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E. "Kika" de la Garza Plant Materials Center

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Following are highlights of some of the activities of the PMC for 2009. Please contact the PMC for more detailed information.

New Seed Releases with STN

In 2009, South Texas Natives and the USDA-NRCS E. "Kika" de la Garza Plant Materials Center completed three cooperative releases.



Zapata Germplasm Rio Grande clammyweed [*Polanisia dodecandra* (L.) DC. ssp. *riograndensis*], is a composite of two collections from Dimmit and Zapata Counties, Texas. Rio Grande clammyweed is a native, annual forb with a mature foliage height ranging from 24 to 60 inches. It produces pink flowers and seed from March through November. The seed are eaten by a variety of game birds and wildlife. It is a good nectar source and outstanding attractant for a number of butterflies and pollinators, and harbors large insect populations beneficial to wildlife. Rio Grande clammyweed foliage is not grazed by livestock or wildlife. Zapata Germplasm is recommended for use in upland wildlife plantings, food plots for game birds, native landscaping, and in range seeding mixes. Zapata Germplasm has performed best at locations in MLRAs 83 (Rio Grande Plains) and 150 (Gulf Coast Prairies). Once established, clammyweed will re-seed itself with moderate soil disturbance prior to the growing season.

Divot tallow weed is a blend of two species of plantain (commonly known as tallow weed) originating from south Texas. Divot tallow weed blend is made up of the release STN-561 Germplasm Hookers plantain (*Plantago*

hookeriana Fisch & Mey), collected in Medina County, Texas, and STN-496 Germplasm redseed plantain (*Plantago rhodosperma* Dcne.) collected in Bexar County, Texas. These were cooperative releases between South Texas Natives, Texas Agrilife Research-Beeville, and the USDA-NRCS E. "Kika" de la Garza Plant Materials Center. Redseed and Hookers plantains are cool-season, annual native plants that grow 6-12" in height. In irrigated food plot settings, solid stands of Divot tallow weed blend will produce an average of 2,000 lbs. of forage per acre. Tallow weeds produce seed eaten by bobwhite quail and mourning doves and forage consumed by livestock, white-tailed deer, bobwhite quail, Rio Grande wild turkey, and Texas tortoise. Divot tallow weed blend can be used as a component in upland wildlife, range, and conservation plantings and in cool season food plots for wildlife. Redseed plantain is found throughout south Texas on clay, loam and other fine textured soils. Hookers plantain is typically found on sand, sandy loam, and coarse textured soils. Divot tallow weed blend has performed best at locations in MLRAs 83 (Rio Grande Plains) and 150 (Gulf Coast Prairies). The Divot Blend should be well adapted to most locations in south Texas. Once established, Divot tallow weed blend readily re-seeds itself with moderate soil disturbance prior to the growing season, or significant rainfall.



Seed Collection Workshops

Four seed collection workshops were held for Zone 3 NRCS Field Offices in 2009. These workshops provided training in collection techniques and identifying seeds. Field Offices have sent in 31 new seed collections since the workshops. A contest was started among Zone 3 personnel to reward the person who sent in the most

collections by Christmas. Stephen Deiss won with seven new collections for the coastal prairie.



Seed Collection Training

The PMC will be seeking new collections of several species in 2010 including: big bluestem (*Andropogon gerardii*), Indiangrass (*Sorghastrum nutans*), switchgrass (*Panicum virgatum*), plains lovegrass (*Eragrostis intermedia*), Virginia wildrye (*Elymus virginicus*), white prairie clover (*Dalea candida*), roundheaded prairie clover (*Dalea multiflora*), partridge pea (*Chaemaecrista fasciculata*), Maximilian sunflower (*Helianthus maximiliani*), frostweed (*Verbesina microptera*), 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.



Engelmann's Daisy

New Employee at the PMC

The PMC hired a new Biological Technician in June of 2009. Weston Pawelek grew up in Jourdanton, Texas on his family's farm and ranch. He graduated from Jourdanton High School in 2005. He then attended Texas A&M University-Kingsville where he received his BS in Range and Wildlife science with an emphasis in Wildlife in 2009. Weston has



Weston Pawelek

many years of range and wildlife experience. Weston was hired to replace George Farek, who left the PMC to pursue a career in ag chemical sales.

