

Opportunity Germplasm Selected Class Nevada Bluegrass

Scientific Name

Poa secunda J. Presl

Alternate Common Name

Nevada bluegrass

Origin

The original Opportunity Germplasm Nevada bluegrass (accession number 9081633) seed collection was made in 1998 near Wisdom Junction, east of Anaconda, Montana. The collection site was severely contaminated with heavy metals deposited by smelter fallout, surface wind and water transport, and historic overflow from a waste canal. Surface pH of the soil was acidic at 4.3.

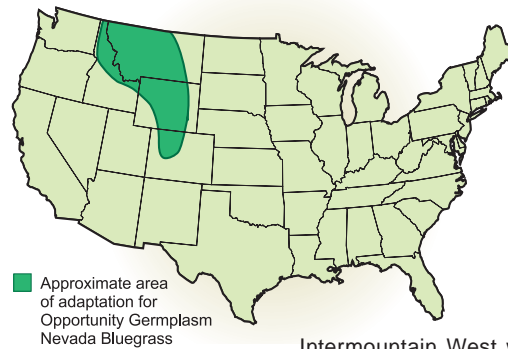
Description

Nevada bluegrass is a long-lived perennial bunchgrass. It is a medium- to tall-stature, cool-season grass with numerous basal and cauline leaves reaching 6 to 12 inches in length. Nevada bluegrass leaves are smooth, deep blue-green, and folded with keel-shaped tips typical of other bluegrass species. The inflorescence is a narrow panicle up to 8 inches long.

Opportunity Germplasm Nevada bluegrass has the same general botanical (floral, foliage, fruit, and seed) attributes as the bluegrasses lumped into the *Poa secunda* classification but has the phenological attributes of the late-maturing types (*P. nevadensis*, *P. ampla*, and *P. juncifolia*) rather than the early-maturing types (*P. sandbergii* and *P. canbyi*). Donor plants of this selection reached 24 to 48 inches in height by early July. Opportunity Germplasm Nevada bluegrass reached a mean plant height of 24.5 inches on a pH-adjusted test site in a 14-inch precipitation zone 4 years after planting.

Plant Distribution and Adaptation

Although Nevada bluegrass naturally occurs in states indicated on the adjacent map, Opportunity Germplasm Nevada bluegrass is best adapted to elevations of 2,000 to 6,000 feet, performing more favorably on lower-elevation (valley and mountain foothill) sites. The selection should prove well adapted for use on drastically disturbed acidic and heavy-metal



Approximate area of adaptation for Opportunity Germplasm Nevada Bluegrass

Intermountain West with similar environments and climates.

Nevada Bluegrass' Role in Mine Land Reclamation

Opportunity Germplasm Nevada bluegrass establishes easily and rapidly on sites characterized by low soil pH and moderate to high levels of heavy metals (relative to phytotoxicity levels) when these sites are properly amended. Evaluations of the accession have been conducted near Anaconda, Montana, where high levels of arsenic, cadmium, copper, lead, and zinc were present. It is best used as an inner-space species in native seed mixtures with other appropriate grasses, forbs, and shrubs.

Plant Selection Process

Opportunity Germplasm Nevada bluegrass was released as a 'Natural-Track' germplasm; i.e., it is increased without purposeful manipulation. This selection was compared to four other *Poa secunda* seed accessions, including two collections from acid/heavy-metal impacted sites. All five collections were field-tested near Anaconda, Montana, for 4 years in replicated studies at an upland site that was tilled, amended with lime, and fertilized. The official release of Selected Class Opportunity Germplasm Nevada bluegrass was in December 2007.

Selection Attributes

Opportunity Germplasm Nevada bluegrass exhibits superior seedling emergence, percent cover, stand persistence, vigor rating, mean plant height, biomass production, and seedling and stand survival on fertilized and lime-amended, acid/heavy-metal impacted sites under the ambient climatic conditions of the Upper Clark Fork Watershed (Deer Lodge County, Montana).

impacted areas of low- to mid-mountain elevations in the northern Rocky Mountain and northern Intermountain West regions, given soil amendment and other favorable climatic conditions. As a seed source found growing naturally in the northern Rocky Mountains, it is assumed the selection will perform well in other mountainous regions of the

Application and Use

In addition to mine land reclamation, Nevada bluegrass can be used for the reseeding of burned range and forestlands because of its ability to produce roots that suppress weed establishment and growth. Because of its early-season growth, Nevada bluegrass provides excellent spring grazing for wildlife and livestock, as well as providing cover and nesting habitat for upland game birds. Opportunity Germplasm Nevada bluegrass can also be used in other conservation applications, such as native range restoration, wildlife habitat enhancement practices, and logging road revegetation.

