

TEXAS A&M UNIVERSITY-KINGSVILLE
CAESAR KLEBERG WILDLIFE RESEARCH INSTITUTE
SOUTH TEXAS NATIVES
KINGSVILLE, TEXAS

And

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
E. "KIKI" DE LA GARZA PLANT MATERIALS CENTER
KINGSVILLE, TEXAS

And

TEXAS AGRILIFE RESEARCH STATION
BEEVILLE, TEXAS

NOTICE OF RELEASE OF MAVERICK GERMPLASM PINK PAPPUSGRASS
SELECTED PLANT MATERIAL

Texas A&M University-Kingsville, Caesar Kleberg Wildlife Research Institute, *South Texas Natives*, U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), E."Kika" de la Garza Plant Materials Center and the Texas AgriLife Research Station at Beeville, Texas announce the release of a selected plant material of pink pappusgrass (*Pappophorum bicolor* E. Fourn.) for the South Texas Ecoregion.

This plant will be referred to as Maverick Germplasm pink pappusgrass, and is released as a selected plant material class of certified seed (natural track). Maverick Germplasm was tested under the USDA NRCS accession numbers 9090676, 9089079, 9090405, 9085324, 9088912, 9090481, and 9090520. Seed of the Maverick Germplasm pink pappusgrass release will be identified by USDA NRCS accession number 9093444.

This alternative release procedure is justified because there are no existing Texas commercial sources of tested and adapted pink pappusgrass. The potential for immediate use is high, especially for upland wildlife plantings, highway rights of way and for range seeding mixes.

A. *Proposed Variety Name and Temporary Designation:*

MAVERICK GERMPLASM PINK PAPPUSGRASS

B. *Family, kind, genus and species:*

Family: Poaceae

Tribe: Pappophoreae

Kind: pink pappusgrass

Genus and species: *Pappophorum bicolor* E. Fourn.

C. Origin and breeding history of the variety:

Collection Site Information: Accession 9090676 was collected by Forrest Smith and Cody Lawson on June 26, 2003 from native plants located at the San Pedro Ranch in Maverick County, Texas at 28°13' 59" N. latitude and 100°07' 38" W. longitude (MLRA 83). Soil type of the collection site is Jimenez gravelly loam (USDA NRCS 2009).

Accession 9089079 was collected by Forrest Smith and Cody Lawson on August 11, 2002 from native plants located at the Cerrito Prieto Ranch in Webb County, Texas at 27° 56' 20" N. latitude and 99° 25' 44" W. longitude (MLRA 83). Soil type of the collection site is Moglia clay loam (USDA NRCS 2009).

Accession 9090405 was collected by Forrest Smith and Paula Maywald on December 18, 2002 from native plants located at the Anaconcho Ranch in Kinney County, Texas at 29° 10' 00" N. latitude and 100° 15' 26" W. longitude (MLRA 83). Soil type of the collection site is Ector stony clay loam (USDA NRCS 2009).

Accession 9085324 was collected by John Lloyd-Reilley on July 14, 2000 from native plants located in Uvalde County, Texas (MLRA 83). Soil type of the collection site was reported to be a silty clay loam.

Accession 9088912 was collected by Forrest Smith and Cody Lawson on August 15, 2002 from native plants located at the Piloncillo Ranch in Dimmit County, Texas at 28° 16' 09" N. latitude and 99° 33' 24" W. longitude (MLRA 83). Soil type of the collection site is Brundage fine sandy loam (USDA NRCS 2009).

Accession 9090481 was collected by Forrest Smith, Cody Lawson, and Poncho Ortega on January 8, 2003 from native plants located at the Bentsen Ranch in Starr County, Texas at 26° 35' 59" N. latitude and 98° 38' 55" W. longitude (MLRA 83). Soil type of the collection site is McAllen fine sandy loam (USDA NRCS 2009).

Accession 9090520 was collected by Forrest Smith, Cody Lawson, and Keith Pawelek on June 3, 2003 from native plants located at the Temple Ranch in Duval County, Texas at 27° 57' 56" N. latitude and 98° 26' 30" W. longitude (MLRA 83). Soil type of the collection site is Pernitas fine sandy loam (USDA NRCS 2009).