New Greenhouse at the PMC

The PMC lost its only greenhouse to a wind storm in 2008. In February 2009 a new 36' x 60' greenhouse was constructed. While actually smaller in square feet, the dimensions of the new greenhouse allow for more trays to be planted as well as more efficient cooling and heating than the old greenhouse. It also has drop-down sides that will allow the greenhouse to be converted to a shade house during the hot South Texas summers.



New Greenhouse

Evaluation of Texas Native Grasses for TxDOT Right-of-Ways

Anna Lund, a graduate student at Texas A&M University-Kingsville, has completed her research evaluating the canopy cover of two native species, hooded windmillgrass and shortspike windmillgrass, compared to bermudagrass when added as a component in a native seed mixture for Texas roadways. The aim of these experiments was to obtain similar vegetation cover using native seeds to achieve 70% canopy cover as quickly as possible to meet EPA's final soil stabilization requirements. Experiments were located at three different ecoregions in Texas during



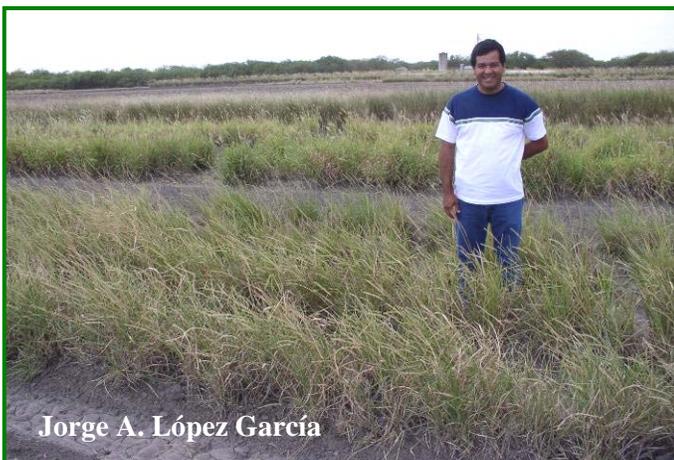
Anna Lund

2006 and 2007 at Andrews, Baylor, and Kleberg counties. The experimental design was a randomized, complete-block with four blocks on sandy and clay soils.

All treatments in the native seed mixture experiment, met the experiment's objective by obtaining the required percent canopy cover necessary to meet EPA standards and allow engineers to receive a Notice of Termination on a project within 90 days of planting; with one exception during the final evaluation in Andrews county in 2007, where the native seed treatment was unsuccessful in obtaining the required canopy cover by <5%. The majority of species observed in reference and treatment plots appeared to be contributed more by the seed bank, rather than the actual seed mixtures planted. However, the dominate species that were encountered but not seeded were annuals, noxious weeds, and non-native invasive species such as Mediterranean lovegrass, horsenettle, ragweed, pepperweed, silver leaf nightshade, weeping lovegrass, Kleberg bluestem, and Johnsongrass.

In 2007, windmillgrass and bermudagrass percent canopy cover was similar ($P < 0.05$) in sandy soils in Baylor and Kleberg counties. Canopy cover produced by all windmillgrass treatments in Andrews county were significantly higher ($P = 0.007$) than bermudagrass canopy cover. All five seeding treatments in Baylor county in 2006 and 2007 obtained 70% canopy cover by EPA standards on sandy and clay soils. These results suggest that windmillgrasses are a viable alternative to bermudagrass for use in roadside revegetation projects, especially on sandy soils in the High Plains ecoregion of Andrews county, the Rolling Plains ecoregion of Baylor county, and the South Texas Plains ecoregion of Kleberg county.

