UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
LOCKEFORD CALIFORNIA

NOTICE OF RELEASE OF FOOTHILL NEEDLEGRASS FOR MAJOR LAND RESOURCE AREA 15f SELECTED CLASS OF NATURAL GERMPLASM

LK 415f Germplasm

The Natural Resources Conservation Service announces the release of a selected ecotype of foothill needlegrass, *Nassella cernua*, for Major Land Resource area (MLRA) 15f. This release will be identified as LK 415f Germplasm to document the Lockeford Plant Materials Center as the releasing agency and the MLRA for which the release is best suited.

As the demand for native seed has grown, so has the demand for ecotypic native seed. Though many native species may be suited for field cultivation and may be excellent candidates for improvement of plant performance through breeding efforts, the seed of a majority of species will continue to be collected from wildland populations. Because of the demand for native seed, it has become important to have seed certification to ensure genetic identity and origin. In order to meet this need a national organization, The Association of Official Seed Certifying Agencies (AOSCA) has developed a certification program to address this need, The Pre-Germplasm Certification Standards.

Species	*Nassella cernua* (Stebbins & A. Love) Barkworth *Stipa cernua* Stebbins & A. Love
Common Name	Foothill Needlegrass
Plant Symbol	NACE
Accession Number	9063737

ORIGIN: San Luis Obispo County, California; Trusedale and Shells Roads. Township 27S Range 15E Section 10. Elevation is approximately 1200 feet. Mean annual precipitation is 12-20 inches. Mean annual temperature is 60 degrees F.

Site Description: The soils found in the area of original collection site is Arbuckle (101). Vegetation found on this soil is: wild oat, soft chess, and filaree.

The Arbuckle soil depth is 62 inches with an average water holding capacity (AWC) of 8.19 inches. North facing slope, 2 to 9 percent.

Anticipated Conservation Use: Restoration, critical area plantings, cover crop, and wildlife habitat.

Availability of Plant Materials: Foundation seed will be maintained by the Lockeford Plant Materials Center, P.O. Box 68, Lockeford, California, 95237. Access to the property of original collection is not available.

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LK 415f germplasm is released as a Select Identified Class of certified seed under the Pre-Germplasm Certification Standards. As a Selected Identified Release, this plant will not be given a "cultivar" name, but will be referred to as LK 415f germplasm to document the Lockeford Plant Materials Center, NRCS, USDA as releasing agent and the MLRA the release is **best** suited.

This alternative release procedure is justified because existing commercial sources of foothill needlegrass are inadequate, propagation material of specific ecotypes are needed for restoration, revegetation, cover crops, and range improvement projects within MLRA 15f. At the current time there are no cultivar releases of foothill needlegrass for California.

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ORIGIN: San Luis Obispo County, California; Trusedale and Shells Roads. Township 27S Range 15E Section 10. Elevation is approximately 1200 feet. Mean annual precipitation is 12-20 inches. Mean annual temperature is 60 degrees F.

Method of Selection: From a purple needlegrass and foothill needlegrass collection found in Land Resource Region (LRR) D; which includes MLRAs 20, 19, 18, 17, 15, and 14.

Collections were evaluated at the Lockeford Plant Materials Center (PMC) From 1992 to 1995. Lk 415f germplasm was selected for its early flowering, vigor, height, and plant density. Purple needlegrass does not require special seed treatment.

Description: Culms 60 to 90 cm. tall, in rather large clumps; basal blades numerous, narrow, glaucous, those of the culm 1.2 to 2.4 mm. wide; panicle open with slender flexous branches; glumes acuminate, the first 12 to 19 mm. long, the second a little

shorter; lemma 5 to 10.5 mm. long, papillose, silky-pilose below and on the nerves, the callus acute, densely bearded; awn 6 to 11 cm. long, the terminal segment flexuous

Literature Review: Seed can be collected from May to July depending on soils, rainfall, temperature, elevation, etc. There are approximately 223,675 seed per pound. The germination on foothill needlegrass can range from 11 to 82 percent and the purity can range from 67 to 94 percent. *Nassella pulchra, N. cernua, and N. lepida* can cross with ease undeer natural conditions. Although Nassella cernua and N. lepida do not grow together on California range, but contiguous plantings of the two species at the University of California, Davis (1954), resulted in the establishment of F1 hybrids without artificial manipulation. Purple needlegrass depends chiefly upon seed for reproduction and on many ranges has been largely killed out by being grazed so close that seed could not mature.

