

PLANT MATERIALS TECHNICAL NOTE

SANDBERG BLUEGRASS *Poa secunda* ssp. *secunda*

A Native Grass for Conservation Use in Montana and Wyoming

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Sandberg bluegrass growing in sagebrush steppe in Butte County, Idaho.
Photo by Matt Lavin, Montana State University, Bozeman, Montana. Used with permission.

General Description

Sandberg bluegrass is a native cool-season, perennial bunchgrass with an extensive, deep, fibrous root system making it drought tolerant and resistant to grazing and trampling. It is one of the first grasses to green up in the spring, set seed, and cure by early summer. Plants are seldom more than 24 inches tall, growing as small tufts, with softly bunched basal leaves and few- to many-flowering stalks that are naked except for two small leaves. The leaves have the typical bluegrass characteristics of a boat-shaped tip and double veins down the center of the leaf surface. The inflorescences are narrow panicles, which droop slightly at maturity.

Current taxonomy divides *P. secunda* into two groups recognized as subspecies: *P. secunda* ssp. *juncifolia* and *P. secunda* ssp. *secunda*. Subspecies *juncifolia* has two distinct variants: one is more robust and found on deep, rich montane soils (*P. ampla* – big bluegrass and *P. nevadensis* – Nevada bluegrass); the other is found in riparian and wet meadows (*P. juncifolia* – alkali bluegrass). Subspecies *secunda* has several variants: scabrous plants (*P. scabrella* – pine bluegrass); smooth and larger plants (*P. canbyi* – Canby's bluegrass); tiny plants of stony and mossy ground (*P. sandbergii* – Sandberg bluegrass); and slender, sparse plants (*P. gracillima* – slender bluegrass). The information herein relates to *Poa secunda* ssp. *secunda*.

Adaptation or Range

Sandberg bluegrass is adapted to high deserts, mountain grasslands, saline meadows, dry forests, and lower alpine slopes. Its primary range is from the Yukon Territory east to Manitoba, south to the Baja regions of California and Mexico. Sandberg bluegrass grows well on medium texture soils, but is most common on badlands, ridge-tops, and dry, stony or sandy soil. It is found at elevations up to 12,000 feet in annual precipitation zones as low as 6 inches. It is a pioneer species and is one of the first grasses to colonize disturbed sites. Sandberg bluegrass is moderately shade tolerant. When dormant, it is tolerant of fire.

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 sites 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.

High Plains Sandberg bluegrass has been field tested at one location in Wyoming. In the Shell-Pinedale evaluation planting, the performance of High Plains Germplasm was “satisfactory” when compared to three other bluegrass entries. Average annual precipitation at the site is 10 inches, although it was only 2 inches the year of establishment and drought conditions prevailed for several years. Soils at the test site are sandy site and the elevation is 7,200 feet.

High Plains Sandberg bluegrass was field-tested at three locations in Idaho. It consistently performed better on sites with low precipitation sites than Mountain Home and Reliable germplasms.



Small (brown) plants of High Plains Sandberg bluegrass near Pinedale, Wyoming

Conservation Uses

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.

Sandberg bluegrass is palatable to livestock early in the growing season, becoming less preferred in the summer when cured. It may produce enough re-growth 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, however, this grass does not provide much usable forage. It has good tolerance to grazing and increases when sites are repeatedly grazed. Sandberg bluegrass may dominate overgrazed sites in sagebrush steppe and other prairie communities.

Ease of Establishment

Sandberg bluegrass readily establishes by direct seeding. Seedling vigor is moderately weak and stands can be slow to establish.

Planting Rates (all recommended amounts based on Pure-Live-Seed, PLS)

Sandberg bluegrass has approximately 900,000 seeds per pound. As a guideline, at a seeding rate of 1 pound per acre, this equates to approximately 21 seeds per square foot. A full drill-seeding rate, based on 30 to 50 seeds per linear or square foot is 1.5 to 2.4 pounds PLS per acre.

Stand Establishment

For best results, plant into a firm, weed-free seedbed. Early spring seeding is recommended over a dormant fall seeding. Drill-plant to ensure uniform seed placement to a depth of ¼- to ½-inch. The broadcast and critical area seeding rates are double the recommended drill rate, whereas broadcast seeding on critical areas may be as much as four times the full stand seeding rate, depending on site conditions. Broadcast seeding is favorable for the small seed when harrowed and packed to assure seed-to-soil contact. Plants are competitive when fully established and will self-seed in open niches of bunchgrass habitats.

Seed production of Sandberg bluegrass is moderately easy under cultivated, irrigated conditions. Supplemental irrigation is recommended in areas receiving less than 16 inches of annual precipitation. Seed fields should be established at 25 to 50 PLS seeds per linear foot. When planted in rows 2 feet apart, the recommended seeding rate is 0.7 to 1.2 PLS pounds per acre. When planted in rows 3 feet apart, the recommended seeding rate is 0.5 to 0.8 PLS pounds per acre. Control broadleaf weeds using herbicides only in early spring before boot and in late summer after harvest. Expect a seed crop the second and third summer, with a decline in production in subsequent years. Seed harvest can be as early as the last week in June through mid-July. Seed fields can be direct harvested or swathed and combined out of the cured windrows. Under irrigation, seed yield of High Plains Germplasm exceeded 200 PLS pounds per acre at the Bridger Plant Materials Center (BPMC) in Bridger, Montana. The average harvest date at the BPMC is June 24. Sandberg bluegrass is strongly self-pollinated.

Limitations

The small stature of Sandberg bluegrass provides limited cover for wildlife. Because of its small seed size, establishment is limited if the seed is buried too deeply during planting. Sandberg bluegrass establishment is more prone to failure under drought conditions than larger seeded species.

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 *Poa secunda* ssp. *secunda*. 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 seedings to restore native plant communities and provide wildlife habitat.



High Plains Germplasm Sandberg bluegrass seed production field at the Bridger Plant Materials Center

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

Mountain Home 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 *Poa secunda*. 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

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

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

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

Seeding Rates and Recommended Cultivars. USDA-NRCS Plant Materials Technical Note Number, MT-46. Currently version available at http://www.nrcs.usda.gov/wps/portal/nrcs/detail/mt/plantsanimals/?cid=nracs144p2_057725