THE UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
TUCSON PLANT MATERIALS CENTER
TUCSON, ARIZONA

NOTICE OF RELEASE OF BONITA GERMPLASM PLAINS LOVEGRASS

The Natural Resources Conservation Service, U.S. Department of Agriculture announces the naming and release of Bonita Germplasm Plains Lovegrass (*Eragrostis intermedia* A.S. Hitchc.). Bonita Germplasm Plains Lovegrass has been assigned the NRCS Accession number 9094065.

Bonita Germplasm is released as a selected class of certified seed. This alternative release procedure is justified by the lack of existing commercial sources of Plains Lovegrass. Propagation material of this species is needed for ecosystem restoration and enhancement in southern Arizona. The potential for immediate use is high. There is currently no released Germplasm of Plains Lovegrass.

Species:	*Eragrostis intermedia* A.S. Hitchc.
Common Name:	Plains Lovegrass
Plant Symbol:	ERIN
Accession Number:	9094065

Collection Site Information

Bonita Germplasm is a composite of 30 accessions collected from mixed grasslands of southeastern Arizona, Major Land Resource Area 41 (MLRA 41), the Southeast Arizona Basin and Range, located in Arizona and southwest New Mexico (Table 1). MLRA 41 corresponds with Level 3 Ecoregion 79. This area is a transition between the Chihuahuan Desert and Sonoran Desert Regions. Plant materials were collected from distinct locations in southeast Arizona to develop a population of Plains Lovegrass with a broad genetic base and greater likelihood of adaptation to the range of conditions found in the region of collection (Fig. 1).