Foothill needlegrass can be found from sea level to an elevation of 4,4600 feet. Foothill needlegrass provides good early forage for grazing animals. Although its palatability is highest in the spring, it is grazed throughout the summer by cattle and horses. It requires some protection from grazing at the flowering period. Foothill needlegrass has a strong root system and can be effective for erosion control. It can be found in association with *Nassella pulchra*, *Sitanion hystrix*, and *Melica californica*.

Site Description: The soils found in the area of original collection site is Arbuckle (101). Vegetation found on this soil is: wild oat, soft chess, and filaree.

The Arbuckle soil depth is 62 inches with an average water holding capacity (AWC) of 8.19 inches. North facing slope, 2 to 9 percent.

Map Symbol	Depth	Texture	AWC in/in	pH	Cation Exchange Capacity
101	0-29 29-53 53-62	Fine sandy loam Loam, Sandy clay loam, Clay loam Stratified sandy loam, to very gravelly clay loam	0.12-0.14 0.15-0.17 0.05-0.08	6.1-7.3 6.1-783 6.1-7.8	

Potential Area of Adaptation: MLRA 15f is located in the Coastal Range from Madera County south to the north west corner of Los Angeles County. The 4ETa* is 6 to 9 inches annually and will vary with soil texture and depth. The average annual precipitation is 6 to 15 inches.

MLRA 15 can be found from sea level to an elevation of 2,625 feet, mountains can reach 5,577 feet. Gently sloping to steep low mountains under lain mostly by shale and sandstone and partly by igneous and volcanic rock most of the area. Coastal plains are narrow and discontinuous, and stream valleys are narrow and widely separated. The precipitation can range from 12 to 40 inches annually. Average annual temperature is 55 to 65 degrees F. There are 120 to 270 frost free days each year. The dominant soils are Xererts, Xerolls, Ochrepts, Xeralfs, Orthents, and Psamments. They have a thermic temperature regime (mesic at the higher elevations).

Observed Selected Traits and Performance: From 1992 to 1994 a collection of 12 accessions From Land Resource Region D were evaluated at the Lockeford Plant Materials Center. Each accession was replicated 4 times with 12 individual plants in each

replication. In 1995 LK 415f germplasm was selected for release because of early flowering date, vigor, survival, and growth. LK 415f germplasm had an average flowering date of March 29. It had a mean vigor rating of 2.00**. At the end of 3 years, LK 415f germplasm had a mean survival rate of 96 percent. The average plant height at the time of flowering was 137 cm. It was observed during the first year and to some extent in the second year that rabbits and gophers would utilize all foothill needlegrass; and in some case, to the point that a replication was destroyed. In order to protect the purity of the ecotype, in the spring of 1996, a seed collection was made from the original collection site before establishing a breeder seed planting at the Lockeford PMC.

Anticipated Conservation Use: Restoration, critical area plantings, cover crop, and wildlife habitat,

Availability of Plant Materials: Foundation seed will be maintained by the Lockeford Plant Materials Center, P.O. Box 68, Lockeford, California, 95237. Access to the property of original collection is not available.

References:

1. Bishop, Gene. 1997. A Vegetative Guide to Selected Native Grasses of California, Technical Note PM-40. United States Department of Agriculture, Natural Resources Conservation Service, California.

2. Climate in Relation to Capability Class and Subclass. February 1970. U.S.
4. Department of Agriculture, Soil Conservation Service. Berkely California.

3. Crampton, Beecher. 1974. Grasses of California. University of
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4. Hitchcock, A.S., revised by Agnes Chase. 1950. Manual of the Grasses of the United States. Dover Publications, Inc. New York.

5. Love, Merton R. Febraury 1954. Interspecific Hybrization In Stipa II Hybrids of Stipa cernua, S. lepida, And S. pulchra. American Journal of Botany, Vol. 41.

6. Land Resource Regions and Major Land Resource Areas of The United States. December 1981. Agriculture Land Services, USDA. Washington D.C.

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* 4ETa Is the actual evaporation, 4 inch available water holding capacity (in inches). ETa is for the entire year.
ETa Actual evapotranspiration is a relative index for frost tolerant dry farmed crops and forage. It includes limitations imposed by rainfall, soil moisture storage, and energy.

** Ratings are based on a 1 to 9 scale with 1 being superior.