the Idaho Agricultural Experiment Station from collections originating from Kazakhstan in 1953. It yields less forage and has poorer

seedling vigor in higher rainfall areas than crested wheatgrass, but will yield more than crested wheatgrass varieties in low rainfall areas.

Additional Information

Plant Fact Sheet for Siberian wheatgrass *Agropyron fragile* is available at <http://plants.usda.gov>.

Plant Guide for Siberian wheatgrass *Agropyron fragile* is available at <http://plants.usda.gov>.

For seeding rates and recommended cultivars, see Plant Materials Technical Note MT-46 (Revision 3). Available at: <http://www.mt.nrcs.usda.gov/technical/ecs/plants/technotes>.

For proper seed source selection, see Plant Materials Technical Note MT-67: *Seed Source Selection, Use of Certified Seed, and Appropriate Seed Release Class Improve Conservation Planting Success*. Available at: <http://www.mt.nrcs.usda.gov/technical/ecs/plants/technotes>.

Plant Materials Technical Note MT-69: *Standard and Preferred Forage and Reclamation Plants for Use in Montana and Wyoming*. Available at: <http://www.mt.nrcs.usda.gov/technical/ecs/plants/technotes>.

For the proper cultural practices and grazing guidelines, see either MSU EB-19: *Dryland Pastures in Montana and Wyoming—Species and Cultivars, Seeding Techniques and Grazing Management* or MSU EB-99: *Irrigated Pastures in Montana and Wyoming*. Available at <http://www.plant-materials.nrcs.usda.gov/pubs/mtpmspu1138.pdf>.