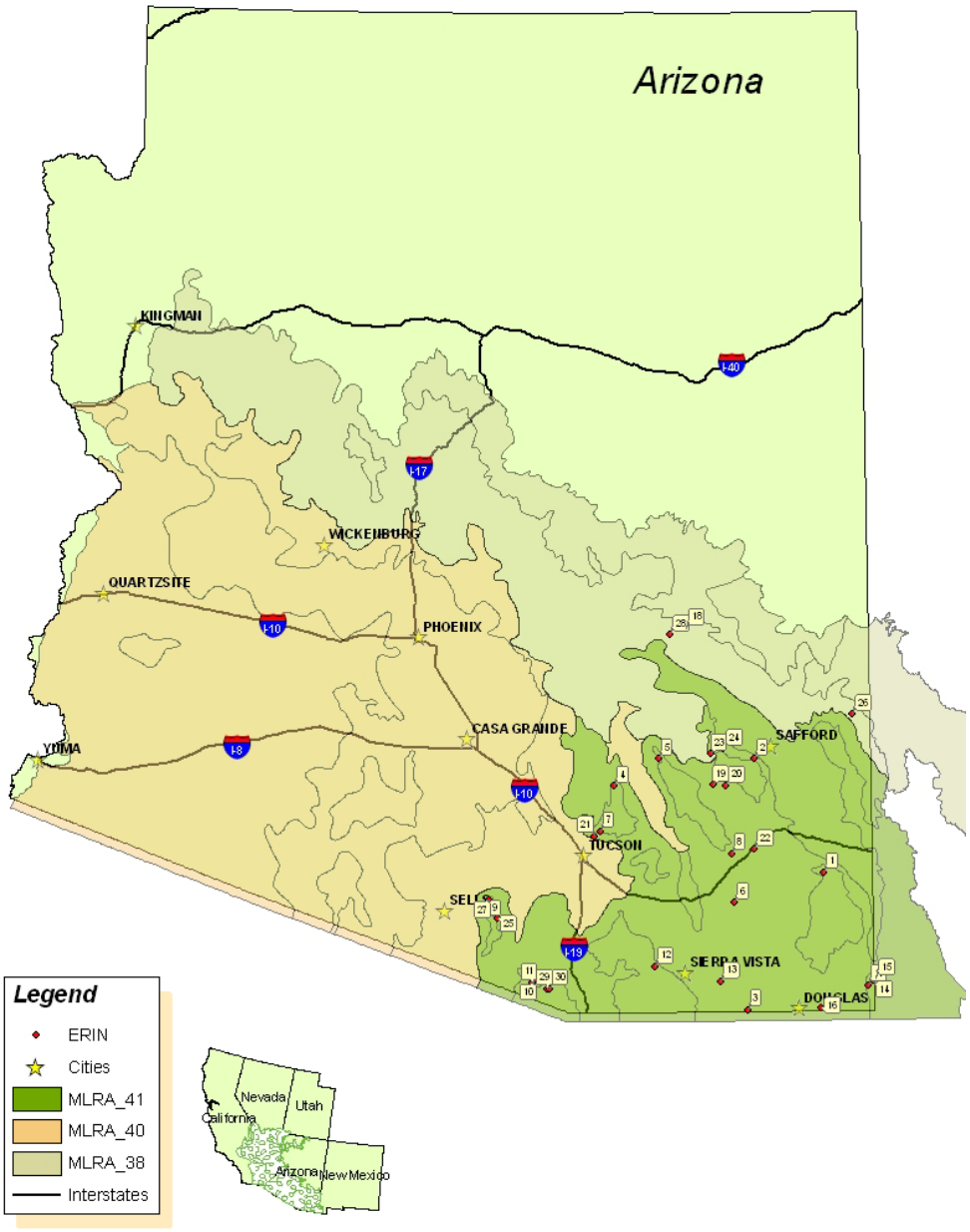

Figure 1. Collection Locations of Bonita Germplasm Plains Lovegrass.

Table 1. Accession number and collection location of 30 accessions for Bonita Germplasm Plains Lovegrass

Number	Accession Number	Collection Location	Number	Accession Number	Collection Location
1	9092484	Lon-109.3711 Lat-32.1175	16	9092686	-109.3992 31.3508
2	9092485	-109.8257 32.7662	17	9092692	-109.0908 31.4747
3	9092486	-109.8892 31.3439	18	9092703	-110.2814 33.5106
4	9092487	-110.7667 32.6167	19	9092709	-110.1011 32.6214
5	9092496	-110.4697 32.7712	20	9092716	-110.0214 32.6161
6	9092535	-109.9667 31.9500	21	9092743	-110.9000 32.3333
7	9092543	-110.8612 32.3607	22	9063991	-109.8320 32.2529
8	9092563	-109.9865 32.2312	23	9058812	-110.1160 32.7951
9	9092573	-111.6147 31.9585	24	9058768	-110.0306 32.8240
10	9092586	-111.3047 31.5089	25	9058769	-111.5469 31.8636
11	9092587	-111.3131 31.5000	26	9058770	-109.1610 33.0124
12	9092600	-110.5019 31.5901	27	9058806	-111.6067 31.9736
13	9092647	-110.0664 31.5033	28	9058771	-110.3846 33.4737
14	9092671	-109.0517 31.4978	29	9047438	-111.2167 31.4667
15	9092673	-109.0356 31.5111	30	9047439	-111.2000 31.4667

Description

Plains Lovegrass is a native, warm season perennial bunchgrass (Kearney et al 1960). Plains Lovegrass typically grows 2 to 3 ½ ft. Seed stalks are wiry and erect with heights of 1.2 to 3.5 inches (3-9 cm) (Kearney et al 1969). The leaf blades are usually narrow and grow to 12 to 35 in (10-25 cm) in length. The inflorescence is an erect, open, broadly pyramid-shaped panicle 8 to 16 in (15-35 cm) long and 6-12 in (15-30 cm) wide, with numerous branches that branch again. The fresh inflorescence is pinkish in color. The spikelets have 3 to 9 flowers (Hitchcock 1951). The seed is reddish-brown, very small (3,386,000 per lb) and rectangular-prismatic in shape. Plains Lovegrass has had various

chromosome numbers reported; 2n = ca. 54, 60, 72, ca. 74, 80, 100, 120 (Flora of North America 2002).

Plains Lovegrass occurs from Florida to Arizona and extends north into Missouri and south into scattered locations of Central America (Gould 1977). Plains Lovegrass occurs on clay, sandy and rocky soils and often on disturbed sites, at 0 to 6069 ft (0 to 1850 m) elevation. In Arizona Plains Lovegrass occurs at elevations from 3,800 to 6,000 ft (1066 to 1800 m). Plains Lovegrass will grow in most soil textures (Canfield 1948, Frost and Smith 1991). In southern Arizona it is most productive on sandy and sandy loam soils with poorly developed profiles, and least productive on shallow, rocky soils. Plains Lovegrass often grows in areas where annual precipitation is bimodal, with a wet season in winter and a second one in summer, when the bulk of the forage is produced. In areas where Plains Lovegrass grows productively, mean annual precipitation usually exceeds 15 in (400 mm) (Wallmo 1955).

