James E. “Bud” Smith Plant Materials Center

2009 Progress Report of Activities

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Evaluating Warm Season Grasses for Biofuel

A great deal of emphasis is being placed on finding native plants that can be used in biofuel production. Crops are grown for direct combustion or gasification to generate electricity; ethanol production for transportation fuel; or thermochemical conversion into other by products. Time and frequency of harvest play a major role in biofuels quality.

Preliminary data has shown that from the end of the growing season through the winter there is no statistical difference between harvest dates of the same variety for biomass production. While the yield may not change throughout the winter, the quality of the biomass will. Analysis to date has shown that the biomass looses minerals the longer it remains in the field and is subjected to the elements. A special thank you to Michelle Auger and David Hinojosa for their help with clipping plots and processing plant materials.

Growth Curve Study of Warm Season Forage Grasses Under Low and High Fertility Management

This year we completed a three year study which evaluated different warm season grasses with different fertility levels. Results from this study provide important information to livestock producers and NRCS conservationists when making pasture and grazing management decisions. Warm season grass cultivars investigated in this study can provide the nutritional needs to meet the physiological and performance demands of various classes of beef cattle.

Data showed that 'Selection 75' Kleingrass (*Panicum coloratum*) and San Marcos Germplasm eastern gamagrass (*Tripsacum dactyloides*) provided all the digestibility and crude protein requirements for a 1,200 lb. lactating cow. The two varieties also produced considerable amounts of biomass. A special thank you again to Michelle Auger and David Hinojosa for helping perform forage clippings. For more information, see tech note at http://www.plant-materials.nrcs.usda.gov/pubs/txpmctn9139.pdf

Adaptability of 'Tropic Sun' Sunn Hemp

Our PMC is a participant in a nation wide test to determine the adaptability of sunn hemp as an alternative leguminous cover crop and potential biofuels plant. Sunn hemp is a tropical or sub-tropic plant that can produce from 5,000-6,000 pounds of biomass per acre. It is an annual plant when grown in the continental United States, and can produce 120-140 pounds of nitrogen in 60-90 days. Plants at the PMC averaged 11½ feet tall (under supplemental irrigation) when the growing season was complete. The plots did produce seed pods, but no viable seed was harvested.

New Collections

The PMC is collecting five native, perennial plant species for evaluation for various conservation uses. The species are blue grama (*Bouteloua* gracilis), Indian ricegrass (*Achnatherum* hymenoides), three-flower melicgrass (*Melica nitens)*, vine-mesquite (*Panicum obtusum*), and showy menodora (*Menodora longiflora*). For more information on these plant species, see the website at http://www.tx.nrcs.usda.gov/ technical/pmc and click on James E. "Bud" Smith PMC. These plant species will be evaluated for potential use in conservation practices such as Range Planting, Upland Wildlife Habitat Management, Conservation Cover Riparian Herbaceous Cover, and others. ,

Plant Collection and Equipment Training

The staff at the James E. "Bud" Smith PMC conducted trainings on plant collection and equipment and tillage practices. Forty-seven NRCS employees from throughout Texas traveled to attend the training. Gary Rea opened the day by welcoming everyone and discussing center activities. Brandon Carr gave a presentation explaining different tillage practices and different types of equipment used on farms, ranches, and in urban areas. Dale Carroll

followed the equipment presentation with a tour of the equipment used here at the center. He discussed the differences in size compared to a normal farming and ranching operation. He also showed how the equipment at the center was modified to meet the research needs of the center. After a brief break for lunch, Rob Ziehr discussed the history of the center and explained the importance of plant collections from Field Office staff. Rudy Esquivel gave a presentation on how to determine seed maturity, and how to make a successful seed and vegetative plant material collection. Following the presentations, the group participated in a tour of the center which highlighted research tests and PMC plant productions. The day provided NRCS Field Office employees the opportunity to meet one another and discuss ways we could work together to facilitate the needs of our customers and the public.

Prescribed Burn Training

On August 12th and 13th, the PMC hosted a prescribed burning training course. Lem Creswell coordinated the training which provided initial and continual credits for thirty NRCS employees. Attendees were educated on the laws and procedures for conducting safe and beneficial burns for customers.

Seed Production

The PMC is responsible for producing breeder, foundation, and germplasm select seed which is sold by the Texas Foundation Seed Service to area seed companies. Currently, the PMC supplies the seed service with twelve releases. A full list can be obtained from their website at http://tfss.tamu.edu or by calling them at (940) 552-6226. The PMC also maintains another seventeen releases by storage and breeder blocks. These releases include grasses, legumes, forbs, and woody plants. A complete list of plant releases can be found at our website at http://Plant-Materials.nrcs.usda.gov/txpmc/.

New Soil Conservationist Added to the USDA-NRCS James E. "Bud" Smith Plant Materials Center

Brandon Carr has been selected to join the staff as a Soil Conservationist at the USDA Natural Resources Conservation Service's James E. "Bud" Smith Plant Material Center (PMC). Brandon graduated from Petersburg, TX in 1997. He received a BS degree in Environmental Science with an emphasis in Agriculture and a BS degree in Plant Science with an emphasis in Integrated Pest Management. Both degrees were received from Lubbock Christian University in 2002. Brandon has six years of experience as an assistant cotton breeder. He resides in Haskell, TX with his wife and new baby girl.

Program Emphasis

The mission of the James E. "Bud" Smith PMC is to develop and transfer effective state-of-the-art plant science technology to meet customer and resource needs. The PMC conducts plantings and studies at the Center and off center with cooperating partners. Plant and technology development objectives of the PMC include:

- Erosion Control - wind and water
- Range and Pasture Improvement
- Wildlife Habitat Improvement
- Water Quality Improvement on Agricultural Land
- Biofuels
- Saline Site Restoration

James E. "Bud" Smith Plant Materials Center

The United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) James E. "Bud" Smith Plant Materials Center (PMC) located near Knox City, Texas, was establish in 1965. It is one of the 27 Centers located throughout the United States. The Center is responsible for developing conservation plants and cultural techniques for use within targeted Major Land Resource Areas (MLRA) in Texas, Oklahoma, Kansas, Colorado, and New Mexico. The Center is also responsible for producing Breeder and Foundation seed of plant releases and assisting in commercial development and promoting their use in natural resource conservation. The PMC serves all or portions of 136 counties in Texas that comprises parts of 25 MLRAs, and the areas served in all or portions of 39 counties in southwestern Oklahoma comprising parts of thirteen MLRAs. The PMC also serves a portion of seven counties in southwestern Kansas including parts of four MLRAs, a portion of one county in the southeastern corner of Colorado comprising parts of three MLRAs, and a portion of seven counties in eastern New Mexico comprising parts of seven MLRAs. The PMC is located approximately four and a half miles northwest of Knox City, Texas, in the Rolling Red Plains MLRA.

James E. "Bud" Smith PMC Personnel

- Dr. Gary Rea- Manager
- Rudy G. Esquivel- Soil Conservationist
- Brandon Carr- Soil Conservationist
- Billy (Dale) Carroll- Biological Science Technician (Plants)
- Mark S. Bennett- Biological Science Aid (part-time, summer only)

Visit the PMC website for more information and publications:
http://Plant-Materials.nrcs.usda.gov/txpmc/

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