

# 'Rosana'

## Western Wheatgrass

*Pascopyrum smithii* (Rydb.) A Löve

'Rosana' western wheatgrass [*Pascopyrum smithii* (Rydb.) A. Löve] is a cultivar released in 1972 by the Bridger Plant Materials Center (MTPMC) in cooperation with the Montana Agricultural Experiment Station.



Figure 1. 'Rosana' western wheatgrass plant.

### Description

Rosana western wheatgrass is a native, sod-forming grass found on a wide range of soil types in plant communities associated with blue grama, bluebunch and thickspike wheatgrass, Idaho fescue, and several needlegrasses (Fig. 1). It is strongly rhizomatous with slender, creeping underground rootstocks and a dense, shallow, fibrous root system to a depth of 8 inches with deep-feeding roots that penetrate to 5 feet. It produces an abundance of moderately-fine, blue-green leaves that are typically 4- to 10-inches long. Leaf blades are usually stiff and taper to a sharp point. The upper leaf surface is rough and distinctly ridged with a smooth underside. It has large, clasping auricles that are commonly purple in color. Mature plants grow 1 to 1½ feet tall. The narrow inflorescence is a spike 8 to 12 inches long with 70% having two florets per node in the lower portion of the spike. The lemmas are awn-tipped and smooth. Glumes are 3 mm long or longer, with roughly 20% being awn-tipped. Approximately 18% of the spikelets are pubescent. Western wheatgrass is often found growing with thickspike wheatgrass which has greener-colored leaves, a hairy lemma, and blunt-shaped glumes.

### Source

Rosana was originally collected in 1959 along the Porcupine Creek drainage northwest of Forsyth, in Rosebud County, Montana. The seed was collected from native meadows on silty-clay to clay-loam soils.

### Conservation Uses

Rosana is a highly popular reclamation species in the Northern Great Plains Region because of its ease of establishment and excellent seedling vigor. It is an excellent component in seed mixtures to stabilize, revegetate and reduce erosion on disturbed sites, such as depleted rangeland, mined land, roadsides, recreation areas, and construction sites. Rosana forms a durable sod under dryland conditions and is well suited as turf in low maintenance landscapes and naturalized areas. However, the leaf blades are tough and do not cut clean, resulting in a frayed, ragged cut edge. It initiates growth a little later than other cool-season grasses and achieves 50% of its annual yield by the end of June. It makes excellent late-season forage. The palatability rating for cattle and horses is 80% and for sheep and goats is 50%. It is palatable as forage for elk. Western wheatgrass produces palatable and nutritious hay, although it is more commonly used as forage. It has an early May protein level of about 20%, decreasing to 4% in October. The digestible carbohydrates remain at approximately 45% throughout the growing season. Rosana can withstand short-duration heavy grazing and considerable trampling.

### Area of Adaptation and Use

Rosana is adapted to a wide variety of sites in the Northern Rocky Mountains. It thrives on medium- to fine-textured soils having moderate or higher levels of soil moisture and is tolerant of coarse-textured soils. Rosana prefers slightly acidic to moderately alkaline soils and performs well on soils with a USDA salinity classification of *slightly saline* and tolerates but has reduced performance on *moderately saline* soils. It is well adapted to a mean annual precipitation of 12 to 20 inches while performing best in 10- to 14-inch zones. It is commonly found in areas with seasonal overflow, in swales or under irrigation; and can withstand considerable inundation and flooding. Rosana is adapted to moderately rolling topography in elevations ranging from 1,000 to 9,000 feet.

### Establishment and Management for Conservation Plantings

Successful stands of Rosana are easily attained when accepted cultural practices are used for establishment. Late-fall and early-spring seedings are equally satisfactory, and no fertilizers are necessary to establish stands. Proper seedbed preparation on critical areas, including weed control, harrowing, packing, drilling the seed with depth-control bands, and mulching, improves

stand establishment. Recommended full stand seeding rate is 10 pounds of pure-live-seeds per acre. Broadcast seeding is not recommended, except on freshly disturbed sites, such as following wildfires or on reconstructed road slopes. The seeding rate on critical areas is doubled. It is best seeded as a cover component in mixtures to a maximum of 50% on fine- to medium-textured soils. Once established for erosion control, usually no mowing is needed because of the natural low growth habit of the plant. Grazing should be prohibited for a minimum of two years following establishment on critical areas to assure maximum vegetative cover and soil stabilization. In established pastures, annual applications of 50 to 70 lb./acre of actual N are recommended under good moisture conditions.

### Ecological Considerations

Rosana western wheatgrass is drought tolerant and exhibits excellent seedling vigor and ease of establishment. It has good forage and seed production with high percentage seed germination. Rosana has a fast rate of spread and the strong rhizomes produce an open sod that is resistant to trampling and vehicular traffic.

### Seed and Plant Production

Rosana produces high-yielding seed crops for three years before sodbinding occurs. Newly established seed production fields do not produce seed until the second growing season. A fourth-year crop typically produces an average yield and then the field should be removed from production. Renovation gapping, walking rows, or spiking will open the stand to weed infestation. Seed production fields are easily established using a conventional double-disk drill with a planting depth of ¼ to ½ inch. With 93,000 seeds per pound, the recommended seeding rate under irrigation is 6 pounds pure-live-seed per acre at 24-inch row spacing. Western wheatgrass can be planted in early spring, late summer (by August) with supplemental irrigation, or as a dormant fall seeding just prior to freeze-up. Rows are cultivated during the establishment year, but once rhizome development starts, the planting is allowed to grow solid. Application of phosphorus fertilizer the year of establishment has been shown to improve seed production when soil tests indicate sub-optimum phosphorus for crop production. Nitrogen fertilizer applications should begin the fall of the second growing season to nourish development of seedhead primordia using approximately 60 to 80 pounds of actual N per irrigated acre. Seeds normally mature in early to mid-August; are swathed, then cured windrows combined (Fig. 2). Seed yields at the MTPMC average 300 to 400 lb./A under irrigation (36-inch row spacing). Commercial growers have reported seed yields in excess of 1,000 lb./A.



Figure 2. Rosana harvested at Bridger Plant Materials Center.

### Availability

*For conservation use:* Certified seed of Rosana western wheatgrass is available through the commercial seed industry for conservation applications. To find a seed vendor, visit the Montana Seed Growers Association website <<https://mtseedgrowers.org/all-crop-directories/>> or by using the pdf: Technical Note PM-33 <[https://www.nrcs.usda.gov/Internet/FSE\\_PLANTMATERIALS/publications/idpmstn10795.pdf](https://www.nrcs.usda.gov/Internet/FSE_PLANTMATERIALS/publications/idpmstn10795.pdf)>.

*For seed or plant increase:* The increase of Rosana is limited to two generations (registered and certified) beyond the foundation class. Foundation seed is available from the USDA-Natural Resources Conservation Service (NRCS) Plant Materials Center (PMC) in Bridger, Montana; the Foundation Seed Program at Montana State University-Bozeman; or the University of Wyoming Foundation Seed Service in Powell, Wyoming.

*For more information, contact:*

Bridger Plant Materials Center, 98 South River Road, Bridger, MT 59014

Phone: 406-662-3579 Fax: 855-510-7028

Website: <https://www.nrcs.usda.gov/wps/portal/nrcs/main/plantmaterials/pmc/west/mtpmc/#>

### Citation

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