

PLANT MATERIALS TECHNICAL NOTE

SANDBERG BLUEGRASS *Poa secunda*

A Native Grass for Conservation Use in Montana and Wyoming

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Figure 1. Sandberg bluegrass seed production field (NRCS photo).

General Description

Sandberg bluegrass, *Poa secunda*, is a native cool-season, perennial bunchgrass with an extensive, deep, fibrous root system making it drought tolerant and resistant to grazing and trampling (Figure 1). It is one of the first grasses to green up in the spring and sets seed and cures by early summer. Plants are seldom more than 24 inches tall, growing as small tufts, with soft basal leaves and few to many flowering stalks that are naked except for two small leaves. The leaves have typical bluegrass characteristics of a prow-shaped tip and double veins down the center of the leaf surface. Sandberg bluegrass has a prominent, membranous, acute ligule. The seedheads are in narrow panicles, which droop slightly at maturity. The seeds are glaucous (hairless) except for short crisp hairs on the lower portion of the lemmas.

Taxonomists have consolidated several bluegrass species into the Sandberg bluegrass complex, *Poa secunda*. The information presented here relates to the true type of Sandberg bluegrass, *Poa secunda* var. *secunda*, formerly classified as *Poa sandbergii*.

Adaptation or Range

Sandberg bluegrass is the most common bluegrass in the Intermountain West. It ranges from Alaska through Canada and south into many environments of the western United States. Sandberg bluegrass grows well on medium texture soils, but is most commonly found in badlands, on ridge-tops, and growing in dry, stony, or sandy soil. It is a pioneer species and is one of the first grasses to colonize disturbed sites.

In Montana, Sandberg bluegrass is found in the prairie, foothills, and open forests at elevations of 1,800 to 7,000 feet. It is present as a minor component in at least 128 Ecological Site Descriptions in Major Land Resource Areas (MLRAs) 43A-A, 44A-A, 44A-B, 46N, 52C, 52N, 53A-E, 58A, 58A-C, and 60B. Sandberg bluegrass is known to inhabit at least 53 of 56 Montana counties.

In Wyoming, Sandberg bluegrass is common to basins and foothills at low to high elevations. It is present as a minor component on sites in MLRAs 32, 34A, 43B, 46, 47, 48A, 58B, 60B, 61, 64, 62, and 67A. Sandberg bluegrass is known to inhabit all 24 counties in Wyoming.

Conservation Uses

Sandberg bluegrass is palatable to livestock early in the growing season, becoming less preferred in the summer as it cures. It may produce enough regrowth for fall grazing if adequate moisture is available. Large ungulates utilize Sandberg bluegrass as forage, and birds and small mammals eat the seeds. Because of its small stature and early maturity, this grass does not provide much usable forage. Although it is usually a minor component of most plant communities, it is considered one of the six most important range grasses of the Intermountain and Pacific Northwest regions. Sandberg bluegrass is useful for filling the early season niche in native mixtures for conservation programs, reclamation of drastically disturbed lands, wildlife habitat plantings, and native plant community restoration. It is also useful as the grass component in pollinator habitat enhancement plantings.

Planting Rates (all recommended amounts based on PLS)

Sandberg bluegrass contains approximately 900,000 seeds per pound. When drill-seeded, it is recommended to plant Sandberg bluegrass with 12 inches between rows at 2.0 pure live seed (PLS) pounds per acre for a pure stand (Table 1), although Sandberg is seldom planted as a solid stand. Seeding rates vary with between-row spacing. A full stand seeding rate is based on 41 seeds per linear or square foot. As a guideline, for estimation purposes, a seeding rate of 1 pound of Sandberg bluegrass seed per acre would result in approximately 20.7 seeds per square foot. The broadcast and critical area seeding rates are double the recommended drill rate, whereas broadcasting seed on critical areas would require 4 times the full stand seeding rate (Table 2).

Table 1. Seeding specifications for conservation plantings of Sandberg bluegrass.

Seeds/lb [†]	Seeding Date	1 PLS lb/A Rate	Full Stand Rate [§]	
		seeds/ft [‡]	PLS/ft ^²	PLS lb/acre
900,000	spring/fall dormant	20.7	41.3	2

[†] number of pure live seeds (PLS) per pound; [‡] number of PLS per linear or square foot at 1 pound PLS/acre; [§] full stand drill seeding rate in PLS pounds per acre at 12-inch between rows.

Table 2. Seeding rates for Sandberg bluegrass as determined by planting method and site condition.

Non-Critical Drilled	Non-Critical Broadcast[¶]	Critical Area Drilled[¶]	Critical Area Broadcast[‡]
<i>PLS lb/acre</i>	<i>PLS lb/acre</i>	<i>PLS lb/acre</i>	<i>PLS lb/acre</i>
2	4	4	8

[¶] multiply the non-critical drill rate times 2; [‡] multiply the non-critical drill rate times 4.