Breeding history: Plants evaluated in all trials were grown from the original seed collection. Breeder seed of each of the seven accessions was also grown from isolated increase plots of the original seed collection. All seed increase plots were grown in isolation from other *Pappophorum* accessions, and wild populations of *Pappophorum*. No intentional breeding, selection or genetic manipulation has been carried out on these

accessions. Combination of accessions for release should have no effect on the genetic makeup of the release, as pink pappusgrass is thought to be an apomictic or self-pollinated species. Each accession in the release should maintain the genetic integrity of the parent population. Plant stature and seed maturation are similar among the selected accessions.

D. Objective description of the variety:

Description:

Pink pappusgrass is a perennial grass, similar in vegetative characteristics to *P. vaginatum*. The culms are 30-80 (-100) cm. tall, stiffly erect or somewhat geniculate below, and glabrous. Sheaths have a tuft of long hairs on either side of collar, and the hairs are deciduous with age. The ligule is a ring of short hairs, but base of blade immediately above ligule has hairs 2-4 mm. long. The blades are flat or involute, scabrous on adaxial surface above base, and smooth on the adaxial surface, 10-20 (-30) cm. long and 1.5-5 mm. broad. Panicles are tightly or loosely contracted, most frequently with short but somewhat erect-spreading branches, pink or purple-tinged at maturity, mostly 12-20 cm. long. Spikelets are short pediceled, appressed, 6-8 mm. long with 2-3 perfect florets and 2 reduced florets above. Glumes are broad, glabrous, acute or minutely notched and mucronate at apex, usually 3-4 mm. long. Lemmas have a broad, firm, rounded, many nerved body, and are pubescent on the midnerve and margins from the base to middle, dissected into 11-15 awns of irregular lengths, the longest 2.5-5 mm. long. The body of lower lemmas is 3-4 mm. long. Paleas are slightly longer than lemma bodies, 2-nerved but tapering to an acute or acuminate apex. Rudimentary florets are similar to perfect ones, but smaller. Chromosome number is reported as $2n=100$ (Reeder and Toolin 1989). Pink pappusgrass flowers from April through November (Gould 1975). Cleaned seed of pink pappusgrass has an average of 322,400 seeds per pound.

Pink pappusgrass exhibits a self-pollinated mode of reproduction. We have not observed off types or characteristics deviant from the parent population in three generations of propagation. A release of a similar species, *Pappophorum vaginatum*, from Arizona, Pima Germplasm Pima pappusgrass, is also assumed to be self-pollinated or apomictic (Garner et al. 2006). Within accessions, plant morphology and phenology are identical, further supporting the assumption of apomictic reproductive biology. However, without conclusive knowledge that this species is apomictic, we have increased each of the seven accessions in isolation prior to blending as Maverick Germplasm to insure inclusion of genetic diversity representative of the source populations.

Potential Uses: Maverick Germplasm pink pappusgrass is recommended for upland wildlife, highway rights of way, and range plantings.

E. Evidence

Method of Breeding and Selection:

Initial Evaluation

As part of an effort to collect, evaluate, and release germplasms of a variety of plants native to South Texas, personnel from *South Texas Natives* obtained seed of pink and whiplash pappusgrasses from 70 field locations in South Texas from 2001-2004. These species of *Pappophorum* were selected for evaluation of potential use in revegetation plantings on rangelands and highway rights of way, and for use in upland wildlife habitat plantings. Pink and whiplash pappusgrass have considerable overlap in range and habit, and often grow together (Reeder 2008). Of the 70 collections, 55 were determined to be pink pappusgrass, six whiplash pappusgrass, and nine a mixture of the two species. A decision was made to evaluate all 70 accessions concurrently because of the similarity of growth habits, habitat of origin, range of occurrence, and breeding biology (assumed apomictic), despite the two species being heterospecific.

In December 2004, all 70 collections were seeded in greenhouse flats to produce transplants for evaluation. Two accessions had 0% germination in this planting, and were eliminated from consideration. In 2005, transplants of the 68 remaining accessions were planted in a randomized, complete block design with 2-10 plant replications of each accession at three locations (Texas AgriLife Research Station (TARS) Uvalde (Uvalde County), Rio Farms (Hidalgo County), and Rancho Blanco (Webb County)). An additional replication was also planted at the USDA NRCS E. "Kika" De La Garza Plant Materials Center (Kleberg County); this planting consisted of paired row planting of 50 plants of each accession in a complete block design.

