

# **East Texas Plant Materials Center Nacogdoches, Texas**

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## **1999 Annual Activity Report**



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# Introduction

## History

The East Texas Plant Materials Center was established in 1982. The founding participants were the USDA-Natural Resources Conservation Service, East Texas Soil and Water Conservation Districts, Associations of Soil and Water Conservation Districts, Stephen F. Austin State University Agriculture Department, and Stephen F. Austin Arthur Temple College of Forestry. The USDA-Forest Service, Pineywoods Resource Conservation and Development, Inc., northwest Louisiana and additional Soil and Water Conservation Districts in Texas joined the cooperative effort in the late 1980's.

## Objectives

The objectives of the East Texas Plant Materials Center are:

- 1) To assemble, evaluate, and release superior plants to address soil and water conservation needs
- 2) Develop cultural and management techniques for their application
- 3) Provide for their commercial production
- 4) Promote their acceptance in resource conservation and environmental programs.

## Service Area

The East Texas PMC service area consists of approximately 43 million acres which includes 81 counties in east Texas and 25 parishes in northwestern Louisiana. Most of the area has a rolling topography with large floodplains along the Red River and coastal areas.

Three large industries in the area are agriculture, timber production, and coal or gravel mining. Therefore, high priority conservation needs include erosion control and revegetation following timber harvesting operations, forages for domestic livestock and wildlife, and reclamation of surface mined areas.

**Major Land Resource Areas included in the PMC service area are:**

- |                                |                                      |
|--------------------------------|--------------------------------------|
| 1) 84C – East Cross Timbers    | 4) 86 A&B – Texas Blackland Prairies |
| 2) 87 A&B – Texas Claypan Area | 5) 133 B – Western Coastal Plains    |
| 3) 150 A – Gulf Coast Prairies | 6) 152B – Western Gulf Coast         |

## **ETPMC Board of Directors**

**A Board of Directors provides overall guidance and direction toward PMC objectives.**

Angus Mims	Deep East Texas Association of Soil and Water Conservation Districts
Roweland Patrick	Sabine Soil and Water Conservation District - Many, Louisiana
Dr. Leon Young	Professor – Stephen F. Austin State University Agriculture Department
Dr. Scott Beasley	Dean - Stephen F. Austin Arthur Temple College of Forestry
Harold Stone	Northeast Texas Association of Soil and Water Conservation Districts
Dr. Ron Thill	US Forest Service
George Wilkins	Emeritus Member
Joe Daniel	Pineywoods RC&D, Inc.
Albert Evans	Texas State Soil and Water Conservation District Board
Micah Poteet	Texas Parks and Wildlife Department

## **Staff**

Melvin Adams	Manager
Melinda Brakie	Conservation Agronomist
Samuel Chancellor	Biological Technician
Tim Allen	Biological Aide
Tim Coats	Biological Aide
Jean Adams	Earth Team Volunteer
Kay Burnell	Earth Team Volunteer
Jack Burnell	Earth Team Volunteer

### **The PMC is Supported and Assisted By:**

Richard White	National Plant Materials Specialist
John Burt	Texas State Conservationist – Temple, Texas
Don Gohmert	Louisiana State Conservationist – Alexandria, Louisiana
James Alderson	Plant Materials Specialist – Texas
Mike Mateme	Plant Materials Specialist – Louisiana

The Plant Materials Technical Committee provides technical guidance for plant materials projects, collections, selections, and releases. The Committee is comprised of technical specialists, representatives of industry, agencies, universities, SWCD's, and other appropriate organizations.

### **Contributing Soil and Water Conservation Districts of Texas and Louisiana**

These Soil and Water Conservation Districts contributed funds for support of the Plant Materials Center during 1999. These funds were used to purchase essential operating supplies.

Bedias Creek	Rusk	Nacogdoches
Pineywoods	Sabine-La.	Bowie County
Wood	Gulf Coast – La.	Panola
Lower Neches	Lower Trinity	Upper Neches
Red River – La.	Trinity Bay	Harris County
Davy Crockett-Trinity	Anderson-Houston	Upper Sabine
Red River	Freestone County	Grant – La.
Lamar	Coastal	Marion-Cass
Robertson	Dorcheat – La.	Smith County

## LETTER OF RETIREMENT COMMENTS

To: PMC Staff, PMC Board of Directors, NRCS Employees and SWCDs

From: Melvin Adams

On Dec. 31, 1999, the time seemed right for my retirement after spending over thirty two (32) years with the NRCS. It was time for me to divert my attention and efforts to other avenues.

From Aug. 16, 1987 through Dec. 31, 1999, I served as the East Texas Plant Materials Center Manager. Those years were rewarding and enjoyable. Working with plant materials is very special to me.

