

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
KNOX CITY, TEXAS

and

TEXAS AGRILIFE RESEARCH
STEPHENVILLE, TEXAS

NOTICE OF RELEASE OF PLAINS GERMPASM PRAIRIE ACACIA
SELECTED CLASS OF NATURAL GERMPASM

The Natural Resources Conservation Service, U.S. Department of Agriculture and Texas AgriLife Research announce the naming and release of Plains Germplasm prairie acacia [*Acacia angustissima* (Mill.) Kunze var. *hirta* (Nutt.) B.L. Robins]. Plains Germplasm prairie acacia has been assigned the NRCS Accession number 9085672.

The Selected Class of Natural Germplasm release procedure is justified because of the demand for a prairie acacia seed source for conservation planting mixtures in central, north-central, and west Texas and southern Oklahoma. Despite the existence of over 50 herbaceous native legume species in north Texas alone (Diggs et al., 1999), very few are commercially available for rangeland and pasture use. Perennial legumes are particularly difficult to establish, justifying the development of Plains Germplasm prairie acacia. The selection of this species for release is further supported by the fact that this species propagates via both seed and aggressive rhizomes, the latter characteristic being rare among herbaceous legumes.

Collection Site Information: Seventeen accessions collected from central and north central Texas were combined and assigned accession 9085672 to develop Plains Germplasm. These seventeen accessions and their county of origin, and associated major land resource areas (MLRA) are presented in Table 1.

Table 1. Origin of accessions used to develop Plains Germplasm prairie acacia, USDA-NRCS James E. "Bud" Smith Plant Materials Center, Knox City, Texas.

Accession	County of Origin	MLRA
9049624	Frio	83A
9064978	King	78
9049620	Runnels	78
9049617	Crockett	81
9064926	Austin	150A
9064928	Lee	86
9064965	Haskell	78
9064952	DeWitt	83A
9064922	Coke	78
9064970	Callahan	80B
9064972	Bell	85
9064924	Grimes	86
9064921	Taylor	78
9064915	Hamilton	85
9049622	Schleicher	81
9064933	Bell	85
9064917	Comanche	84B

Description: Plains Germplasm is a native, perennial, warm-season, deep-taprooted legume that forms colonies by means of woody rhizomes with aerial stems that are thornless and rarely over 1 m tall. The plant has attractive and delicate fern-like foliage. Stems are thin, usually unbranched, glabrate, and ridged. Leaves are alternate. The blade is usually divided into 3 – 12 pairs of segments, which again are divided into 6 – 20 pairs of tiny leaflets. Flowers are small and white to creamy yellow, with five petals and numerous long and protruding stamens; numerous and congested in rounded terminal clusters on long stalks arising from upper leaf axils. Fruit is a brownish flat seed pod 4-7 cm long and 6-7 mm wide (Powell, 1988; Diggs et al., 1999).

Method of Breeding and Selection: The original assembly of prairie acacia collections consisted of forty-one accessions. Accessions were planted on a Miles fine sandy loam soil in non replicated plots (1-m x 6-m) in 1993 at the USDA-NRCS James E. “Bud” Smith Plant Materials Center (USDA, NRCS, 2007). Accessions were evaluated annually for drought tolerance, seed production, and plant vigor from 1994-1996. In 1997, seventeen accessions were selected from the original forty-one accessions on similar growth habit and performance in the initial evaluation nursery (Table 2). Seed of each of the seventeen accessions were bulked, and increased as accession 9085672. Average seed yield of Plains Germplasm, harvested with a conventional combine and cleaned with an air screen cleaner, range from 127 to 136 kg/ha⁻¹. Rincon-Rosales et al. (2003) reported that acacia seed germination is increased with scarification; however, Plains Germplasm has emerged successfully without seed scarification or other seed enhancement treatments when planted in seed production fields after seed was harvested/cleaned with conventional equipment (i.e. partial mechanical scarification likely resulted).

Table 2. Average drought, seed production and vigor ratings of seventeen accessions of prairie acacia at the USDA-NRCS, James “Bud” Smith Plant Materials Center, Knox City, Texas 1994-1997.

