

PLANT MATERIALS TECHNICAL NOTE

PUBESCENT WHEATGRASS *Thinopyrum intermedium* spp *barbulatum*: An Introduced Conservation Grass for Use in Montana and Wyoming

Roger M. Hybner, Research Agronomist, NRCS, Plant Materials Center, Bridger, Montana



Figure 1. Pubescent wheatgrass pasture.

General Description

Pubescent wheatgrass (*Thinopyrum intermedium* spp. *barbulatum*), is similar to intermediate wheatgrass (*Thinopyrum intermedium* L.) in most respects, but is distinguishable by the pubescence, or presence of short, stiff hairs, on the seedheads and seeds (see Figures 2 and 3). Plant attributes generally vary from one species to another. Seeds of pubescent wheatgrass and intermediate wheatgrass are frequently found as a mixture and the two species readily cross-pollinate.

Pubescent wheatgrass is more drought tolerant and winter hardy than intermediate wheatgrass. It also spreads more by rhizomes. Pubescent has the ability to remain green during the summer months if provided adequate moisture, making it useful as both a hay and pasture crop.

Adaptation or Range

Pubescent wheatgrass performs best on loamy to sandy soils and is adapted to a wide range of conditions with respect to precipitation, temperature, and elevation. It is better adapted than

intermediate wheatgrass to low-fertility soils and low-rainfall areas and has some tolerance to saline soils (i.e., less than 12 millimhos per centimeter).

Depending on the cultivar, pubescent wheatgrass grows well in areas having at least 12 inches of annual precipitation. It grows well under irrigation, but yields are not equal to intermediate wheatgrass under these conditions. It performs best between 3,500 and 9,000 feet elevation. Pubescent can be seeded at lower elevations, but moisture requirements are greater. Dryland yields of forage depend upon total annual precipitation and the distribution of rainfall in April and May.

Limitations

Under irrigated conditions, pubescent wheatgrass may be unproductive in a few years due to the competitive root system, making the plants sod-bound. Forage production can be restored and stands may benefit from ripping with spikes to a depth of 4 to 6 inches, once every three years, if sod-bound conditions occur. Care should be taken to avoid more frequent tillage or tillage deeper than 6 inches, because stands may be damaged.

Pubescent is not as drought resistant as crested wheatgrass (*Agropyron cristatum*) and during drought conditions, stands may die out. It has a low tolerance of wet conditions and does not persist in areas with poor drainage.

Ease of Establishment

Pubescent wheatgrass should be seeded with a drill at a depth of ½-inch or less on medium- to fine-textured soils and no more than 1 inch deep on coarse-textured soils. When seeded alone, a rate of 10 pounds pure live seed (PLS) per acre or 21 to 25 PLS seeds per square foot is recommended. If used as a component of a mix, adjust to the percentage of mix desired. The best dryland results are obtained from planting in very early spring on heavy- to medium-textured soils and in late fall (dormant) on medium- to light-textured soils. Plantings under irrigation should occur in spring through early summer. Late summer (mid-August) plantings are not recommended unless irrigation is available and there is a need to control warm-season grassy weeds prior to planting.

For mined lands, roadsides, and other harsh critical areas, the normal seeding rate should be doubled to 20 pounds PLS per acre or 42 to 50 PLS seeds per square foot. Light, frequent irrigations for several weeks work the best for stand establishment.

Protect new seedlings until they are fully established and are able to withstand pulling by grazing animals without being uprooted. It is desirable to cut at least one hay crop prior to grazing as this will promote additional root growth. Stands may require weed control measures during the year of establishment and several cultural practices may be used. Application of a herbicide, such as 2,4-D, should not be made until plants have reached the 4 to 6 leaf stage. Another weed control method is to mow at or just prior to the bloom stage of the weeds.

Conservation Uses

Erosion control/reclamation: Due to its spread by rhizomes, pubescent wheatgrass is well adapted to stabilization of disturbed soils. It can be used in critical and urban areas where irrigation water is limited and to stabilize ditch banks, dikes, and roadsides.

Wildlife: Un-grazed strips of this grass provide good nesting cover for game birds and migratory waterfowl. These strips may also be left when swathing pubescent wheatgrass for hay.

Hay Production: Pubescent wheatgrass produces good yields of high-quality hay. It is higher than crested wheatgrass in total digestible nutrients, lower in lignin content, and about equal in protein content. It stays green longer and matures later than crested wheatgrass.

For maximum forage production, pubescent wheatgrass should be planted in a mixture with a legume to obtain higher yield. It has enough seedling vigor to either be planted in the same row with the legume or in alternate rows (i.e., grass, alfalfa, grass, alfalfa). Row spacing is recommended at 12 to 18 inches under irrigation and 18 to 24 inches under dryland conditions. When planted with a legume, harvest hay at the optimum stage for the legume (i.e., no more than 10% bloom). This will allow the grass to be harvested prior to flowering and result in very high quality hay.



Figure 2. Pubescent wheatgrass seed.

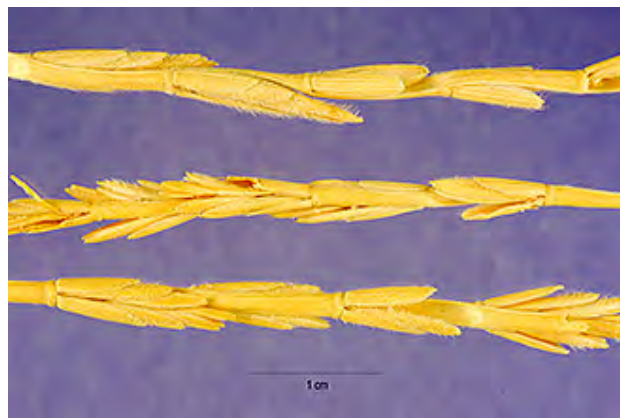


Figure 3. Pubescent wheatgrass seedheads.

