Year 2011 Progress Report of Activities

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Following are highlights of some of the activities of the PMC for 2011. Please contact the PMC for more detailed information.

New Seed Releases with STN

In 2011, South Texas Natives and the USDA-NRCS E. "Kika" de la Garza Plant Materials Center completed two cooperative releases. Both are a selected plant material class of certified seed (natural track). No intentional breeding, selection or genetic manipulation was carried out within these populations.

Hidalgo Germplasm Multiflowered False Rhodes Grass

Hidalgo Germplasm multiflower false Rhodes grass (*Trichloris pluriflora* Fourn.) is a blend comprised of six natural populations collected in the South Texas Counties of Jim Wells, Webb, Medina, Jim Hogg, Wilson and Hidalgo. Multiflower false Rhodes grass, also known as fourflower trichloris, is a warm-season, native, perennial bunch grass with mature foliage height ranges from 4 to 5 feet tall. The plants produce seed from July through September. The selected accessions have superior active seed germination, greater overall seed production, and higher plant vigor ratings than other collections evaluated.

Hidalgo Germplasm multiflower false Rhodes grass is recommended for upland wildlife and in range plantings. Multiflower false Rhodes grass is a co-dominate plant along with false Rhodes grass [*Trichloris crinita* (Lag.) Parodi], also known as twoflower trichloris, across numerous range sites in the Rio Grande Plains Ecoregion. Multiflower false Rhodes grass is one of the few native grasses in south Texas that can produce abundant forage somewhere between the forage potential of Kleingrass (*Panicum coloratum*) and buffelgrass (*Cenchrus ciliaris*). Its stature and productivity should help native seedings compete with introduced exotic grasses especially on sandy loam and sandy clay loam soils. Soil types of the populations included in this release include fine sandy loam, clay loam, sandy clay loam, and clay. The best performance of Hidalgo Germplasm will be predominantly in the Rio Grande Plain. It is not cold tolerant and is unlikely to perform well outside of the Rio Grande plain Ecoregion.

Oso Germplasm Hall's Panicum

Oso Germplasm Hall's panicum [*Panicum hallii* Vasey var. *filipes* (Scribn.) Waller] is a blend comprised of two natural populations of Hall's panicum collected in the South Texas Counties of Nueces and Cameron. Hall's panicum is a short-lived, native, perennial bunch grass with mature foliage height ranges from 0.5 to 2.5 feet tall. The plants produce seed from April through November.

These two populations were chosen for release from comparisons of twenty-nine collections. The selected accessions have superior active seed germination, greater overall seed production, and higher plant vigor ratings than other collections evaluated.

Oso Germplasm Hall's panicum is recommended for upland wildlife, highway rights-of-way, and range plantings. Soil types of the populations included in this release include a clay loam and a gullied, clay soil. The best performance of Oso Germplasm will be predominantly in the Gulf Prairies and Marshes and the eastern portions of the Rio Grande Plain and Coastal Sand Plain eco-region of Texas.

Seasonal Growth and Nutritional Quality of Three Warm Season Perennial Grasses

Forage Quality Plots in Stephenville, Texas

Native warm-season grasses have the potential to provide summer grazing because of their adaptation and persistence. However, little nutritive value information is available on the effects of maturity and soil amendments on these grasses during establishment. Multiflower false rhodesgrass (*Chloris pluriflora* E. Fourn.), pink pappusgrass (*Pappophorum bicolor* E. Fourn.), and plains bristlegrass [*Setaria vulpiseta* (Lam.) Roem. and Schult.] were harvested monthly during the first 2 years after establishment in 2007 on a Windthorst sandy loam soil in Stephenville, Texas and fertilized with 0 or 67 kg N and P ha-1 yr-1. Spring application of fertilizer resulted in early season herbage N concentrations 58–79% greater ($P \leq 0.10$) than unfertilized herbage and maintained N concentrations ($P \leq 0.10$) above the 11.2 g kg-1 considered minimum for cattle maintenance through September for most entries. Multiflower false rhodesgrass had the least ($p < 0.10$) fiber and greatest N and in vitro organic matter disappearance (IVOMD). Crude protein of multiflower false rhodesgrass ranged from a low of 7% to a high of 27% with a monthly average of 11-14%. Pink pappusgrass had a crude protein percentage of 7-26% with a monthly average of 11-13%. Plains bristlegrass had the highest crude protein percentages with 8-34% and a monthly average of 11-18%. These forage quality measures compare very favorably with buffelgrass which generally has a crude protein percentage of 6-16% and IVOMD and crude protein digestibility of 50-60%. Multiflower false rhodesgrass also produced the most biomass when the first frost period didn't occur until late November. Multiflower false rhodesgrass produced from a low of 1,884 to a high of 4,874 #/acre, pink pappusgrass produced 2,323 to 4,793 #/acre, and plains bristlegrass produced 651 to 1,737 #/acre.

