

A Conservation Plant Released by The Natural Resources Conservation Service Bridger Plant Materials Center, Bridger, Montana

'GARRISON' creeping meadow foxtail

Alopecurus arundinaceus Poir.

'Garrison' creeping meadow foxtail (*Alopecurus arundinaceus* Poir.) is a cultivar released in 1963 by the USDA-Natural Resources Conservation Service (NRCS) Bismarck Plant Materials Center and Wyoming Agricultural Experiment Station.

Description

Garrison is a cool-season, sod-forming perennial grass introduced from temperate regions of Eurasia (Figure 1). Stems grow 3 to 6 feet tall in groups of one to several from nodes of a rhizome. Leaf blades are 0.18 to 0.22 inches wide. The inflorescence is a cylindrical, compact spike-like panicle 1.6 to 3.9 inches long and 0.4 inches in diameter. Spikelets are about 0.2 inches long with silky hairs located mostly along glume margins and midrib veins giving the seed a hairy appearance. Laterally compressed lemmas have an awn from the base extending to lemma tip and rarely beyond. It flowers from May through August. Seed maturation begins at the top of the inflorescence and proceeds downward. Seeds are black when mature.



Figure 1: 'Garrison' creeping meadow foxtail.

Source

Seed of Garrison, (accession number 436704), was collected from plants growing at the margins of prairie potholes and sloughs near Max and the Garrison Dam, McLean County, North Dakota in 1950. The original population is believed to have escaped cultivation by homesteaders from eastern Germany or Ukraine. Garrison was selected for outstanding forage yield, palatability, total digestible nutrients, and response to nitrogen fertilizer compared to other accessions of this species from western Europe, Italy, Turkey, Iran, and Afghanistan, as well as other commonly available forage species.

Conservation Uses

Garrison is well suited for pastureland or hayland because it produces high yields of forage with excellent digestibility, protein content, and is palatable to all classes of livestock throughout the growing season. Early initiation of spring growth allows for two hay cuttings, even in high elevation locations. Its vigorous rhizome production (up to 4 feet crown-diameter growth per year) contributes to its long-lived stands and ability to recover quickly from grazing. The tender spring growth also provides forage for deer, elk, geese, and other waterfowl. Numerous bird species use the dense growth for cover and nesting.

Garrison is well suited for erosion control, stream bank stabilization, and critical area plantings. It tolerates flooding for up to three months and short periods of drought, which makes it useful in areas of fluctuating water levels like earthen dams. Its tolerance of a broad range of pH makes it suitable for stabilization of mine spoils, saline seeps, and other critically disturbed areas. Garrison tolerates high levels of nitrogen (N), water and silt. With suitable moisture, it works as an excellent filter strip, tolerating up to 6 inches of silt per single deposition event.

Area of Adaptation and Use

Garrison is extremely winter hardy and can establish and survive in areas where frost-free periods average less than 30 days annually. It also grows well at a broad range of elevations (500 to 9,000 feet) that receive at least 18 inches of precipitation but grows best on mid- to high-elevation, wet to semi-wet sites and irrigated sites in the northern Great



Figure 2: Area of adaptation of Garrison creeping meadow foxtail.

Plains and Rocky Mountains (Figure 2). It does not perform well in prolonged high temperatures or Mediterranean climates. Garrison is adapted to fine and medium texture soils, provided there is sufficient water. It grows well in slightly saline soil (up to 4 decisiemens per meter) and tolerates moderately saline sites (up to 12 dS/m) to successfully establish on the edges of saline seeps. Garrison also tolerates moderately acidic to slightly alkaline (pH 5.6 to 8.4) soils.

Establishment and Management for Conservation Plantings

Garrison produces approximately 679,800 seeds per pound. A full stand drill seeding rate of 2 pounds pure live seed per acre is recommended. Double the seed rate when broadcast seeding. When drill seeding, the seedbed should be weed free, moist, and firmly packed. Optimum seeding depth is 1/8- to 1/4-inch, and no deeper than 1/2-inch. Irrigated fields can be seeded in early to mid-spring or late summer. Dormant fall, winter, and early spring seedings are most effective under dryland conditions. Where precipitation is below 15 inches annual precipitation, plant when the soil is moist, but firm enough or frozen adequately to support seeding equipment while placing seed into soil. Drill seeding can be challenging because of the small, hairy seeds. To prevent seed from bridging in the drill, mix it with inert materials such as rice hulls, cracked grains, or use coated seeds. When seeding with a legume, plant legumes in alternate rows to reduce in-row competition and increase yield. Rhizomes appear after several months, after which growth from them is rapid. In areas receiving less than 16 inches of annual precipitation, it may require several years before the stand is considered well-established.

Ecological Considerations

Garrison can become weedy if not managed properly. In addition to aggressive rhizomes, it proliferates by wind-borne and waterborne seed dispersal. Although rapid reproduction is useful in repairing damaged sites, its ability to spread quickly may create management problems in canals, irrigation ditches, and other waterways. It can outcompete all other components in a seed mix, especially if planted in areas with poor soil conditions where Garrison thrives. There is little historic evidence suggesting Garrison suffers from insects or diseases. Leaf spot diseases have occasionally been recorded in Canada.

Seed and Plant Production

Stands should be planted in wide-spaced 36- to 48-inch rows. Once seedlings are established, apply 30 pounds N per acre for fall dryland applications and 60 to 80 pounds N per acre on irrigated fields in both the late fall and early spring. Rhizomes can cause row closing and sod-binding. To overcome a sod-bound condition, apply high levels of N and use aggressive cultivation. For proper harvest timing use the following indicators: at least 75% of seeds are black (i.e., mature); 50% of seedheads have begun shattering at the tip; and 75% of stems are yellow up to 3 to 4 inches directly below the inflorescence. These three developments often occur quickly over a 3-day period. Many combine adjustments may be needed to accommodate the light, fluffy seed. Garrison produces 200 to 400 bulk pounds of seed per acre under irrigation.

Availability

For conservation use: Garrison creeping foxtail is widely available on the commercial seed market (see [USDA-NRCS Technical Note PM-33](#)).

For seed or plant increase: Breeder and Foundation seed is maintained by the USDA-NRCS PMC in Bridger, Montana. Garrison is available to commercial growers by contacting the Montana Foundation Seed Program at Montana State University-Bozeman or the University of Wyoming Foundation Seed Service in Powell, Wyoming. Foundation and Certified seed classes are recognized. Registered class is prohibited and certified seed cannot be used to establish another certified seed production field.

For More Information

Contact Bridger Plant Materials Center, 98 S. River Rd, Bridger, MT 59014, Phone: 406-662-3579, www.plant-materials.nrcs.usda.gov/mtpmc.

Citation

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