Accessions at each location were evaluated monthly throughout the growing season in 2005 under fully irrigated conditions and bi-monthly under rain-fed conditions in 2006. Data was collected on important traits for commercial production and ecological function including: survival, plant vigor, foliage density, uniformity, forage (biomass) production, seed production, and plant height. Each replication of each accession was given a rank of 1 to 9 (1 best, 9 worst) based on visual observation of each characteristic at the given evaluation. Data from each evaluation year was pooled, and mean performance in each category by year was used for selection of superior accessions. In 2005, under fully irrigated conditions, seed was collected from each accession at each location for testing percent active seed germination under favorable production conditions. Accessions were not evaluated in 2006 at TARS-Uvalde because of severe drought conditions, as no appreciable plant growth occurred.

Advanced Evaluation

Following evaluation in 2005 and 2006, 11 accessions were selected for advanced evaluation and initial seed increase. Of these 11 accessions, three were whiplash pappusgrass, and eight pink pappusgrass. One of the 8 selections of pink pappusgrass had no original seed left, and was removed from consideration, leaving seven selected

accessions. Accessions were chosen using a combination of data collected from each evaluation site and active seed germination test results. Accessions that showed greater than mean performance in the greatest number of evaluation categories at all locations were selected. Transplants of these 10 accessions were grown from the original seed collections and planted for isolated seed increase and evaluation of harvest characteristics, seed set and timing, and adaptability to agronomic production in 2007 at Rio Farms. Additional advanced evaluation plots containing 250 plants per accession were planted at the STN Farm, near Kingsville, Texas in the spring of 2008. All accessions performed well in this evaluation, and similar growth rates and seed maturity dates were observed. Similar seed maturation dates and seedhead stature of the selected accessions have been confirmed at four growing locations.

Selection

All 10 accessions planted for advanced evaluation showed similar phenology in the onset of flowering, seed-set, and seed maturity. Each accession was harvested successfully using a Flail-Vac seed harvester, and had excellent survival in rowed, fully irrigated setting under intense cultivation and herbicide exposure. The three whiplash pappusgrass accessions were designated for release as Webb Germplasm whiplash pappusgrass, and the seven pink pappusgrass accessions as Maverick Germplasm pink pappusgrass.

Seeding trials

Numerous seeding trials have documented good establishment of pappusgrasses from seed in south Texas. Plantings at the Welder Wildlife Refuge near Sinton, Texas had good establishment from seed >1 year after planting, following a severe drought. These plantings indicated good soil seed life and persistence, an important characteristic for range seed mix components in south Texas. A blend of pink and whiplash pappusgrass seed was also planted as part of a highway right of way seeding demonstration in Kleberg County, Texas. Emergence and persistence of pappusgrass in this planting was also documented following a severe drought.

A composite harvest of seed of pink and whiplash pappusgrass seed from evaluation plots was planted in a native grass seeding trial in 2006 at Rancho Blanco, near Laredo, Texas. Three seeding rates (10, 20, and 30 pure live seeds/ft²) were sown in replicated plots at three times throughout the year (May-spring, August-summer, and November-fall) in areas dominated by the exotic grass buffelgrass (*Pennisetum ciliare*). All plantings were fully irrigated. These plantings showed that seeding in the fall season was superior for establishment of pappusgrass in south Texas. One year after planting, spring plots had 6% cover, summer plots 15% cover, and fall plots 37% cover. By two years following plantings, spring seeded plots had 1% cover, summer plots 0% cover, and fall plots 22% cover. Seeding rates had no significant effect on cover of pappusgrass in these plantings. Of 12 native grass species planted in these trials, pappusgrass was the 4th most competitive species with the exotic buffelgrass.

A blend of the selected accessions of pappusgrass was planted in a research project in the lower Rio Grande Valley of Texas in March 2008. Pappusgrass seedlings did not emerge until the following October, despite above average rainfall and soil

moisture by mid-June of the planting year. These results concur with observations in our evaluations plots at various locations, and the Rancho Blanco plantings where we have also noted a dramatic increase of volunteer pappusgrass seedlings in the fall.