Dryland and Irrigated Pasture: Pubescent wheatgrass provides a nutritional pasture and is very palatable to all classes of livestock and wildlife. New growth should reach 8 inches in the spring before grazing is allowed on established stands. Because of its early spring growth, pubescent wheatgrass can be grazed one to two weeks earlier than most other grasses, except crested wheatgrass and Russian wildrye (*Psathyrostachys juncea*). If grazed as early as crested or wildrye, pubescent stands are likely to die out. Care should be taken to allow proper rest of 21 to 28 days between grazing periods in irrigated and high moisture situations. It generally does not provide grazing during late June to early July. Pubescent provides 25% less grazing time than other grasses when stocked at the same animal units per acre. Yearling steers grazing irrigated pubescent wheatgrass make excellent gains. These gains are greater than those on orchardgrass (*Dactylis glomerata*), reed canarygrass (*Phalaris arundinacea*), or creeping red fescue (*Festuca rubra*). In addition, after a hay crop has been harvested in the early summer in Montana and Wyoming, pubescent wheatgrass greens up after early-fall rains and can make excellent pasture for weaned calves. A 4-inch stubble height should be maintained following grazing or mowing to allow the plant to replenish its root reserves going into the winter season.

Seed production: Seed production of pubescent wheatgrass is generally not difficult. If fields are maintained in rows by cultivation and adequate fertility levels are maintained, seed can be produced for seven to 10 years. Row spacings of 36 inches under dryland conditions (areas with a minimum of 14 inches annual precipitation) and 24 to 36 inches under irrigation are recommended.

Average production of 250 to 350 pounds per acre can be expected under dryland conditions and 450 to 550 pounds per acre under irrigation. Seed yields drop significantly after about four years of production. Spike cultivation after the fourth year of seed production can increase yields in subsequent years. Harvesting is best completed by swathing, followed by combining of the cured rows. If direct combining is desired, the stand should be harvested when the top of the seed heads

just begin to shatter. Harvested seed must be dried to 12% moisture before storing in bins and to 15% before storing in sacks. Seed is generally harvested in mid- to late August. Breeder seed is maintained by the Upper Colorado Environmental Plant Center near Meeker, Colorado.

Releases

'Manska' pubescent wheatgrass was selected from seed originating in Russia by the Northern Great Plains Research Laboratory. It traces to 11 separate commercial lots of 'Mandan 759' pubescent wheatgrass (no longer available). It was selected for improved vigor, resistance to leaf spot, high forage and seed production, and nutritional quality. High nutritional value is the primary advantage of Manska over other pubescent wheatgrass cultivars. It is intended for use in grass/alfalfa hay mixes and for pasture in areas receiving at least 14 inches of precipitation.

'Luna' is one of the most broadly adapted pubescent wheatgrasses available and performs well from the central to northern Great Plains to the northern Rockies and Sierra Nevada regions. It was selected from seed originating in Russia and Turkey by the Los Lunas Plant Materials Center and was released in 1963. Due to its rhizomatous spread and resulting plant competition, it can also aid in reclaiming pastureland from noxious weeds. A University of Wyoming research trial under dryland conditions in Crook County utilized several grass species to control leafy spurge. Luna reduced canopy cover of the leafy spurge to 10% and 15% or less in tilled and no-till plots, respectively, seven and 10 years after seeding. The control plots not seeded to a forage grass averaged 55% leafy spurge canopy cover. Luna should be planted in areas receiving 12 inches or more of precipitation.

'Greenleaf' pubescent wheatgrass is listed in Plant Materials Technical Note MT-46, however, it is not recommended for planting in Montana and Wyoming due to poor performance in field plantings.

References

Plant Fact Sheet for pubescent wheatgrass, *Thinopyrum intermedium* ssp. *barbulatum*, available at: <http://plants.usda.gov>.

Plant Guide for pubescent wheatgrass, *Thinopyrum intermedium* ssp. *barbulatum*, available at <http://plants.usda.gov>.

For Seeding Rates and Recommended Cultivars, see Plant Materials Technical Note MT-46 Seeding Rates and Recommended Cultivars (Revision 3). Available at: <http://www.mt.nrcs.usda.gov/technical/ecs/plants/technotes>.

For proper seed source selection, see Plant Materials Technical Note MT-67, *Seed Source Selection, Use of Certified Seed, and Appropriate Seed Release Class to Improve Conservation Planting Success*. Available at: <http://www.mt.nrcs.usda.gov/technical/ecs/plants/technotes>.

For the proper cultural practices and grazing guidelines, see MSU EB-19: *Dryland Pastures in Montana and Wyoming – Species and Cultivars, Seeding Techniques, and Grazing Management*, available at: <http://www.plant-materials.nrcs.usda.gov/pubs/mtpmstu1138.pdf>.

Leafy Spurge (Euphorbia esula) Control with Several Grass Species, M.A. Ferrell, T.D. Whitson, D.W. Koch, and A. E. Gade, *Weed Technology*, Vol. 12, No. 2 (Apr. - Jun., 1998), pp. 374-380.

Evaluation of Four Intermediate Wheatgrass Populations Under Grazing, K.J. Moore, K.P. Vogel, T.J. Klopfenstein, R.A. Masters, B.E. Anderson, *Agronomy Journal*, July/Aug 1995. v. 87 (4).