During this span of time, The PMC staff grew from one full time employee to three full time and several part time student employees. With the leadership and support of the PMC Board of Directors, NRCS, a few legislative members and several SWCDs, line item funding was obtained. With funding, facilities were planned and constructed. And in the late 90's, the first plant releases were being made. I feel a great deal of pride to have worked with many of you in the development stages of the PMC. I have many fond memories.

As a whole, working at the PMC and in the Plant Materials Program has been one of the highlights of my NRCS career. Its program is (I consider) a true treasure of the agency. Its results, benefits, and value is dependent on the efforts of many of you that collected seed or plants, attended committee or board meetings, etc.

Thanks to you for your assistance, support and comraderie through the years. You are special friends, partners and associates. Retirement will break many of those people ties and that is a down side to retirement. However, I hope to see some of you from time to time. Let me hear from you, especially when you have enough years to change pace and retire.

Now in a less stress mode which includes more fishing!

Best Regards,

Melvin Adams

## The Plant Materials Program Evaluation and Release Process

Below are the steps taken when selecting a superior plant for commercial release.

**Step 1** – Collection of seed, cuttings, or plants. NRCS PMC Staff and Field Office personnel participate in collecting suitable plant materials.

**Step 2** – Initial Evaluation. Conducted at the PMC or another location. The better performing accession(s) are chosen for further study

**Step 3** – Initial Seed and Plant Increase. Conducted at the PMC.

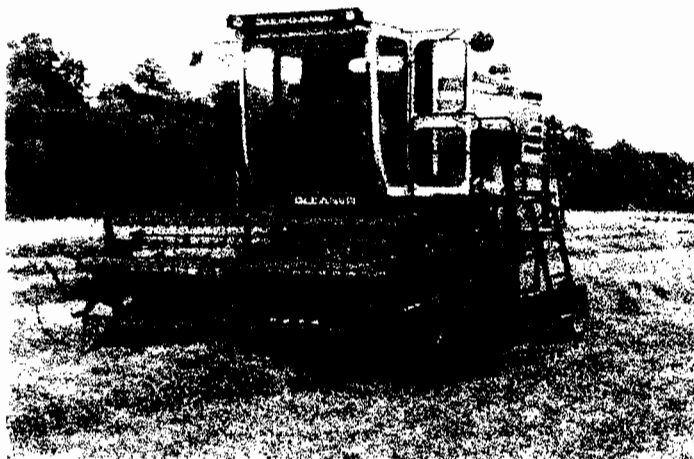
**Step 4** – Advanced Evaluation. Conducted at PMC or at locations representing specific environmental conditions. The superior accession(s) are chosen.

**Step 5** – Large Scale Seed and Plant Increase of Chosen accession(s). Conducted at the PMC.

**Step 6** – Off Center Field Plantings/Adaptation Studies

**Step 7** – Naming and Release of Cultivar(s) or germplasm for the Commercial Market.

**Step 8** – Production of Foundation or Breeder Seed for the Commercial Market. Seed increase blocks are maintained at the PMC.



August 1999 - Harvesting Herbaceous mimosa seed from the seed production block.

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## Initial Seed and Plant Increase

The following plant species are being increased for advanced testing:

Common Name	Scientific Name	Accession #	Cultivar/Origin
Deertongue	Dicanthelium clandestinum	9057333	Walker Co., Tx.
		9057334	Camp Co., Tx.

## Advanced Evaluation

Advanced Evaluation of Deertongue, *Dicanthelium clandestinum* (L.)

Project #: 59A015D

Introduction: Deertongue is a perennial native bunchgrass. This grass is considered a pioneer plant due to its ability to grow on a variety of low fertility soils. Pioneer plants provide initial soil stabilization benefits but allow successional plant to increase on the site.

Objective: The objective of this project is to select a suitable accession as a component of mixes for revegetation of surface mined lands and other disturbed areas including timber logged sites.

Summary: During 1999, plants of accessions 9057333 and 9057334 were transplanted to advanced evaluation plots in May 1999. The plants produced seed which were harvested in September. The collected seed will be grown in the greenhouse and transplanted to the advanced evaluation plots in spring of 2000.

## Large Scale Seed and Plant Increase

During or following advanced evaluations, those accessions with superior characteristics are established in increase blocks. The following accessions are currently being increased for field plantings, foundation plots, or further testing:

Common Name	Scientific Name	Accession #	Cultivar/Origin
Herbaceous mimosa	Mimosa strigillosa	PI548994	Houston Co., Tx.
Limpogras	Hemarthria altissima	299993	'Red Alta'
Virginia wildrye	Elymus virginicus	PI436957	Payne Co., OK
		PI436971	Anderson Co., Tx
Eastern gamagrass	Tripsacum dactyloides	PI595896*	Jackson Co., Tx
		PI595897*	Medina Co., Tx
Florida paspalum	Paspalum floridanum	9043874	Harrison Co., Tx
Vetivergrass	Vetiveria zizanioides		'Sunshine'

\*Note: PI595896 was previously accession #9043740. PI595897 was previously accession #9043762.