The recommended seeding rate for pure stands of Maverick Germplasm pink pappusgrass is 3 lbs. pure live seed per acre. Seed coatings (talc based) increase the flowability of seed through standard seed drills. Successful establishment has been obtained in both drill and broadcast plantings.

Seed Increase

Seed harvested from the 2007 advanced evaluation plantings was used to establish breeder seed increase fields of each accession selected for release in 2008. Seed harvested from this planting will be blended by a specified range of pure live seed (PLS)/accession, and distributed to interested commercial seed producers.

Seed Production, Harvest, and Cleaning

Seed increase plots have been planted on 36" bedded rows, however flat plantings may be possible with frequent weeding. Pink pappusgrass produces seed throughout the growing season, whenever adequate soil moisture is present. Seed is harvested with a Flail-Vac or similar brush-type harvester. The use of slow travel and RPM speeds while harvesting results in relatively clean seed, needing little cleaning or processing. Seed harvested in this manner averages 42% pure live seed. To clean stems and chaff from harvests, a clipper seed cleaner has been used when needed. No attempt has been made to clean caryopsis from the bur or glumes, as seed damage or reductions in seed life are likely to occur.

Common pests of pappusgrass seed include fall armyworms (*Spodoptera* spp.), thrips (*Thrips* spp.), and rice stink bugs (*Oebalus pugnax*). Control of the pests may be necessary in order to produce seed crops in dry years under irrigation. Pappusgrass seed fields should be mowed or burned annually to promote vigorous growth. Deep soil tillage or frequent close cultivation is also recommended to promote seed production. Herbicides containing 2, 4-D, Pendamethelin, Atrazine, and Halosulfuron-methyl are safe for weed control once plants are beyond the seedling growth stage. Established plants (>1 yr. age) have shown excellent tolerance to Glyphosate herbicides; discretion should be used to avoid applications during times of vigorous active growth of pappusgrass stands.

Plantings of pink pappusgrass in north central Texas at 2 locations (Stephenville and Breckenridge, TX) have had good winter survival <2 years after seeding. Long-term persistence of this species for seed production in these areas is unknown.

F. Area of adaptation

Based on the distribution of *Pappophorum bicolor*, best performance of Maverick Germplasm will likely be in the Gulf Prairies and Marshes, Rio Grande Plain, and Sand Plains of south Texas. Good performance is likely in the southern portions of the

Edwards Plateau, eastern portion of the Trans Pecos Mountains and Basins eco-regions of Texas, and adjacent portions of northern Mexico, but has not been tested.

G. Procedure for maintaining stock classes of seed

Breeder seed will be produced and maintained by *South Texas Natives* in conjunction with the Texas Foundation Seed Service.

H. Description of how variety is to be constituted, etc.

Maverick Germplasm pink pappusgrass is released as Selected Texas Native Ecotype. Breeder seed will be made up of equal amounts (by percent PLS, +/-7%) of each of the seven accessions. Breeder seed may contain a maximum of 21% PLS of any one accession and a minimum of 7% PLS of any one accession. Foundation seed is that which is grown from plantings of the Breeder seed blend. Certified seed is that which is grown from plantings of the Foundation seed. Increase using certified seed is prohibited.

I. Additional restrictions, etc.

Foundation and certified seed fields have a 7 year production limit.

Will application be made to the Plant Variety Protection Office? YES__ NO X

If yes will the application specify that the variety is to be sold by variety name only as a class of certified seed? YES__ NO__

Royalty distribution: A royalty per pound of Certified Pure Live Seed sold will be collected by the Texas Foundation Seed Service, and placed in a project account with discretionary spending authority, requiring approval for expenditures by the *South Texas Natives Coordinator* and Manager of the USDA NRCS E. "Kika" de la Garza Plant Materials Center, for the benefit of native seed development for south Texas.

Ecological Considerations and Evaluation: An Environmental Evaluation of Plant Materials Releases was completed using guidelines established by NRCS, and the best available information for this species. Results of this evaluation determined that Maverick Germplasm pink pappusgrass was suitable for release based on the criterion contained in this document. This conclusion is mainly because pink pappusgrass is a naturally occurring species in Texas and planting it would therefore not constitute an introduction of an exotic species into local ecosystems. Any negative impacts on other native plant species would likely be minimal to non-existent. Also, release of this species will make available an additional native species for rangeland planting, will provide a good seed source to upland avian wildlife species and provide unknown benefits by maintaining and contributing habitat that harbors beneficial insects and butterflies.

