

Jackson-Frazier Germplasm Meadow Barley

Pre-variety class: Source Identified Natural Germplasm

Scientific Name: *Hordeum brachyantherum* Nevski

Common Name: Meadow barley

Release Name: Jackson-Frazier Germplasm

Selected by: Corvallis PMC, NRCS, USDA

Origin: 123.2° West Long., 44.6° North Lat. Township 11S, Range 5W, Sections 13 and 24, Benton County, Oregon Elevation 225 ft. Precipitation 42 in/yr

Release Cooperators: None

Description: Jackson-Frazier germplasm is a source identified release of meadow barley. It originates from an extensive natural population growing in the Jackson-Frazier wetland near the city of Corvallis in Benton County, Oregon. The release represents a reliable seed source suitable for use at low elevation in western Oregon, primarily the Willamette Valley. The species is known for its rapid seedling growth and ready establishment, especially when used for erosion control as well as wetland wildlife habitat and restoration.

Meadow barley is a native short to medium lived (3-8 yrs), cool season, perennial bunchgrass. Its growth habit is an open tuft with erect to spreading culms (stems) that are 24 to 54 inches tall and slightly bent near the base. The leaves are mostly basal from short vegetative tillers except for 1 to 3 (4) short blades extending partway up the culms. The inflorescence (seedhead or panicle) is a narrow, flattened spike. The spike is erect, 1.5 to 4 inches long with a brittle central axis (rachis) that breaks off from the top down as it matures. Jackson-Frazier Germplasm contains genotypes that have bluish stems (due to a bluish-white waxy coating) with purple to green leaves and panicles, as well as those that have only green stems and leaf blades but purple nodes (joints) and occasional purple bases.

Method of Selection: Jackson-Frazier Germplasm was increased and evaluated as NRCS accession number 9056373 and designated PI-645564. The population was not bred or hybridized, nor has it undergone any purposeful selection. Obtained from 100s of wild parents at its origin, progeny have been evaluated for seed production techniques, ability to establish, and flood or inundation tolerance. Although Jackson-Frazier Germplasm has not been compared directly to other populations of meadow barley, observations suggest it has good seedling vigor, establishes easily, and has acceptable, consistent seed production. It was also chosen for the large size, reliability, and central location (within the Willamette Valley of Oregon) of the parent (G0) population.



Anticipated Conservation Uses: Jackson-Frazier Germplasm should prove beneficial for freshwater wetland restoration and enhancement. It provides quick cover alone or in mixes with other native grasses for erosion control and wildlife habitat along streambanks, waterways, shorelines, ditch bottoms and other summer dry, moist or wet sites. Meadow barley is sometimes used for forage where locally abundant, but resource value is rated low to moderate for livestock. The species is regarded useful as a nurse crop for longer lived species. It is occasionally used as vineyard cover crop and the plant provides cover for small mammals and game birds.

Establishment: Planting 1 lb/ac of conditioned seed (125,000-150,000 seeds/lb with awns, multiple spikelets, and sterile florets eliminated) will result in about 3-4 seeds/sq. ft. Recommended rates are 1-4 lbs/ac of Pure Live Seed (PLS) in mixes and 8-20 lbs/ac when sown alone, depending on use, method, and site conditions. Rates should double for broadcast seeding on critical areas. Seed of Jackson-Frazier Germplasm has little or no dormancy so it can be fall or spring sown. However, germination of meadow barley in controlled environments can be aided by 14 days of cold-moist stratification (moist chilling).

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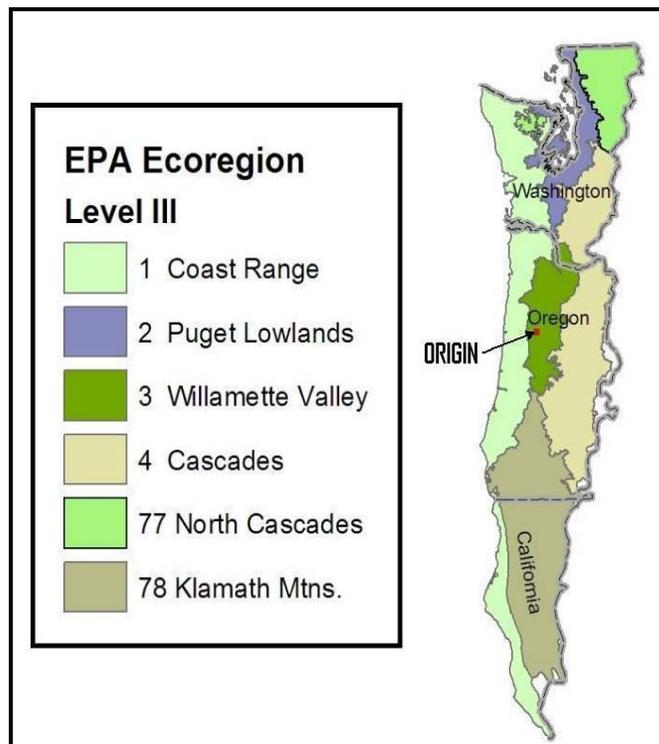
Diseases and Insects: While the species in general is a known host for head smut disease (*Ustilago* sp.), infection rates have been low for Jackson-Frazier Germplasm. However, no special resistance is inferred. Seed may be treated with an approved fungicide prior to sowing and diseased plants can be removed from production fields for sanitation. The disease stripe rust (*Puccinia striiformis*) can occur on stems and leaves in some years, typical of meadow barley. Fungicides labeled for rust control in grass seed production are applicable to this species. Minor signs of ergot (*Claviceps purpurea*) have been observed when environmental conditions are right. When abundant in any grass pasture, this disease may require special precautions for grazing animals due to toxicity. No substantial insect problems have been observed.