## Off Center Plantings

Off center plantings include sites considered as field plantings/adaptation studies. Field plantings are established on cooperator land or unique problem areas. The plantings are evaluated under actual use conditions for three to five years to verify their adaptability and potential superiority over commercially available cultivars. Sites for field plantings are chosen in various soil types.

The following counties have eastern gamagrass field plantings:

Liberty County, Tx.	Nacogdoches County, Tx	Falls County, Tx
Bell County, Tx	Rusk County, Tx	

The following counties/parishes have 'Red Alta' limpgrass plantings:

Hardin County, Tx	Nacogdoches County, Tx	Orange County, Tx
Grimes County, Tx	Rusk County, Tx	Walker County, Tx
Gregg County, Tx	Waller County, Tx	Vernon Parish, La

Catahoula Parish, La

'Red Alta' limpgrass is a released cultivar from Florida. The PMC furnishes vegetative materials for the service area until commercial growers are available.

### Use of Herbaceous mimosa for Mine Reclamation

The PMC is studying Herbaceous mimosa, *Mimosa strigillosa*, for use on a wide range of revegetation needs and site conditions. The plant will be another alternative species to address ground cover and soil stabilization problems.

To obtain additional data on the species' potential on postmined sites, an off center study was initiated in 1999 at a site operated by the Sabine Mining Company near Hallsville, Texas. This study will evaluate the adaptation of herbaceous mimosa on mine reclamation soils.

Glenn Stewart, Scientific Specialist with the Sabine Mine, provided a site for the study. The surface soil contained a high clay content at the study site. The soil pH ranged from 4.9 to 5.4 using a Kelway pH meter. A soil analysis revealed the following levels:

phosphorus – low to very low	potassium – medium	magnesium – high
sulfur – high	iron – high	manganese – high
zinc – high	copper - high	calcium – medium

The plots were located on a 2-3% slope with an unvegetated strip above them. Surface runoff carrying sediment left some deposition and/or caused sheet and rill erosion on the plots. An annual cool season grass cover had been established on the site and was plowed under prior to the planting of herbaceous mimosa.

At planting time, the soil moisture was fair. Six week old herbaceous mimosa plants were installed on April 21, 1999 in 15 x 20 ft. replicated plots on 3 x 3 ft. and 2 x 2 ft. spacings.



Glenn Stewart and Melvin Adams evaluate a planting of Herbaceous mimosa at Sabine Mine.

Plot performance was evaluated on July 12, 1999, eighty-one days after planting. Soil moisture was good. According to the mine records, rainfall received from April 21<sup>st</sup> to July 12<sup>th</sup> was 12.51 inches. Plant survival ranged from 93 – 100%. A few plants, where sediment deposition occurred, exhibited light yellowish-green leaflets and minimal growth. Most plants in all plots had good color and were producing good runner growth. A random sampling of plants revealed the length of runners on the 2 x 2 ft. spacing plots ranged from 2.5 – 28 inches with an average of 11.16 inches. On the other hand, the length on the 3 x 3 ft. spacing plots ranged from 1.5 – 20 inches with an average of 9.68 inches. Intertwining of many runners had occurred. Some sediment deposition, up to 1 inch, had occurred on and around some plants, and they were emerging with no noticeable damage to vigor, growth or color.

On August 3, 1999, a followup visit was made. No rainfall had occurred at the mine since the July 12, 1999 visit and temperatures in excess of 95 degrees had been common. Plant color was still good, however they were showing heat stress (leaflets mostly closed) and had not grown significantly since July. Ground cover was visually estimated and ranged from 15 - 25% on the 3 x 3 ft. spaced plots and 40 – 50% on the 2 x 2 ft. spaced plots. Very few volunteer plants of other species were present indicating there was only a limited seed bank in the oxidized material surface.

Conclusion: Overall the survival, vigor, and performance for 1999 was encouraging. Evaluation of the plots will continue in 2000.

In following studies at the site, herbaceous mimosa seed will be the preferred method of planting. Additional plots will be installed in first year pine seedlings plantations and evaluated for seed emergence, seedling vigor, establishment traits, providing adequate ground cover and soil holding attributes. In addition, being a legume, the effects of some nitrogen fixation by the herbaceous mimosa will be of interest and offers potential for further studies.

## Demonstration Plantings

Several demonstration plantings were established this year.