Stand Establishment

Sandberg bluegrass readily establishes by direct seeding. For best results, seed should be planted into a firm, weed-free seedbed as early in the spring as possible. Use the previously described seeding rates for various conservation practices, site conditions, sowing method, and goals. It is commonly used in native seed mixtures at a rate of ¼ to ½ PLS pound per acre. Seed should be drill-planted to ensure uniform seed placement to a depth of ¼ to ½ inch. Broadcast seeding has been favorable when the seeding is harrowed and packed after planting to ensure seed-to-soil contact. In dryland situations, adequate precipitation at the time of germination is critical for survival. Seeding of this species in early spring is favored over a dormant fall seeding. Seedling vigor is modest, and stands may be slow to establish.

Sandberg bluegrass is moderately shade and fire tolerant when dormant. It has good tolerance to grazing and behaves as an “increaser” when sites are repeatedly grazed. Sandberg bluegrass may dominate overgrazed sites in sagebrush (*Artemisia* species) steppe and other prairie communities. Plants are competitive when fully established and will self-seed in open niches of bunchgrass habitats.

In the Shell-Pinedale Evaluation Planting, the performance of High Plains Germplasm on a severe site was “satisfactory” when compared to the other 3 bluegrass entries, with annual precipitation during the establishment year (8 inches in 2006) well below the long-term average (11 inches), and drought conditions prevailing for several years on the sandy test site located at an elevation of 7,200 feet (Figure 2).



Figure 2. Small (brown) plants of High Plains Sandberg bluegrass near Pinedale, Wyoming (NRCS photo).

Seed of Sandberg bluegrass is moderately easy to produce under cultivated conditions, however, seed production is not recommended in areas receiving less than 16 inches of annual precipitation if supplemental irrigation will not be provided. Seed fields of this species should be established at 40 to 50 PLS seeds per linear foot. Control broadleaf weeds using herbicides only in early spring before boot stage and in late summer after harvest. Expect seed production to begin the second growing season and to decline after the fourth growing season. Seed harvest can be as early as the last week in June through mid-July. Seed fields can be direct harvested or swathed, then combining the cured windrows. Under irrigation, seed yield of High Plains Germplasm exceeded 200 PLS pounds per acre at the Bridger Plant Materials Center (BPMC), Bridger, Montana. The average harvest date at the BPMC is June 24. Sandberg bluegrass is strongly self-pollinated.

Limitations

Sandberg bluegrass is considered an “increaser” under heavy grazing conditions. Seed does not disperse far from the parent plant. Sandberg bluegrass, as a component of native plant communities, deters species encroachment, including invasive species, by occupying seasonal niches and through resource competition by its extensive root system.

Releases

High Plains Germplasm was released in 2000, by the USDA-NRCS BPMC, in cooperation with the Montana and Wyoming Agricultural Experiment Stations, as a Selected class germplasm of Sandberg bluegrass (Figure 3). It is a composite of three accessions collected in the early 1980's from native stands in Wyoming's Campbell County (elevation 4,690 feet), Natrona County (elevation 5,216 feet), and Uinta County (elevation 6,300 feet). It was selected for use in native plantings to restore native plant communities and provide wildlife habitat.



Figure 3. High Plains Germplasm Sandberg bluegrass seed production field at the BPMC (NRCS photo).

Reliable Germplasm was released in 2004, by the USDA-ARS and the Agricultural Experiment Station in Logan, Utah, as a selected class germplasm of Sandberg bluegrass. It is a composite of plants originating from 28 locations and is intended for rehabilitation and restoration of western rangelands.

Mountain Home Germplasm was released in 2011, by the USDA-FS, USDI-BLM, University Experiment Stations in Utah and Idaho, and the USAF-Idaho, as a selected class germplasm of Sandberg bluegrass. It can be used to restore extensive areas in the Great Basin and Snake River Plain on sites once dominated by big sagebrush (*Artemisia tridentata*) - bluebunch wheatgrass (*Pseudoroegneria spicata*) communities. It is particularly valuable for seeding semi-arid regions supporting only remnant populations of this species. It has been especially useful in conjunction with other native plants in fire rehabilitation and wildlife habitat plantings to re-establish natural communities in areas presently occupied by exotic annuals.

Additional Information

Seeding Rates and Recommended Cultivars. USDA-NRCS Plant Materials Technical Note Number MT-46 (Revision 4). Current version available at http://www.nrcs.usda.gov/wps/portal/nrcs/detail/mt/plantsanimals/?cid=nrcs144p2_057736

Sandberg Bluegrass Plant Fact Sheet and Plant Guide available at <http://plants.usda.gov>.

Manual of Montana Vascular Plants. 2012. P. Lesica. Brit Press, Fort Worth, Texas.

A Field Guide to Wyoming Grasses. 2010. Q.D. Skinner. Educational Resources Publishing, Cummings, Georgia.

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