Conservation Use: Maverick Germplasm pink pappusgrass will provide a native plant species for rangeland planting and wildlife habitat improvement.

Availability of Plant Materials: Breeder Seed will be maintained by *South Texas Natives*, Kingsville, Texas. Breeder seed will be available by September 2009. At this time release of the germplasm will be distributed to a single commercial grower.

References:

Garner, E.R., M.E. Hershendorfer, and B. Munda. 2006. Notice of Release of Pima Pappusgrass Selected Class of Germplasm. USDA-NRCS Tucson Plant Materials Center. Tucson, Arizona.

Gould, F.W. 1975. The Grasses of Texas. Texas A&M University Press. College Station, Texas.

Reeder, J.R. 2008. 18.01 PAPPOPHORUM Schreb *in* Manual of Grasses for North America. Utah State University, Logan, Utah.

Reeder J.R. and L.J. Toolin. 1989. Notes on *Pappophorum* (Gramineae: Pappophoreae). Systematic Botany 14:3, 349-358.

USDA NRCS. 2009. Web soil survey. <http://websoilsurvey.nrcs.usda.gov>.

Prepared by:

Forrest S. Smith
Coordinator
South Texas Natives
Caesar Kleberg Wildlife Research Institute
Texas A&M University-Kingsville
MSC 218, 700 Univ. Blvd.
Kingsville, TX 78363

TABLES AND FIGURES

Table 1. *Pappophorum* collections evaluated in the development of Webb and Maverick Germplasms.

Accession	Species	County	Location	Soil type
PMT 2593	<i>P. bicolor</i>	Webb	Laredo, TX	
PMT 3033	<i>P. bicolor</i>	Dimmit	Carrizo Springs, TX	
9076944	<i>P. bicolor</i>	Jim Wells	Hwy 44	sandy loam
9085241	<i>P. bicolor</i>	Dimmit	Carrizo Springs, TX	Poteet FSL
9085252	<i>P. bicolor</i>	Dewitt	Hwy 87 R.O.W.	loamy sand
9085257	<i>P. bicolor</i>	Starr		Catarina clay
9085302	<i>P. bicolor</i>	Duval	JD Lopez ranch	
9085324	<i>P. bicolor</i>	Uvalde	Stichler's house	silty clay loam
9086195	<i>P. bicolor</i>	Zavala	Westwind ranch	
9086196	<i>P. bicolor</i>	Zavala	Westwind ranch	
9086272	<i>P. vaginatum</i>	Atascosa	74 ranch	sandy loam
9086276	<i>P. vaginatum</i>	Atascosa	Peeler ranch	Loam
9088534	<i>P. bicolor</i>	Zavala		sandy loam
9088540	<i>P. bicolor</i>	Frio		Loam
9088567	<i>P. bicolor</i>	Zavala	Westwind ranch	sandy loam
9088620	<i>P. bicolor</i>	Dimmit	Dos Amigos ranch	Loam
9088622	<i>P. vaginatum</i>	Dimmit	Dos Amigos ranch	Loamy
9088627	Mix	Dimmit	Dos Amigos ranch	Loam
9088639	<i>P. bicolor</i>	Dimmit	Dos Amigos ranch	Loam
9088710	<i>P. bicolor</i>	Webb	Old Mines rd	gravel loam
9088715	<i>P. vaginatum</i>	Webb	Cerrito Prieto ranch	sandy loam
9088738	<i>P. bicolor</i>	Jim Hogg		caliche loam
9088785	<i>P. bicolor</i>	Webb	Cerrito Prieto ranch	sandy loam
9088792	<i>P. bicolor</i>	Webb	Cerrito Prieto ranch	sandy loam
9088793	<i>P. bicolor</i>	Webb		sandy loam
9088855	Mix	Webb	7 C's ranch	Loam
9088856	Mix	Webb	7 C's ranch	Loam
9088858	Mix	Webb	7 C's ranch	Loam
9088904	<i>P. bicolor</i>	Dimmit	Piloncillo ranch	Loam
9088912	<i>P. bicolor</i>	Dimmit	Piloncillo ranch	sandy loam
9088954	<i>P. bicolor</i>	Frio	Shiner ranch	sandy loam
9088970	<i>P. bicolor</i>	Frio	Shiner ranch	sandy loam
9088982	<i>P. bicolor</i>	Uvalde	FM 1022	Loam
9088995	<i>P. bicolor</i>	Dimmit	Piloncillo ranch	clay loam
9088999	<i>P. bicolor</i>	LaSalle	7 C's ranch	clay loam
9089000	<i>P. bicolor</i>	LaSalle	Chaparral WMA	sandy clay loam
9089079	<i>P. bicolor</i>	Webb	Cerrito Prieto ranch	sandy loam
9089171	<i>P. bicolor</i>	Medina	Co. Rd 5232	Loam
9089176	<i>P. bicolor</i>	Medina	CR 742	sandy loam
9089239	Mix	LaSalle	Hwy 624	Loam
9090329	<i>P. vaginatum</i>	LaSalle	Herradura ranch	Loam
9090405	<i>P. bicolor</i>	Kinney	Anaconcho ranch	clay loam
9090407	<i>P. bicolor</i>	Kinney	Anaconcho ranch	Loam
9090416	<i>P. bicolor</i>	Kinney	Anaconcho ranch	gravel-loam
9090469	Mix	McMullen	NE of Tilden	Clay
9090481	<i>P. bicolor</i>	Starr	Benison ranch	sandy loam
9090500	Mix	Frio	CR 189	sandy loam
9090518	<i>P. bicolor</i>	Frio	FM 3176	Loam
9090519	<i>P. bicolor</i>	Medina	FM 1343	red sandy loam
9090520	<i>P. bicolor</i>	Duval	Temple ranch	loamy sand

