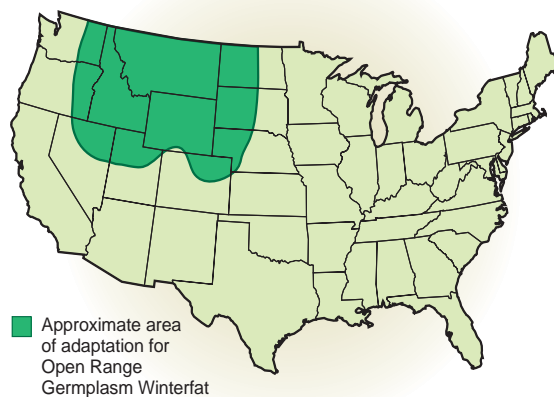


Open Range Tested Class Germplasm Winterfat

Open Range is a tested class germplasm release of winterfat (*Krascheninnikovia lanata* [Pursh] Guldenstaedt). It is a composite of three accessions collected in 1985 from native stands in Montana and Wyoming: Custer County, Montana, Carbon County, Montana, and Carbon County, Wyoming. Thirty-two different accessions of winterfat were evaluated at a coal mine near Rock Springs, Wyoming, a bentonite mine near Greybull, Wyoming, and at the Bridger, Montana, Plant Materials Center. These three accessions were selected because of their seedling vigor, forage production, seed production, and uniformity of phenology.



Description

Winterfat is a half-shrub measuring 1 to 2.5 ft (30 to 75 cm) tall. From a woody base, the plant produces numerous erect, annual branches. The stems and leaves are covered with soft, wooly hairs that give the plants a whitish to gray-green appearance. The sessile to short-petioled leaves have enrolled edges and persist through the winter season. The plants are monoecious. The flowers are arranged in dense clusters in the leaf axils on the upper portions of the stems. The white wooly fruit is enclosed in two, densely hairy bracts. The seed embryo consists of the horseshoe-shaped cotyledons and radical encased in a thin seed coating. The seed with the fluffy bracts still intact has 48,000 seeds/lb (106,000 seeds/kg), while seed processed down to a naked utricule has 160,000 seeds/lb (352,000 seeds/kg). Because of its deep taproot and numerous lateral roots, winterfat has good drought tolerance.

Adaptation

The Open Range germplasm has been tested in Montana, North Dakota, South Dakota, Wyoming, Idaho, Utah, Nevada, and Washington. Commercially produced seed and plants can be used in the northern Great Plains, northern Intermountain basin, and the Snake River plains of southern Idaho. Winterfat can be found on a wide variety of soil types: sandy to clayey, saline uplands, panspots, and most often shallow and stoney sites. It is found in association with salt-bush, greasewood, sagebrush, rabbitbrush, western wheatgrass, bluebunch wheatgrass, and blue grama.

Uses

Winterfat is vigorously grazed by all classes of livestock, especially sheep, and is an important food source for elk, deer, and antelope. The persistent leaves and late season crude protein content make this plant an exceptional winter browse species. When utilized as winter forage,

winterfat provides crude protein levels of 7 to 11 percent and is relatively high in calcium, phosphorus, and potassium. Open Range can be established in seed mixtures for mined land reclamation, range renovation, and wildlife habitat restoration. It can also be used for shrub enhancement in mixtures for government conservation programs. Winterfat can be direct seeded in mixtures with native grasses and forbs. Winterfat is one of the few arid land shrubs that can be commercially produced using standard seed production techniques.

Establishment

Seed should be planted into a firm, weed-free seedbed, preferably with a drill that will ensure a uniform seed placement depth of 1/4 to 1/2 inches (6 to 12 mm). Winterfat can be included in a mix with grasses and forbs, but alternate row planting and cross-seeding have produced excellent stands. Spring seeding produces the best results—April or early May when seeded with cool season grasses and throughout May if seeded with warm season grasses. Winterfat seed consists of two dried cotyledons encased in a thin seed coat, which makes for a short shelf life of the seed. Use only 1- or 2-year-old seed. Most winterfat seed is sold with the hairy bracts still intact, often necessitating the use of some kind of carrier to get the seed to flow through a drill. Special drills with picker fingers, in-box agitators, and large drop tubes make planting winterfat somewhat easier. Seed that is processed down to a naked utricule can be easily metered through any drill.

Seed Production

Seed production fields should be established in rows, with between-row spacing of 24-36 inches (60-90 cm) allowing for between-row cultivation. Seeding is done at a rate of 10-15 pure live seed (PLS) per linear foot (32-50 seeds per linear meter) of row. If seeded in early spring some seed production can be expected the first year. At the Bridger PMC the mature stand is swathed and combined out of the cured wind-

row. Seed is ready to harvest when the seeds start to mature, changing from gray-green to light brown. The average date of harvest at the Bridger PMC has been October 22. First-year production will be only 30-50 lbs/acre (34-56 kg/ha). Overall seed production has ranged from 30 to 260 lbs/acre (35-290 kg/ha). The light fluffy seed requires low wind settings and wide-open sieves. The combine-run product consists of approximately 50 percent seed by volume and 35 percent by weight. The clean-out material is primarily crushed leaves and small, immature fruit. There are no chemicals labeled for broadleaf weed control; however, chemicals used for weed control under fruit trees and shrubs may be used once the stand is at least 1 year old.



Availability

The USDA-NRCS Plant Materials Center, Bridger, Montana released Open Range as a tested class germplasm release. G_1 seed (equivalent to foundation seed) is produced at the Bridger PMC and made available to commercial growers through the Foundation Seed Stock program at Montana State University-Bozeman and the University of Wyoming Foundation Seed Program at Powell, Wyoming. Two generations (G_2 equivalent to registered and G_3 equivalent to certified) beyond foundation (G_1) are recognized.

Authors:

Mark Majerus and Larry Holzworth

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**A
Conservation
Plant
for Montana
and Wyoming**

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