United States Department of Agriculture
Natural Resources Conservation Service
Plant Materials Program

Klamath Mountains Germplasm Roemer's fescue

Festuca roemeri (Pavlick) E.B. Alexeev

A Conservation Plant Release by USDA NRCS Corvallis Plant Materials Center, Corvallis, Oregon

Klamath Mountains Germplasm Roemer's fescue. Photo by Dale Darris

Klamath Mountains Germplasm is a selected class pre-variety of Roemer's fescue released in 2012 by the USDA Natural Resources Conservation Service and the Institute for Applied Ecology, Corvallis, Oregon. It is one of five related germplasm releases, each targeting an area of the Pacific Northwest within the natural range of the species.

Description

Klamath Mountains Germplasm Roemer's fescue is a native cool season, perennial bunchgrass with mostly basal foliage that is fine-textured and dense. Variation among plants is moderately high. Leaf color varies from shades of green to pale blue. The stiff, erect, smooth stems terminate in an open seedhead and grow 29 to 32 inches tall. Stems range in color from yellow-green to purple or red, turning mostly straw colored at maturity. The basal width of the plant is 3.9 to 5.5 inches. Plants rarely flower until mid to late May of the second full growing season. Seed matures between mid June and early July.

Source

Klamath Mountains Germplasm was collected from five naturally occurring stands (populations) of Roemer's fescue growing within the Klamath Mountains ecoregion. The collection sites were from 2250 to 3200 feet above sea level in an area with an annual precipitation range of 20 to 80 inches. Results from a common garden study revealed patterns of genetic variation for growth, fitness, and rate of development among 47 populations from the Pacific Northwest that related to elevation, latitude, and certain climatic features of the seed source. Roemer's fescue variation clustered into seed transfer zones corresponding to EPA Level III or Level 1V ecoregions. In order to incorporate substantial genetic diversity, four of seven populations collected within the Klamath Mountains seed transfer zone were selected to represent the Klamath Mountains Germplasm. One population was eliminated for being too high in elevation. Two others that were excluded had lower seed yields, lower survival, and higher rust disease (*Puccinea* spp.) infection. A fifth population was later added to better represent the genetics of the area. Random mating among the five populations was promoted in a crossing block of G1 plants in order to form a genetically diverse polycross.

Conservation Uses

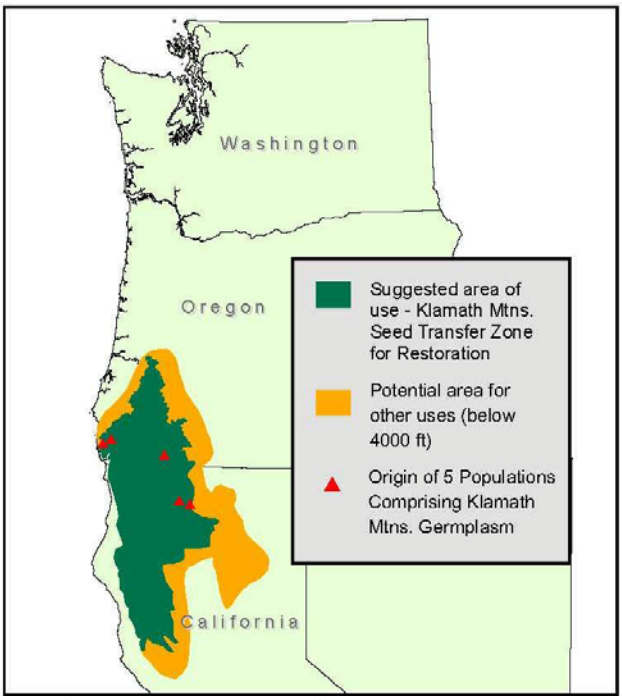
Recommended uses for Klamath Mountains Germplasm include restoration of upland prairies, rangelands, oak savanna, and similar native plant communities, as well as wildlife habitat improvement. This includes food or cover for various song and game birds, small mammals, and beneficial insects. Forage value and palatability for wildlife and livestock are not well documented but may be similar to Idaho fescue. Idaho fescue is rated as fair to good forage. Roemer's fescue is drought tolerant and its non-aggressive growth habit suggests compatibility with forbs. After further evaluation, other uses may include general revegetation and erosion control of disturbed sites where a fine textured perennial grass is desired, low input turf, and cover crop for vineyards or young orchards.

