

DEERGRASS

Muhlenbergia rigens (Benth.) A.S. Hitchc. plant symbol = MURI2

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Uses

Ethnobotanic: Deergrass is a significant basketry material to central and southern California Native Americans who utilize the flower stalks in the foundations of coiled baskets. Frequently thousands of flower stalks are needed for completion of each basket. Culms are gathered in late spring while still green, or summer or early fall when golden brown depending upon the tribe, individual family preference and elevation of the deergrass site.

Wildlife: In California, dense patches of deergrass provide cover during the fawning period of mule deer (*Odocoileus hemionus*) in mountain meadows and grassland openings. The younger palatable tufts are grazed by deer, horses, and cattle and can remain palatable if continually grazed. It is particularly sought for forage by animals when first resprouting after a burn. Older tufts are poor feed for livestock. The seeds provide food for songbirds and probably other birds as well. In sunny openings where deergrass occurs, it forms a larval food plant for one

of the Satyrid butterflies, the California ringlet (*Coenonympha californica*) and for the umber skipper (*Poanes melane*). Massive numbers of ladybugs overwinter in deergrass clumps.

Conservation: Deergrass is a valuable streambank stabilizer, as it has an extensive root system, and if grown in dense enough colonies, it can be an effective weed suppresser. In California, Pacific Gas and Electric is experimenting with growing dense colonies under powerline corridors. It's long, slender culms, and tall tufts making it an attractive plant for the garden.

Other Uses: Uses of deergrass include streambank stabilization, landscaping, forage, insectary, weed suppressant, and wildlife.

Status

Please consult the PLANTS Web site and your State Department of Natural Resources for this plant's current status, such as, state noxious status and wetland indicator values.

Description

General: Grass Family (Poaceae). Deergrass is a perennial bunchgrass obtaining heights of 5 feet when in bloom. It is part of the largest genus of warm season grasses in North America. The bunchgrass is found in dense, large clumps, but can occur as a continuous cover, in areas that are subjected to light, frequent ground fires. The culms are slender, narrow spike-like panicles, 9 to 12 dm. in length and less than 1.2 cm. wide. The numerous, small spikelets each have one awnless floret, with a 3-nerved lemma. The ligules are firm and truncate, 2-3 mm long. The leaves are 1.5 to 6 mm wide. The seeds are small, requiring about 2.5 million to make one pound. The dense, basal foliage is tufted and these large tufts, up to six feet across, are a distinguishing feature of the grass, along with the whip-like flower stalks.

Distribution

For current distribution, please consult the Plant Profile page for this species on the PLANTS Web site. It is found in sandy or gravely well-drained soils in scattered colonies in dry or damp places below 2150 m elevation from Shasta County in northern California south, extending into New Mexico, Texas, and Mexico.

Establishment

Adaptation: Deergrass can withstand periodic flooding, but it cannot tolerate poorly-drained soils. The major plant communities it inhabits include valley grassland, streamsides, and meadow habitat. Additionally, deergrass is shade-intolerant and also occurs in grassland openings within chaparral, mixed conifer forests, and oak woodland plant communities, maintained with human-set or lightning fires. On most soil types, these grassland areas quickly revert to the surrounding dominant vegetation type without human or natural disturbance.

Broadcast Seeding: In California and the Southwest, deergrass can be broadcast seeded in the late spring or summer during the months of May, June, July, and August, with irrigation. The seeds are tiny and should be broadcast on top of the ground, and then run over with a ring roller or a culti-packer to compress the seeds slightly below the soil surface. For best results, sow at least four pounds of PLS (pure live seed) per acre, which amounts to 50 seeds per square foot. Deergrass is slow growing and germination rates can vary from two weeks up to two months. Fertilization of deergrass is not recommended, as it usually gives the alien weeds a competitive edge. Site preparation is extremely important for good establishment of deergrass. Both repetitive tillage and burning are recommended to drastically curtail weed competition. Repetitive tillage involves loosening the soil, irrigating, and cultivating the area with a disc harrow, following with a ring roller to kill the flush of annual weeds. This is done several times prior to seeding to exhaust the weed seed bank. Burning involves firing all residual dry matter prior to seeding.

Container Planting: Container planting is a more effective and less time consuming way of establishing deergrass, but it is more costly than seeding on a large scale. Deergrass seed can be sown into flats or, D-pots, stubby cells, or reforestation tubes in May. Plants can be planted out from containers in the fall of the same year in soil that has been moistened with the first rains, using standard planting procedures. Plants can also be sown in the fall in flats or containers and planted out the next summer or fall in the designated area. Plants should be spaced at a minimum width of 24 inches. Irrigating is not necessary if it is a normal rainfall year. Site preparation is the same as for a broadcast seeding. Larger bunchgrasses can also be divided in winter or early spring and transplanted. A good stand of deergrass can be established by container planting in one and one half years. It is thought that container planting with grown plugs is more effective than a seeding.

Management

Once established, deergrass is quite drought-tolerant. To maintain its vigor and reduce accumulated dead material, deergrass can be mowed or burned every several years. Burning or mowing should be in the fall, after it has gone to seed. Many tribes historically and probably prehistorically enhanced deergrass populations through firing deergrass stands in the fall in California every two to five years. Indian-set fires increased flower stalk yields, recycled nutrients, cleared away detritus, and promoted seedling production in the midst of reduced competition from other plants. According to Native American elders, these fires maintained the bunchgrass in greater numbers than would have occurred under natural conditions. Knowledge of past indigenous fire management of deergrass has important implications for mountain meadow habitat management for wildlife and maintenance of grassland openings within shrublands, woodlands, and forests for preservation of indigenous cultural traditions. Some areas could be managed with the dual objectives of indigenous harvesting of flower stalks and grazing after culm harvest. There are several fungi that infect the leaves of deergrass, causing debilitation, but usually not death. A fire would eliminate these pathogens.



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Basket foundation material consists of deergrass with red pattern material from the western redbud tree.

Cultivars, Improved and Selected Materials (and area of origin)

If possible, gather the seed from local sources, to maintain genetic diversity of deergrass. The flower stalks can be cut, bundled, and then beat over a tarp or bucket to release the seeds. The seeds are usually highly viable, and do not need special treatment. Please check the Vendor Database, expected to be on-line through the PLANTS Web site in 2001 by clicking on Plant Materials. This grass is available from nurseries handling native plants.

References

Agricultural Experiment Station, University of Arizona 1953. *Arizona range grasses: Description--forage value---management*. Bulletin 298, Tucson, Arizona.

Amme, D. 1994. *The development of native grasses in California*. Growing Native 5(2). The newsletter of the Growing Native Research Institute.

Anderson, M.K. 1996. *The ethnobotany of deergrass, Muhlenbergia rigens* (Poaceae): its uses and fire management by California Indian tribes. Economic Botany 50(4):409-422.

Edwards, S.W. 1989. *Ten splendid grasses*. The Four Seasons 8(3):17-24. Journal of the Regional Parks Botanic Garden.

Kephart, P. & D. Amme 1992. *Native perennial grass establishment and management*. Grasslands (February): The newsletter of the California Native Grass Association.

Lathrop, E. & B. Martin 1982. *Fire ecology of deergrass (Muhlenbergia rigens) in Cuyamaca Rancho State Park, California*. Crossosoma 8(5):1-4, 9-10.

Sampson, A.W., A. Chase, & D.W. Hedrick 1951. *California grasslands and range forage grasses*. California Agricultural Experiment Station Bulletin 724.

Stromberg, M.R. & P. Kephart 1996. *Restoring native grasses in California old fields*. Restoration and Management Notes 14(2):102-111.

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