Conservation of Slender Rushpea

Slender Rushpea Plants

The historic range of slender rushpea (*Hoffmannseggia tenella*) consisted of 10 small populations documented in an area of about 20 miles by 20 miles, in Kleberg and Nueces counties, Texas. Within the documented range, more than 90% of the land has now been converted to crop land and improved pasture, or has been developed for commercial or residential uses. Three historic populations are believed to have been extirpated, or cannot be relocated, and 4 populations on inaccessible private land have not been observed since 1993 (2 sites) and 1964 (2 sites). When this project was initiated in 2009, only two confirmed extant populations were accessible. One small population, consisting of a few hundred individuals, is on a managed ROW of US Hwy 77 in Kleberg County. The other population, at St. James Cemetery in Bishop, Nueces County, has had as many as 10,000 individuals. Kleberg bluestem (*Dichanthium annulatum*), a highly-invasive introduced grass, has colonized both sites and threatens the remaining wild slender rushpea populations. A third population of about 100 slender rushpea was documented along the Hwy 70 Right of Way (ROW) at Petronila Creek, Nueces County, in 1986. This site was subsequently

dominated by Kleberg bluestem. Ten slender rushpea plants were observed there in 1994, and none had been seen since 2004. This trend is likely to continue at the two remaining known populations. The sites are not managed for plant conservation, and are extremely vulnerable. There is a high probability that slender rushpea will become extinct within the next 10 – 20 years.

On June 2, 2009, USFWS entered into a cooperative agreement with the Nueces County Soil and Water Conservation District (District) and the PMC to carry out conservation actions that were urgently needed to stem the decline of slender rushpea and to facilitate the species' recovery. On June 28, 2010, the original agreement was modified to expand the scope of the project and to extend the period of performance from December 2010 until December 2012.

Substantial accomplishments have been made under this grant. We discovered a new population of slender rushpea at Sablatura Park in Nueces County. We also discovered new additional portions of the Hwy 77 population on the west side of the highway and in the highway median. We collected seed from the 4 known populations, Hwy 77 ROW site, St. James Cemetery, Petronila site and the Sablatura County Park population. All of these collections are being banked or stored in a temperature and humidity controlled seed storage vault at the PMC. Slender rushpea seeds from Hwy 77 ROW were also planted in a shortgrass prairie demonstration plot at PMC-Kingsville.

Additional work scheduled for this grant are to continue surveying and collecting seed from slender rushpea populations. Initiate an invasive grass management study on the effect of summer burning treatments on slender rushpea by Sandra Rideout-Hanzak, Assistant Professor, Texas A&M University-Kingsville. This project will compare the effects of summer burning, summer burning plus grass-specific herbicide and clipping of competing plants treatments on slender rushpea. Slender rushpea is a low-growing perennial endangered plant found only in Nueces and Kleberg counties. Results of this project will help U.S. Fish and Wildlife Service personnel determine appropriate management techniques to maintain or increase current populations and establish new populations.

We will also establish a second slender rushpea/shortgrass prairie refugium. We recommend establishing multiple refugia for two reasons: 1) To reduce the risk that a catastrophic event, such as a hurricane or other natural disaster, could damage or destroy all refugium plants; and 2) in accordance with USFWS policy on controlled propagation of endangered species, to prevent accidental out-crossing of distinct populations. The second refugium will be established at the North American Butterfly Association (NABA) National Butterfly Center, in Mission, Hidalgo County, Texas (http://www.nationalbutterflycenter.org/index.html). NABA began establishing native plant demonstration plots at the National Butterfly Center in 2001, and has requested technical assistance from USFWS to develop native grassland demonstration areas. NABA has expressed enthusiastic support for establishing the proposed slender rushpea/shortgrass prairie refugium at the National Butterfly Center. The National Butterfly Center will provide long-term maintenance and vigilance of the refugium through its professional staff and dedicated volunteers. Additionally, the site will provide excellent opportunities for the public to learn about slender rushpea and other rare plants of the shortgrass prairie, to appreciate the beauty of this unique vegetation type, and to understand the importance of its conservation.