Production: Meadow barley is a highly self-pollinated species but adequate isolation from other barleys (*Hordeum* spp.) and wildryes (*Elymus* spp.) should be practiced to avoid natural hybridization. For seed increase, fall or spring sow at 6-8 lbs/ac into a firm, weed-free seedbed using 12-24 inch wide rows. Seeding depth should be 1/8-1/2 inch. Broadleaf and grassy weeds can be controlled using chemical, mechanical, and hand methods. Volunteer seedlings of meadow barley can occur in high numbers unless managed with approved herbicides or row tillage. Until more is known about optimal fertilization rates and timing, established stands in western Oregon should receive 15-20 lbs of nitrogen/ac in the fall and 50-75 lbs of nitrogen/ac in late February or March. Other potential nutrient needs include sulfur and potassium so application should be based on soil tests. Irrigation is not required in western Oregon, although it may boost seed yields, especially in dry years. Partial seed crops are possible the first full growing season after fall seeding if conditions are ideal. Fields can be productive for several years, peaking in the second or third growing season.

The seed matures unevenly, both within the stand and individual seedheads. The head will mature from the terminus downward and shatter or break off in segments. To minimize losses, strip the seed on different dates with a flail-vac type stripper. Otherwise, harvest by windrowing (swathing) and combining. However, a very high percentage of seed is likely to fall off in the windrow and end up on the ground unless paper or tarps are placed beneath the rows. Swathers can be modified to hold 3-6 ft. wide rolls of butcher paper for this purpose. Post-harvest residue (crop aftermath) should be removed by mowing/baling, flail chopping (with vacuum action), or field burning (when and where permitted). Jackson-Frazier Germplasm is very resistant to late summer field burning and recovery is excellent. During processing, seed should be conditioned with a brush machine or other device to remove awns (linear appendages) and break apart joined spikelets and florets in order to improve flow through seeding equipment. For highly processed seed lots, yields have averaged 130 lbs/ac.

Site Adaptation: Meadow barley tolerates moderate summer drought as well as seasonal soil saturation, shallow winter inundation, and sand to clay soils with a pH range from 5.5 to 8.5. It prefers full sun. The species is known for intermediate tolerance to soil salinity and adaptation to high tidal marshes and surge plains near the Coast, but this cannot be presumed for Jackson-Frazier Germplasm at this time.

Suggested Area of Use: Until more information is available, use of Jackson-Frazier Germplasm should be confined to the Willamette Valley and surrounding foothills below an elevation of 1500 ft. This is roughly equivalent to Ecoregion 3.



Dark green area (Willamette Valley) is the suggested area of use for Jackson-Frazier Germplasm meadow barley. Map by Ian Reid (NRCS).

Environmental Considerations: Meadow barley may be potentially weedy in some regions for certain crops. Yet, in more natural landscapes the species readily coexists with other native plants. While meadow barley can move into adjacent, moist disturbed areas, it rarely dominates and often gives way to longer-lived, more persistent species. It is not considered a problem within western Oregon and western Washington, including the suggested area of use for Jackson-Frazier Germplasm.

Jackson-Frazier Germplasm is not necessarily a replacement for a local or on-site source of meadow barley for restoration. Individuals with a concern for a particular environment or ecosystem should make their decisions on a case-by-case basis. Meadow barley has awns on its spikelets that readily attach to hair and skin. Apparently, they may harm certain animals by working into noses, mouths, or intestines. However, others indicate little injury to livestock or deer that graze the foliage.

Seed Availability: Certified, source-identified G1 seed will be maintained and made available to growers for seed production by:

USDA-NRCS
 Corvallis Plant Materials Center (PMC)
 3415 NE Granger Ave.
 Corvallis, Oregon. 97330
 (phone: 541-757-4812)

Growers may produce G2 and G3. For more information about Jackson-Frazier Germplasm meadow barley, contact the PMC, NRCS Plant Materials Specialists in OR and WA, or your local NRCS field office.