Liberty County, Texas

In April, Melvin Adams, PMC Manager, and Sam Chancellor, Biological Technician, assisted in a coastal prairie restoration project. Several native species including Virginia wildrye, Eastern gamagrass, and Canada wildrye were planted.

## Phosphorus Remediation Plots

Rick Leopold, Zone 4 Agronomist, used 550 'Jackson' propagules along with other native species in a poultry litter phosphorus remediation plot study near Bryan, TX. This study will continue for three years and provide information about an important waste disposal problem in east Texas.

## Vegetative Buffer Planting

In April, a vegetative buffer planting was completed by the Plant Materials Center near Grapeland, Texas. The Plant Materials Center provided 260 plants of Vetivergrass and 95 plants of Herbaceous mimosa. The PMC provided technical information and planting assistance to the Crockett Field Office.

## Dorcheat SWCD Wetland Restoration

In March, the Plant Materials Center provided plant materials and technical assistance to the Dorcheat Louisiana SWCD and Minden NRCS Field Office in a wetland restoration project. The Plant Materials Center provided several different aquatic species and 380 grass plants for planting around abandoned gravel mine pits.



From left: Robert Austin, Soil Conservationist, Twyla Moore, District Secretary, and Sam Chancellor, Biological Technician, plant *Juncus* along the shore of one of the gravel pits.

## Name and Release

PMC Release:

Year	Species	Name	Release Type
1998	Eastern gamagrass	Jackson	Cultivar

## Foundation or Breeder Block – Released Cultivars or Germplasm

Species	Name
Eastern gamagrass	Jackson

## Constructed Wetlands Septic Systems

The use of constructed wetlands to treat wastewater is a rapidly emerging biotechnology. Aquatic plants along with bacteria, enzymes, fungi and protozoa break down pollutants. Special aquatic species pump oxygen to their roots zones and create aerobic conditions that speed water purification.

The ETPMC serves as a plant source for several aquatic species to be installed in constructed wetlands systems (rock reed and surface type), restoration of wetlands sites and stabilization needs. In addition to providing plants, the PMC provides technology transfer for propagation, establishment and maintenance of aquatics to its customers.

One study involved the evaluation of seed propagation methods to increase germination of Giant Blue Iris, *Iris giganticaerulea*. This iris species grows 3- 5 ft. tall and prefers freshwater marshes. Iris seed have a corky covering that allows them to float. This mechanism allows the seed to be dispersed to new locations. The PMC study was to determine the effects of early uniform germination when leaving or removing the corky coating.

This study was begun in 1998 and concluded in 1999. Seed were collected July 3, 1998 near DeRidder, Louisiana by Dr. K. Derstine.

On July 16, 1998, the seed were planted in a germination tray containing approximately 1 ½ inches of a commercial general purpose mix. The mix contained a blend of sphagnum peat moss, perlite, vermiculite, dolomitic and calcitic limestone and a wetting agent. The mix was kept moist throughout the study period. One half of the seed were planted with the seed coating removed or broken and half were planted with the seed coating intact. The study was conducted in a greenhouse maintaining a minimum of sixty-five degrees Fahrenheit and maximum temperatures dependent on solar heating buildup during the daytime.

**Results:**

1. All germination had occurred by 11/30/98.
2. Seed left intact germinated at a higher rate than those seed that had the corky seed coating removed or broken.
3. Seed left intact germinated sooner and had a higher percentage of plants ready to be potted on November 30, 1998.

**Conclusion:** The best germination of Giant Blue Iris seed occurs with the corky coating left intact. It is suggested that the seed be planted in germination trays soon after harvesting. Keep the potting medium moist. Plants approximately six to eight inches tall should be removed from germination trays to small pots for further growth and root development. Plants more than ten inches tall are adequate for outside transplanting in early spring.



September 1999 – Dan Schullenburg (left) and Melvin Adams, PMC Manager, plant a constructed wetland system near Converse, Louisiana.

October 1999 – Constructed wetland at Yellowrose/Crossroads school at Madisonville, Texas. The PMC provided plants and technical assistance for the planting. This system was completed in April 1999.



## Plant Distribution and PMC Facility Use During 1999

The PMC distributed plant materials to individuals, civic organizations, and NRCS personnel in Texas and Louisiana. These materials were used for demonstration of constructed wetlands, vegetative buffers, and range management projects. Over 7000 plants, 440 bushels of limpgrass, and 150 lbs. of seed were distributed during the year.

During 1999, 1400 people toured or utilized PMC facilities for educational contests or training. The PMC staff gave educational tours to school groups from around the area.



October 1999 - Evenstart elementary students from Diboll, Texas.

Ray Stoner, NRCS Forester explains the different components of soil to 6<sup>th</sup> graders from Crockett, Texas during a tour of the PMC.



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