



East Texas Plant Materials Center 2010 Progress Report of Activities

Current Studies

Initial Evaluation of Black-eyed Susan Accessions Study Leader: Melinda Brakie

In response to a request by the Texas Department of Transportation, the East Texas Plant Materials Center (ETPMC) conducted an initial evaluation of Black eyed Susan. Black eyed Susan is a widely adapted native forb with rough stems and daisy-like flower heads composed of golden-yellow ray flowers. The seeds are a food source for goldfinches and the flowers attract several species of pollinators. It shows excellent potential as a pioneer species for soil stabilization, roadside beautification, and pollinator habitat improvement.

The initial evaluation included sixty seed collections from Texas and Louisiana, and was planted at three locations, Kingsville, Baytown, and Nacogdoches, Texas. The study plots were transplanted in early April and plant survival was noted in mid May. The collections were evaluated for survival, foliage abundance, vigor, seed production potential, and disease resistance.



**Technician Mike Woody
transplanting Black eyed Susan**

Seed Increase of Gayfeather (*Liatris pycnostachya*) Accession #9067351 Study Leader: Melinda Brakie

The East Texas Plant Materials Center is working with the Kika de la Garza Plant Materials Center in Kingsville, Texas to develop a composite release for both service areas using collection #9067351 and collections from Kingsville. Gayfeather is extremely attractive to butterflies and other pollinating insects. Fifteen species of butterfly and a multitude of other insects were observed utilizing the seed increase plot at the ETPMC this spring.

In 2010, the seed increase plot was watered periodically throughout the growing season and produced a harvest of nineteen pounds of bulk seed. This was double the 2009 harvest of 8.5 bulk pounds. Part of the increase can be explained by the majority of plants being two years old, timing watering to seed development stages and providing support for the tall stems, thereby reducing seed



**A swarm of butterflies
working the seed increase**

loss. Seed increase will be carried to production fields at the ETPMC for large scale production in 2011.

Effects of Cold Season Legume N Fixation on 'Alamo' for Switchgrass Biofuel / Biomass Production **Study Leader: Alan Shadow**



Hairy vetch smothered and drastically reduced the switchgrass stand

With current interest in the use of perennial, warm season, native grasses as biofuels, the ETPMC set out to evaluate the use of four cool season legumes to supply nitrogen input for the production of 'Alamo' switchgrass. Growth of the four legumes was monitored throughout the spring. The 2010 growing season saw little recruitment of legumes due to the late removal of biomass in 2009. Ball clover appeared to have the best recruitment, but failed to create a useable stand. Management practices concerning harvest timing and storage of biomass need to be addressed to insure the establishment of the legume component in the understory for a self sustaining, renewable source of nitrogen.

Rust Resistance Screening of Indian Grass **Study Leader: Alan Shadow**



Selected accessions shortly after transplanting

Five selections were made from the initial study and carried into advanced evaluations. These accessions will serve as crossing parents in a breeding program to develop a broad genetic based, locally adapted Indiangrass with resistance to rust. Paul Gray, a graduate student at Stephen F Austin State University, completed his thesis on this study in the spring of 2010. Paul's work evaluated the differences in leaf morphology between susceptible and seemingly resistant selections using electron microscopy. This work noted several surface features which inhibited or decreased the ability of the rust pathogen from entering the stomata of the leaf. Selected material showed significant differences

in leaf morphology when compared to plants selected as rust spreaders and cultivars with known susceptibility.

Screening of NPAT Switchgrass Collection for Forage and Biofuel Potential **Study Leader: Alan Shadow**

In an effort to find a locally adapted switchgrass that has good forage and biofuel production potential, the ETPMC recently screened through a large collection of switchgrass collected by the Native Prairies Association of Texas. Initial results are promising with one accession producing significantly more biomass than 'Alamo' and 'Kanlow'. This same accession had the lowest acid digestible fibers (ADF) and highest total digestible nutrients (TDN) in the study. The results for ADF and TDN were significant placing this accession into a mean group unto itself. Several accessions in

the study have shown significant increase in biomass yield compared to 'Alamo' and 'Kanlow'. This study is in its second year of data collection, and is planned to end in 2012.

Seed Increase of Ashy Sunflower, *Helianthus mollis*

Study Leader: Alan Shadow



Seed increase plot of ashy sunflower at the ETPMC

Working in conjunction with the Golden Meadow Plant Materials Center (GMPMC), Louisiana Native Plant Initiative (LNPI), and Gary Fine at Nicholls University, the ETPMC planted a small seed increase plot of ashy sunflower. The seed was drilled on 40 inch rows, and readily established. Plants showed little sign of pest or disease and were combine harvested in later summer. The 1/10 acre plot yielded 10.4 pounds of cleaned seed. This seed will be used to plant a larger seed increase field, and seed will be supplied to Nicholls University, LNPI, and the GMPMC. Ashy sunflower is attractive to a wide array of pollinating insects and produces a small seed that is utilized by birds and small

mammals. It would make an excellent component in conservation seed mixes.

New Publication

The East Texas Plant Materials Center created two new technical notes, "Maintenance and Management of Conservation Plantings" and "Collecting Seed Materials" to aid field office staff and the public. Plant Fact Sheets were also written for American Beauty Berry, *Callicarpa americana* L., and Eastern Redbud, *Cercis canadensis* L. These documents may be referenced at the following web address:

<http://plant-materials.nrcs.usda.gov/ETPMC/publications.html#TN>

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Who We Are

The East Texas Plant Materials Center (ETPMC) is part of the Natural Resources Conservation Service (NRCS), United States Department of Agriculture. The ETPMC is a joint venture between Soil and Water Conservation Districts in east Texas and northwestern Louisiana, NRCS, Stephen F. Austin State University (SFASU), and US Forest Service. The ETPMC is located at the Stephen F. Austin Experimental Forest near Nacogdoches, Texas.

What We Do

The mission of the NRCS Plant Materials Program is to develop and transfer plant materials and plant technology for the conservation of natural resources. In working with a broad range of plant species, including grasses, forbs, trees, and shrubs, the program seeks to address priority needs of field offices and land managers in both public and private sectors. Emphasis is focused on using native plants as a healthy way to solve conservation problems and protect ecosystems. Center personnel also develop research projects and technical reports for use in developing technical guides for agency personnel and landowners on the use of plant materials in various conservation practices.

Contact Information

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