

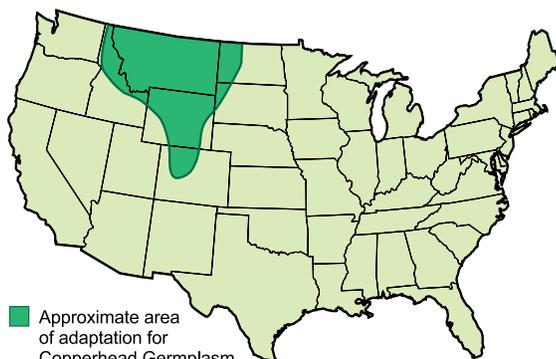
Copperhead Germplasm Selected Class Slender Wheatgrass

Scientific Name

Elymus trachycaulus (Link) Gould
ex Shinners

Common Name

Slender wheatgrass



■ Approximate area
of adaptation for
Copperhead Germplasm
Slender Wheatgrass

Description

Copperhead (original accession number 9081620) is a selected class pre-varietal germplasm release of slender wheatgrass. Slender wheatgrass is a short-lived perennial bunchgrass that often acts as a pioneer species on disturbed sites. The individual plants of this germplasm are 60 to 100 cm tall, reaching mature heights by early July. Slender wheatgrass has mostly cauline leaves and does not develop dense basal foliage. Leaves are flat with prominent nerves and clasping auricles. At maturity, the stems may turn reddish purple at the base of the plant, just below the inflorescence. Copperhead germplasm produces a narrow spikeate inflorescence, with the 5 to 7 flowered spikelets that are strongly imbricate (overlapping like shingles). Slender wheatgrass has short anthers making it strongly self-pollinated. Seeds of this slender wheatgrass are awnless or awn-tipped (2 to 3 mm).

Plant Distribution

One generation (G2 equivalent to Certified) beyond G1 (equivalent to Foundation) is recognized. G1 seed of Copperhead germplasm slender wheatgrass is available from the USDA-Natural Resources Conservation Service (NRCS) Plant Materials Center (PMC) in Bridger, Montana, through the Foundation Seed Program at Montana State University-Bozeman or the University of Wyoming.

Plant Selection Process

Copperhead germplasm slender wheatgrass is being released as a "natural-track" germplasm and increased with no purposeful manipulation. The accession was compared to two other collections from acid/heavy-metal impacted sites (9081621—Stucky Ridge north of Anaconda and 9078455—Lulu Pass near Cooke City, Montana) and four released cultivars: 'Pryor' (Montana), 'San Luis' (Colorado), 'Revenue' (Canada), and 'Highlander' (Canada). Copperhead germplasm has been field tested at three impacted sites (two deep plowed, one deep plowed and amended)

in the Anaconda area and in a controlled greenhouse environment utilizing contaminated soil.

Selection Attributes

Copperhead germplasm has exhibited superior emergence, survival, and biomass production on amended acid/heavy metal impacted soil under the ambient climatic condition of the Upper Clark Fork Watershed (Deer Lodge County, Montana).

Origin

Copperhead germplasm is from a collection of at least 20 plants originating from approximately one-half mile north of Highway 1 across from the junction to Wisdom. The collection site was severely impacted by smelter fallout, surface wind, and water transported contaminants, as well as historic overflow from the canal transporting waste material to the Opportunity Sediment Ponds. The original collection site, with a soil surface pH of 4.3, an average annual precipitation of 13.93 inches and an elevation of 5,000 feet, has since been reshaped and replanted.

Adaptation

Copperhead germplasm originated in the Upper Clark Fork River basin of western Montana where it was growing on soil impacted by acid/heavy-metal contamination, resulting from historic copper smelter emissions. The area is currently impacted by both wind and surface water erosion. The testing of the accession has been limited to the immediate area of its origin and at the Bridger Plant Materials Center in south-central Montana. Copperhead germplasm is adapted for use on drastically disturbed acidic/heavy-metal-impacted areas in mountain valleys and low to mid-mountain elevations in the northern Rocky Mountain region.

Application and Uses

Copperhead slender wheatgrass is a short-lived perennial bunchgrass. It is a prolific seed producer, but will not become weedy. The species is strongly self-pollinated and does not readily cross-pollinate with other slender wheatgrasses, nor hybridize with closely related wheatgrasses. However, slender wheatgrass will hybridize with foxtail barley (*Hordeum jubatum*), resulting in Macoun's barley (*Elyhordeum macounii*). It is very important that native reclamation species adapted to the Upper Clark Fork Watershed be made commercially available for use on areas impacted by mining

and smelting in the northern Rocky Mountain region. Slender wheatgrass is also a good forage crop, making high quality hay and grazing if utilized in early growth stages. Slender wheatgrass is recommended for erosion and reclamation use because of its good seedling vigor and rapid establishment qualities providing quick plant cover in native species seed mixtures.

Establishment for Field Production

Slender wheatgrass production fields are easy to establish with a conventional drill. Medium textured, well drained soils are preferred, but it can handle heavier soils. Spring planting is preferred with a Pure Live Seed (PLS) rating of 6 pounds PLS per acre for pure stands planted at one-fourth to three-fourths inches deep. Average seeds per pound of commercially produced seed is 145,000, while wildland collected seed has been found to be somewhat lighter with 175,000 seeds per pound. Average date of harvest at the Bridger PMC has been July 14. Copperhead germplasm, like other releases of slender wheatgrass, is susceptible to seed shatter, making this species moderately difficult to harvest or to get consistently high yields.

Establishment for Conservation Use

Copperhead germplasm is intended for use on severely impacted sites with low pH and high concentration of heavy metals. At high elevations, Highlander may be better adapted, and in the short-grass prairie region, Pryor would be the preferred accession. Copperhead germplasm, as with any slender wheatgrass, is best used in native reclamation mixtures for its quick establishment and site stabilization.

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Natural Resources Conservation Service
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A Conservation Plant
for Montana and Wyoming



Produced in cooperation
with Deer Lodge Valley
Conservation District