Seed Yield Response to Nitrogen Application



Jorge A. López García

Jorge A. López García, a graduate student from Mexico, has completed his Ph.D. studies at Texas A&M University-Kingsville. Jorge worked with the PMC, Texas A&M University-Kingsville and the Texas AgriLife Stations at Beeville & Stephenville to evaluate the effects

of nitrogen fertilizer on bristlegrass and windmillgrass seed production. Accessions of bristlegrass varied across nitrogen rates with maximum seed yields ranging from 51 to 672 pounds/ acre at the Stephenville study site in 2005 and ranging from 199 to 344 pounds/ acre at the Beeville study site in May 2006. Overall the bristlegrass accessions responded differently to the nitrogen rates both for location and seasons. Humic acid did not benefit seed yield in this study.

Windmillgrass responded favorably to intermediate to high nitrogen rates (90-165 pounds/ acre). Seed yields peaked at 43 pounds/ acre for hooded windmillgrass and 104 pounds/ acre for shortspike windmillgrass using 165 pounds/ acre of nitrogen. Survival and seed yields were better at Beeville than at the Stephenville study site.

Jorge also evaluated methods of breaking seed dormancy in bristlegrass. Significant improvements in seed germination were seen with dry heat treatments (40°C) that lasted for 3 to 4 weeks. Germination levels increased from 2% to a high of 17%.

Seedling Response to Salinity Levels

LeeRoy Rock, a graduate student at Texas A&M University-Kingsville, completed his Master's research on seedling response to salinity levels. The research investigated high saline water impacts on germination and young seedling growth of 18 native and introduced plant species to elevated saline conditions (0 to 30 dS/m). Seeds were germinated and plants were irrigated with a sea salt solution. Seed and plant survival and biomass production were evaluated over a 4 month period during May-Aug 2006 and March-July 2007.



LeeRoy Rock



Seedlings Under Salt and Drought Stress

Results from this study provide critical information in regards to plant survival under extreme heat and salinity stress. The plants having good seedling germination and plant stand survival at salinity levels ranging from 15 to 30 dS/m were the grasses alkali sacaton, Hall's panicum, and two-flowered trichloris. The best performing forbs were bundleflower and four-wing saltbush. Sorghum outperformed all species for seed germination, biomass production and seedling growth under saline conditions. Based on both germination trials and the seedling trials, sorghum should be planted at most saline sites to add organic matter and help reduce toxic salt levels. Once volunteer seedlings of other species appear at the site, the perennial species alkali sacaton, two-flowered trichloris, Hall's panicum, four-wing saltbush, and "BeeWild" bundleflower can be planted.

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 Ecotype Releases			
Common Name	Scientific Name	Available From	Date Available
Catarina Blend Bristlegrass	<i>Setaria leucopila</i> & <i>Setaria vulpiseta</i>	Pogue Agri Partners, Douglass W. King Co., Bamert Seed Co. Turner Seed Company	Now
Dilley Germplasm Slender Grama	<i>Bouteloua repens</i>	Douglass W. King Co.	Now
Chaparral Germplasm Hairy Grama	<i>Bouteloua hirsuta</i>	Douglass W. King Co.	Now
Atascosa Germplasm Texas Grama	<i>Bouteloua rigidiseta</i>	Douglass W. King Co.	Now
La Salle Germplasm Arizona Cottontop	<i>Digitaria californica</i>	Pogue Agri Partners, Douglas King Seed Co.	Now
Lavaca Germplasm Canada Wildrye	<i>Elymus canadensis</i>	Turner Seed Company	Now
Mariah Germplasm Hooded Windmillgrass	<i>Chloris cucullata</i>	Douglass W. King Co.	Now
Welder Germplasm Shortspike Windmillgrass	<i>Chloris subdolichostachya</i>	Turner Seed Company	Now
Zapata Germplasm Rio Grande Clammyweed	<i>Polanisia dodecandra</i> ssp. <i>riograndensis</i>	Turner Seed Company	expected in Spring 2011
Divot Tallweed Blend	<i>Plantago hookeriana</i> & <i>Plantago rhodosperma</i>	Pogue Agri Partners, Turner Seed Company	expected in Spring 2011

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