Accession	Drought ^{1/}	Seed Production	Vigor
9049624	1	6	1
9064978	1	6	1
9049620	1	6	1
9049617	1	1	1
9064926	1	1	1
9064928	1	4	1
9064965	1	1	1
9064952	1	3	1
9064922	1	1	1
9064970	1	1	1
9064972	1	1	1
9064924	1	1	1
9064921	1	1	1
9064915	1	1	1
9049622	1	6	1
9064933	1	2	1
9064917	1	1	1

1 = rating scale for drought, seed production and vigor where 1 = excellent; 5 = average; 9 poor.

Ecological Considerations and Evaluation: Plains Germplasm is a collection of natural germplasm which has not been manipulated or undergone breeding selection. Plains Germplasm was determined “OK to release” when evaluated through the “Worksheet for Environmental Evaluation of the USDA Natural Resources Conservation Service Plant Releases” (USDA, NRCS, 2000).

Conservation Use: Prairie acacia is a native legume which is high in protein, nutritious (Muir et al., 2005), palatable, and readily eaten by livestock. As an indicator of range condition, it decreases under misuse or heavy grazing. Plains Germplasm will be incorporated into NRCS conservation practice standards including Range Seeding (550), Upland Wildlife Habitat Management (645), Conservation Cover (327), and Critical Area Plantings (342).

Area of Adaptation: Prairie acacia is found in dry soils on prairie hillsides, savannahs, rock outcrops, grasslands, and open shrubby vegetation areas. It grows well on well-drained acidic to slightly alkaline soils in Zones 6a – 10b of the USDA Plant Hardiness Zone, is widespread in Texas, and is the most common *Acacia* in Texas (Diggs et al., 1999). The range of adaptation of Plains Germplasm prairie acacia is not known. However, because of the origin of the accessions used in the composite to develop Plains Germplasm, it is anticipated that the potential area of adaptation is northern, western and central Texas, and southern Oklahoma.

Plains Germplasm will be compared with other prairie acacia sources and selections for adaptation, herbage production and quality, and seed yields in cooperation with Texas AgriLife Research Scientists and cooperating scientists at multiple locations in northeastern, eastern, southern, central and western Texas, northern Louisiana, and southern Oklahoma beginning in May 2008. Adaptation and performance will be tested in New Mexico and Arizona.

Availability of Plant Materials: G1 seed will be maintained by the USDA – NRCS James E. “Bud” Smith Plant Materials Center and will be available in limited quantities through the Texas Foundation Seed Service, 11914 Highway 70, Vernon, Texas 76384.

References:

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Rincon-Rosales, R., Culebro-Espanosa, N.R., Gutierrez-Miceli, F.A. and Dendooven, L. 2003. Scarification of seeds of *Acacia angustissima* (Mill) Kuntze and its effect on germination. *Seed Sci.& Technol.* 31:301-307.

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Signatures for the release of:
Plains Germplasm prairie acacia [*Acacia angustissima* var. *hirta* (Nutt.) B.L. Robins]



Acting

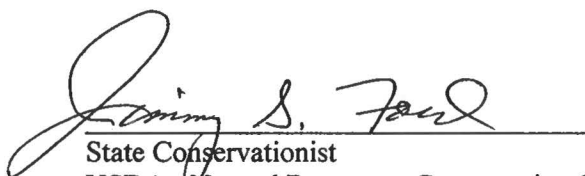
AUG 29 2008

Date

State Conservationist

USDA - Natural Resources Conservation Service

Temple, Texas



Acting For

9/2/08

Date

State Conservationist

USDA - Natural Resources Conservation Service

Stillwater, Oklahoma

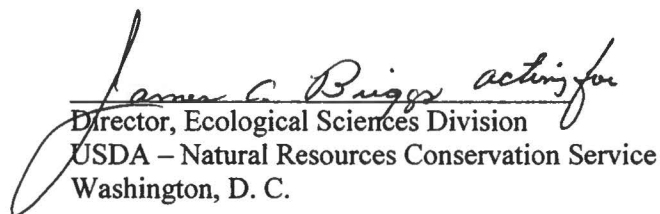


8-26-08

Date

Texas AgriLife Research

College Station, Texas



9-4-08

Date

Director, Ecological Sciences Division

USDA - Natural Resources Conservation Service

Washington, D. C.