Accession	Species	County	Location	Soil type
9090583	<i>P. bicolor</i>	Frio	Half ranch	sandy loam
9090612	<i>P. bicolor</i>	Maverick	Faith ranch	Loam
9090627	<i>P. bicolor</i>	Dimmit	San Pedro ranch	sandy loam
9090635	<i>P. bicolor</i>	Kinney	Hwy 90	Clay
9090637	<i>P. bicolor</i>	Kinney	Dolan falls	Clay
9090646	<i>P. bicolor</i>	Kinney	Seminole Can. SP	Loam
9090660	<i>P. bicolor</i>	Maverick	Faith ranch	Loam
9090674	<i>P. bicolor</i>	Dimmit	San Pedro ranch	sandy loam
9090676	<i>P. bicolor</i>	Maverick	San Pedro ranch	Loam
9090700	<i>P. bicolor</i>	Frio	Calvert ranch	sandy clay
9090755	<i>P. bicolor</i>	Frio	Calvert ranch	sandy loam
9091841	<i>P. vaginatum</i>	Zapata	Arroyo Velano	sandy clay loam
9091859	<i>P. bicolor</i>	Zapata	Arroyo Velano	gravelly loam
9091869	<i>P. bicolor</i>	Zapata	Noser ranch	clay loam
9091882	<i>P. bicolor</i>	Dimmit	La Bandera	silty clay
9091885	<i>P. bicolor</i>	Zavala	Chaparrosa ranch	Clay
9091895	<i>P. bicolor</i>	Maverick	Comanche Ranch	gravelly clay
9093175	<i>P. bicolor</i>	Duval	Duval co. ranch	sandy clay loam
9093185	<i>P. bicolor</i>	Zapata	Rafael Flores ranch	loamy sand
9093208	<i>P. bicolor</i>	Zavala	Chaparrosa Ranch	Sandy loam

Table 2. Field plantings of *Pappophorum* collections 2005-2009, during the development of Maverick and Webb Germplasms.