Partners in this project include: USDA NRCS E. "Kika" de la Garza Plant Materials Center, the U.S. Fish and Wildlife Service, Texas A&M University – Kingsville, St. James Parish of the Catholic Diocese of Corpus Christi, Texas Department of Transportation's Corpus Christi District Office and Kingsville Maintenance Office, and the North American Butterfly Association.

Seed Collections Needed

The PMC will be seeking new collections of several species in 2012 including: big bluestem (*Andropogon gerardii*), Indiangrass (*Sorghastrum nutans*), switchgrass (*Panicum virgatum*), Virginia wildrye (*Elymus virginicus*), white prairie clover (*Dalea candida*), roundheaded prairie clover (*Dalea multiflora*), partridge pea (*Chaemaecrista fasciculata*), Maximilian sunflower (*Helianthus maximiliani*), and Engelmann's daisy (*Engelmannia peristenia*). Species description sheets as well as seed collecting protocols can be found on the Texas Plant Materials Program website

(http://www.tx.nrcs.usda.gov/technical/pmc/) or contact the PMC for more information.

About the PMC

The Kika de la Garza Plant Materials Center (PMC) is a 91-acre facility established to provide cost-effective vegetative solutions for soil and water conservation problems. This means identifying plants and developing techniques for successful conservation use. It also means assisting in the commercial development of these plants and promoting their use in natural resource conservation and other environmental programs.

The PMC was established in 1981. It is one of 27 centers located throughout the United States. The PMC is operated by the United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), in cooperation with an Advisory Board from Texas A&M University-Kingsville, the Caesar Kleberg
Wildlife Research Institute (CKWRI), South Texas Association of Soil & Water Conservation Districts, and the Gulf Coast Association of Soil & Water Conservation Districts.

The Kika de la Garza PMC serves approximately 27 million acres of the southern portion of Texas.

Program Emphasis

The mission of the Kika de la Garza PMC is to develop and transfer plant science technology to solve natural resource problems in the South Texas area. Plant testing and plant selection as well as the development of new plant science technologies are the primary products of our program. The PMC conducts plantings and studies at the Center and off-Center with cooperating partners. The PMC works with NRCS Field Offices and Resource Conservation and Development (RC&D) groups, Conservation Districts, federal and state agencies, and private landowners.

Our current program emphasis at the PMC is in the following areas:

- Rangeland Habitat Restoration and Enhancement
- Coastal Shoreline Stabilization
- Coastal Habitat Restoration and Enhancement
- Erosion Control/Water Quality Improvement on Agricultural Land
- Biofuels

Current Availability of South Texas Ecotype Releases

Common Name	Scientific Name	Available From	Date Available
Lavaca Germplasm Canada Wildrye	*Elymus canadensis*	Turner Seed Company	Now
Falfurrias Germplasm Big Sacaton	*Sporobolus wrightii*	Douglass W. King Co.	Now
Kinney Germplasm False Rhodes Grass	*Trichloris crinita*	Douglass W. King Co.	Now
Catarina Blend Bristlegrass	*Setaria leucopila* & *Setaria vulpiseta*	Pogue Agri Partners, Douglass W. King Co., Bamert Seed Co. Turner Seed Company	Now
Mariah Germplasm Hooded Windmillgrass	*Chloris cucullata*	Douglass W. King Co.	Now
Welder Germplasm Shortspike Windmillgrass	*Chloris subdolichostachya*	Turner Seed Company	Now
Dilley Germplasm Slender Grama	*Bouteloua repens*	Douglass W. King Co.	Now
Chaparral Germplasm Hairy Grama	*Bouteloua hirsuta*	Douglass W. King Co.	Now
Atascosa Germplasm Texas Grama	*Bouteloua rigidiseta*	Douglass W. King Co.	Now
La Salle Germplasm Arizona Cottontop	*Digitaria californica*	Pogue Agri Partners Douglas King Seed Co.	Now
Zapata Germplasm Rio Grande Clammyweed	*Polanisia dodecandra* ssp. *riograndensis*	Douglas King Seed Co.	expected in Fall 2012
Divot Talloweed Blend	*Plantago hookeriana* & *Plantago rhodosperma*	Pogue Agri Partners	expected in Fall 2012
Maverick Germplasm Pink Pappusgrass	*Pappophorum bicolor*	Pogue Agri Partners	Now
Webb Germplasm Whiplash Pappusgrass	*Pappophorum vaginatum*	Douglass W. King Co.	Now