Area of Adaptation and Use

Klamath Mountains Germplasm Roemer's fescue is primarily recommended for use within the Klamath Mountains ecoregion at elevations between 1000 and 4000 feet (see map). Movement of the germplasm within this seed transfer zone should pose minimal risk of maladaptation. Pending further testing, use may extend to adjacent ecoregions for select purposes other than restoration.

This germplasm is likely to grow best in full sun and part shade near trees on moderately well to well-drained, medium to fine-textured soils that are moderately acid to slightly basic. Although Roemer's fescue is considered drought tolerant and has extensive roots, it favors more mesic rather than xeric habitats within a site. While the species is known for tolerance to serpentine soils, moderate to low fertility conditions, and wildfire, the

specific adaptation of Klamath Mountains Germplasm to such extremes remains to be tested.



Areas of suggested and potential use for Klamath Mountains Germplasm Roemer's fescue. Map by Ian Reid, NRCS Portland, OR.

Establishment and Management for Conservation Plantings

Seeds typically germinate without treatment indicating dormancy is low. However, germination is quicker and more uniform after 14 days of cold (34-38°F), moist stratification (moist chilling). There are approximately 500,000 seeds per pound with hulls intact. A seeding rate of 1 pound per acre results in about 12 seeds per square foot. Sown alone, recommended rates for revegetation vary from 4 to 20 pure live seed (PLS) pounds per acre depending on goals, method of sowing, and site conditions. Fertilization encourages weed competition and should be avoided the first four to six months.

If managed for forage production, a rotational system of moderate grazing similar to that used for Idaho fescue is suggested. Idaho fescue is susceptible to overgrazing. In settings where utilization is low, prescribed burning or mowing every few years are possible tools in maintaining stand vigor and stimulating reproductive capacity. For cover or low input turf, Roemer's fescue tolerates being mowed two to three times a year at moderate heights (2-3 inches) with or without fertilization.

Ecological Considerations

Klamath Mountains Germplasm is not considered weedy within the intended area of use. It is a known host of rust diseases (*Puccinea* spp.) but infection rates have rarely warranted control when cultivated for seed. Trace amounts of ergot (*Claviceps purpurea*) have been observed in similar populations of Roemer's fescue. The same rusts and ergot commonly infect other grasses, so their presence on this germplasm, if detected, is not deemed a special risk. In the unlikely event of ergot becoming abundant, special precautions should be considered to avoid toxicity to grazing animals (such as mowing or temporary livestock exclusion).

Seed and Plant Production

For seed increase the suggested seeding rate is 2 to 4 pounds per acre. Fall sowing is preferred since spring plantings may require irrigation in summer dry areas. Suggested row spacing is 12 to 14 inches. Certified seed production in Oregon requires a minimum isolation distance of 900 feet between Roemer's fescue populations, and allows no more than 1% contamination by red fescue seed as determined by an ammonium hydroxide root florescence test. Depending on the state, one or more herbicides may be labeled for grass weed control in established stands, and others are routinely labeled for broadleaf weed control. Fungicides may be labeled for control of rust diseases. Always read and follow label directions. For established stands in western Oregon, apply 50 to 60 pounds of nitrogen per acre annually in February or March. Conventional harvest methods of windrowing and combining after the seed is dry work well, as do flail-vac seed strippers. Post-harvest residue (crop straw, older foliage) should be removed by baling or flail chopping with a forage harvester. Remaining stubble should be 1 ½ to 2 ½ inches tall.

Availability

For conservation use: G3 and G4 seed should be available from specialized growers by late 2013.
For seed or plant increase: The NRCS Corvallis Plant Materials Center maintains certified G2 and G3 seed.

For more information, contact:
Corvallis Plant Materials Center
3415 NE Granger Ave.
Corvallis, Oregon 97330
Phone: 541-757-4812

Citation

USDA Natural Resources Conservation Service. 2012. Release brochure for Klamath Mountains Germplasm Roemer's fescue (*Festuca roemeri*). USDA NRCS Corvallis Plant Materials Center, Corvallis, OR.

For additional information about this and other plants, please contact your local USDA Service Center, NRCS field office, or Conservation District <http://www.nrcs.usda.gov/>, and visit the PLANTS Web site <http://plants.usda.gov> or the Plant Materials Program Web site <http://www.plant-materials.nrcs.usda.gov>