Date	Location	County	Planting type	# accessions
3/2005-2009	Rancho Blanco	Webb	Transplant (2 x10)	68
4/2005-2008	TAR Uvalde	Uvalde	Transplant (2x10)	68
3/2005-2009	Rio Farms	Hidalgo	Transplant (2x10)	68
2005-2007	PMC	Kleberg	Transplant (1x50)	52
2007-2008	Bladerunner Farms	Atascosa	Seed (irrigated)	68
2006-2009	Rancho Blanco	Webb	Seed (irrigated)	68
2007	US HWY 77	Kleberg	Seed	68
2006	Welder Refuge	San Patricio	Seed	68
2007	Rio Farms	Hidalgo	Transplant (1x20)	10
2008-2009	Rio Farms	Hidalgo	Seed increase	10
2008	Taormina WMA	Hidalgo	Seed	10
2008	Turner Seed Co.	Stephens	Seed	10
2008	Pogue Seed Co.	Karnes	Seed	10
2007	TAR Stephenville	Erath	Seed	10

Table 3. Comparative difference in evaluation scores of selected and non-selected accessions of pink pappusgrass, across all planting sites and evaluation years.

Category	Selected Accessions	Non Selected Accessions	Difference (%)
% survival	99.00	96.00	3.03
plant vigor*	2.69	2.84	5.58
foliage density*	2.70	2.83	4.47
uniformity*	2.08	2.18	4.74
development stage*	1.08	1.10	0.99
seed production*	2.38	2.55	7.10
forage production*	2.79	2.85	2.07
plant height*	2.59	2.68	3.81
% active seed germ	36.08	29.17	19.15

*Ocular estimates with 1 being the best and 9 being the poorest.

Figure 1. Collection, evaluation, and experimental planting sites used in development of Maverick Germplasm pink pappusgrass .