Plains Lovegrass produces quality forage on the grazing lands of Arizona and New Mexico (Gould 1977 and Hitchcock 1951). However, because of its high seed stalk to forage ratio it does not produce a lot of forage. Plains Lovegrass provides forage that is intermediate in preference to cattle. It is often heavily grazed because it is one of the first species to green up in spring. Where cattle are present, this species often declines. Because of its importance as an early spring forage plant, ranges where this grass remains should be managed to maintain or increase it (Ruyle and Young 1997).

Bonita Germplasm Plains Lovegrass is not distinguishable from in situ populations of Plains Lovegrass occurring in southeast Arizona.

Method of Selection

Bonita Germplasm was developed from collections made at 30 distinct sites within southeast Arizona (Table 1). Accessions were planted into a 0.2 acre field at the Tucson Plant Materials Center in September 2005. Plugs of each accession were planted into a randomized complete block design with 9 replications. Visual evaluations conducted during 2005-2010 revealed little to no discernible differences among accessions for flowering dates, number of flowers, size or vigor. The assemblage contained no observable detrimental characteristics, therefore no selection was made. Efforts were made to avoid direct and indirect selection to maintain the genetic diversity of the assemblage. Seed harvested using the Woodward Flail-Vac was used to produce the composite population of Bonita Germplasm. Due to hybridization that may occur within the assemblage it should not be assumed that this Germplasm may be reproduced by repeating collections from the original collection sites. Composite populations such as this are not simply mixtures of the genotypes present in the field, but are expected to have a continuously changing genetic makeup (Fehr 1987). When a composite cross population is to be used for restoration, the earliest filial generation available should be used. This allows successive generations of the segregating population to be produced in a specific environment, allowing natural selection to become the principal component acting to produce genetic change.

By producing composite cross populations from a defined land resource area, we hope to match the abiotic and biotic factors of the area of intended use, such as elevation, soil

characteristics, climate regime, pathogens and predators. Composite cross populations respond dynamically to complex natural selection from abiotic and biotic stresses (Phillips and Wolfe 2005). By avoiding making selections for traits such as vegetative vigor or high productivity, we seek to produce a product that does not disrupt the ecological interaction between species or the gene pools of local plant communities. We also hope to produce a product with greater sustainability in the landscape.

Ecological Considerations

Bonita Germplasm is a composite of naturally occurring Germplasm and has undergone no purposeful selection. Bonita Germplasm does not differ significantly in rate of spread, seed production, or vigor from naturally occurring Plains Lovegrass. Bonita Germplasm Plains Lovegrass was determined "OK to release" when evaluated through the "Worksheet for Conducting and Environmental Evaluation of NRCS Plant Releases".

Anticipated Conservation Use

The potential uses of Bonita Germplasm Plains Lovegrass include restoration of disturbed areas, wildlife habitat improvement and increasing plant diversity on lands in southeast Arizona and southwest New Mexico (MLRA 41). Bonita Germplasm Plains Lovegrass reproduces through seed. Because of its importance as an early spring forage grass, and its quick response following fire (Bock et al 2009), the potential for use of this species for restoration is high.

Anticipated Area of Adaptation

Bonita Germplasm Plains Lovegrass was developed for use in southeastern Arizona Basin and Range (MLRA 41).

Availability of Plant Materials

Seed production will be maintained by the USDA-NRCS Tucson Plant Materials Center. Limited quantities of G2 seed are available to seed producers for increase and to other interested parties, as available.

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Prepared by:

Mary E. Hershdorfer, USDA-NRCS Tucson Plant Materials Center, 3241 N. Romero Road, Tucson, Arizona 85705

Heather Dial, USDA-NRCS Tucson Plant Materials Center, 3241 N. Romero Road, Tucson, Arizona 85705

Manuel Rosales, USDA-NRCS Tucson Plant Materials Center, 3241 N. Romero Road, Tucson, Arizona 85705

Signatures for release of:

Bonita Germplasm Plains Lovegrass (*Eragrostis intermedia*)

_____ _____

David McKay
Arizona State Conservationist
United States Department of Agriculture
Natural Resources Conservation Service
Phoenix, Arizona

Date

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Mike Hubbs
Director, Ecological Sciences Division
United States Department of Agriculture
Natural Resources Conservation Service
Washington, D.C.

Date