Establishment for Seed Production

Opportunity Germplasm Nevada bluegrass seed production at the Bridger Plant Materials Center (PMC) consists of 36-inch between-row spacing, clean cultivation, furrow irrigation, and fertilization using conventional seed production methods and equipment. Average seed production of Opportunity Germplasm at the Bridger PMC is approximately 240 pounds of clean seed per acre. A seed crop is not produced until the second growing season, and the stand will stay productive for 3 to 5 years. Opportunity Germplasm Nevada bluegrass averages 1,029,000 seeds per pound. With standard harvesting and cleaning practices, up to 25% of the seed may have naked but viable embryos. Maximum production per unit area of land can be realized by maintaining seed production fields in 20- to 24-inch between-row spacing [0.5 pounds pure-live-seed (PLS)/acre rate], clean cultivation, and supplemental irrigation and fertilization. Average date of harvest of Opportunity Germplasm Nevada bluegrass at the Bridger PMC ranges from June 25 to July 5. Seed production fields are swathed when the seed is in the firm-dough stage (approximately 22 percent seed moisture), allowed to cure in the windrow, and then combined.

Establishment for Conservation Use

Nevada bluegrass establishes well when drilled at a rate of 50 PLS per square foot (approximately 25 seeds per linear foot of row in 6- to 7-inch row spacing). This is equivalent to 2 pounds per acre when drill seeded. Ideal planting depth ranges from 1/8 to 3/8 inches. Surface broadcast at a rate of 4 pounds PLS per acre for a solid stand. For seed mixtures, percentages of these rates are recommended. Light roller-packing using a cultipacker or roller-harrow with the tines up after planting improves seed-to-soil contact and subsequent

germination with both methods of planting. Planting in late winter to early spring in areas characterized by light, frequent spring showers is ideal. It may be possible to sow Opportunity Nevada bluegrass seed in late summer in areas where supplemental irrigation is available or late-growing-season showers are likely. Dormant fall seeding, after about October 15 at the Bridger PMC can be conducted in lieu of spring planting. Adequate stand establishment must occur prior to winter. Light mulching with certified weed-free straw or the use of agronomy cloth, when practical, improves germination and stand establishment on exposed sites. Severely acidic sites should be amended with lime and deep tilled prior to planting. Soils characterized by high surface concentrations of heavy metals should be plowed or deep tilled prior to planting.

Obtaining Plant Materials

G₁ seed stock (equivalent to Foundation) will be available for additional research through the Plant Materials Center, Bridger, Montana. Seed of Opportunity Germplasm Nevada bluegrass for commercial seed production is available by contacting one of the following sources:

Foundation Seed (for commercial seed production)

Plant Materials Specialist
USDA NRCS
Federal Building
10 East Babcock Street, Room 443
Bozeman, Montana 59715-4704

USDA NRCS Plant Materials Center
98 South River Road
Bridger, Montana 59014
Phone: 406-662-3579
Fax: 406-662-3428

Foundation Seed Stocks Program
Department of Plant Sciences and Plant Pathology
Montana State University
Bozeman, Montana 59717-3150
Phone: 406-994-5687
Fax: 406-994-7600
Website: <http://plantsciences.montana.edu/FoundationSeed/default.htm>

Wyoming Seed Certification Service
Powell Research & Extension Center
University of Wyoming
P.O. Box 983
Powell, Wyoming 82435-9135
Phone: 307-754-9815

Commercial Certified Seed (for reclamation and revegetation projects)

A list of commercial seed producers can be obtained by contacting:

Montana Seed Growers Association
Montana State University
P.O. Box 173146
Bozeman, Montana 59717-3146
Phone: 406-994-3516

Wyoming Seed Certification Service
Powell Research & Extension Center
University of Wyoming
P.O. Box 983
Powell, Wyoming 82435-9135
Phone: 307-754-9815

Commercial production of two generations (G₂ and G₃) beyond G₁ are allowed.

Technical Information Available

For additional information on this release or other Bridger Plant Materials Center products, see the contact information below or visit our Web sites.
<http://www.mt.nrcs.usda.gov/technical/ecsc/plants/>
<http://www.plant-materials.nrcs.usda.gov/mtpmc/>

Contact Information

USDA NRCS Plant Materials Center
98 South River Road
Bridger, Montana 59014
Phone: 406-662-3579
Fax: 406-662-3428

Authors*:
Elizabeth C. Graham, Project Leader, Deer Lodge Valley Conservation District, Deer Lodge, Montana (stationed at the USDA NRCS Plant Materials Center, Bridger, Montana); Joseph Scianna, Research Horticulturist, USDA NRCS Plant Materials Center, Bridger, Montana.

* References for this brochure available upon request

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Natural Resources Conservation Service
Bridger Plant Materials Center

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A Conservation Plant
for Montana and Wyoming



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*Helping People
Help the Land*



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with Deer Lodge Valley
Conservation District