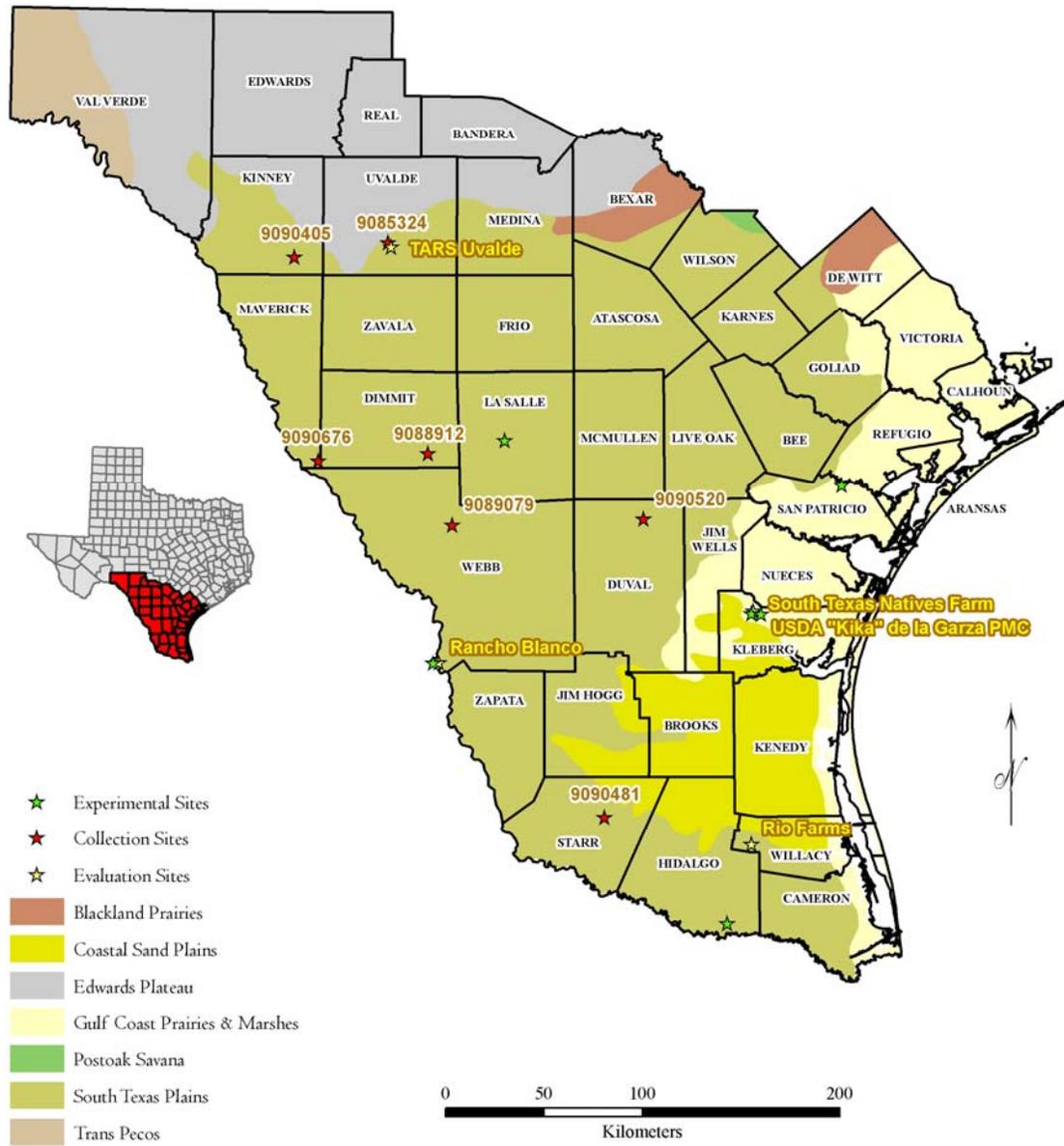


Figure 2. Seed increase field of accession 9090481 pink pappusgrass, a component of Maverick Germplasm, 2008 at Rio Farms.



Figure 3. Representative plant of Maverick Germplasm pink pappusgrass.



MARKETING PLAN

MAVERICK GERMPLASM PINK PAPPUSGRASS

January 2010

Distribute breeder seed to commercial grower

January 2010

Finalize and obtain approval for release, and print supporting documents (fact sheet & brochure)

Spring/Summer 2010

Draft press release and host celebration of release once seed is commercially available to consumers.

Staff information booths at 2 landowner and consumer oriented symposiums or conferences in south Texas

Winter 2011

Present results and overview of development process at International Meeting of the Society for Range Management

Publish “notice of release” article in Native Plant Journal

SEED AVAILABILITY

MAVERICK GERMPLASM PINK PAPPUSGRASS

As of September 31, 2009, 75 lbs. of pure live seed of Maverick Germplasm is available for distribution to a commercial grower. This will plant approximately 25 acres of commercial production fields by direct seeding. Additional seed for establishment of transplants and renovation of breeder lines comprising the blend is in cold storage at the E. "Kika" de la Garza Plant Materials Center.

SEED PRODUCTION ESTIMATE/PLAN

MAVERICK GERMPLASM PINK PAPPUSGRASS

As of August 1, 2009, 0.34 acre (5,000 transplants) isolated seed increase fields of each of the 7 accessions that comprise the blend are established at Rio Farms, Inc. near Monte Alto, Texas. Total production acreage for the blend components is 2.41 acres, which if harvested 3x annually yields an average of 75 pounds pure live seed/year. This production level will be sustained until November 2011, when fields will be reduced to 0.10 acres each, or removed if commercial production has reached an acceptable level, and seed for establishment of at least 50 acres of commercial seed fields is in cold storage. An additional nursery plot containing 250 plants of each of the 7 selected accessions planted in concurrent rows is established at the *South Texas Natives* Irrigated Farm near Kingsville, Texas. This plot is used to produce seed for research and demonstration plantings. Hand harvests of the isolated fields will be obtained annually and stored at the E. "Kika" de la Garza Plant Materials Center in Kingsville to provide material for re-establishment of the germplasm if fields are lost.

Signatures for release of:

Maverick Germplasm pink pappusgrass

***Pappophorum bicolor* E. Fourn.**

Dr. Fred C. Bryant
Leroy Denman, Jr. Director of Wildlife Research
Caesar Kleberg Wildlife Research Institute
Texas A&M University-Kingsville
Kingsville, TX

Date

Dr. George Allen Rasmussen
Dean
Dick and Mary Lewis Kleberg College of
Agriculture, Natural Resources and Human Sciences
Texas A&M University-Kingsville
Kingsville, TX

Date

Dr. William A. Dugas
Interim Director
Texas AgriLife Research
College Station, TX

Date

Don Gomert
Texas State Conservationist
United States Department of Agriculture
Natural Resources Conservation Service
Temple, TX

Date

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

Date