

United States Department of Agriculture



# **East Texas Plant Materials Center**

## **2006 Technical Report**

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## Introduction

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, and US Forest Service. The ETPMC is located at the Stephen F. Austin Experimental Forest near Nacogdoches, Texas. The Center has use of 75 acres. Currently 26 acres are being used for evaluation plots and seed production fields.

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.

### **Priorities of the East Texas Plant Materials Center:**

PMC activities are directed to develop plant materials and corresponding technology for the following seven high priorities:

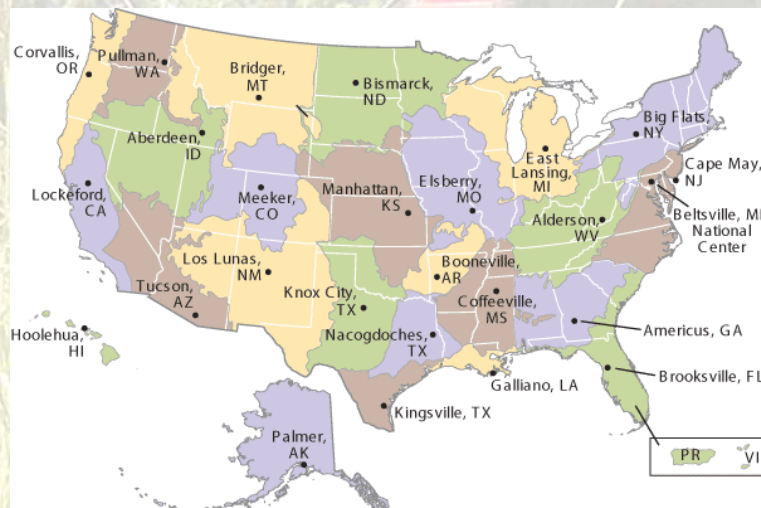
- Erosion control and improvement of water quality and quantity
- Domestic livestock and wildlife food and cover
- Revegetation, water quality improvement and erosion control following timber harvests.
- Revegetation and stabilization of surface mined areas
- Stream bank stabilization and frequently inundated bottomlands
- Saline areas and high water table soils
- Wetland environments using adapted herbaceous and woody aquatic species

The PMC cooperates with other agencies and organizations to develop plant materials and technology. Cooperators include the US Forest Service, Soil and Water Conservation Districts in east Texas and western Louisiana, entities within NRCS, and the Arthur Temple College of Forestry and Agriculture at Stephen F. Austin State University at Nacogdoches, Texas.

The purpose of this publication is to present information from active studies conducted during 2006. These studies are ongoing and information is preliminary in nature. Past information about PMC studies is available at <http://Plant-Materials.nrcs.usda.gov>.

## PMC Service Area

The Plant Materials Center serves 48.2 million acres in east Texas and northwestern Louisiana. The topography is diverse ranging from level floodplains to strongly sloping forestlands and prairies. Soils in the service area range from deep, coarse textured sands to heavy clay bottomlands. Average yearly rainfall amounts vary from 32 inches to 56 inches near the Gulf coast. Humidity and temperature are usually high during the growing season. The average growing season ranges from 228 days to 260 days from north to south. The Center is one of 27 USDA, Natural Resources Conservation Service, Plant Materials Centers strategically located across the nation. Centers are located to serve areas with similar soils, plants, and climate.



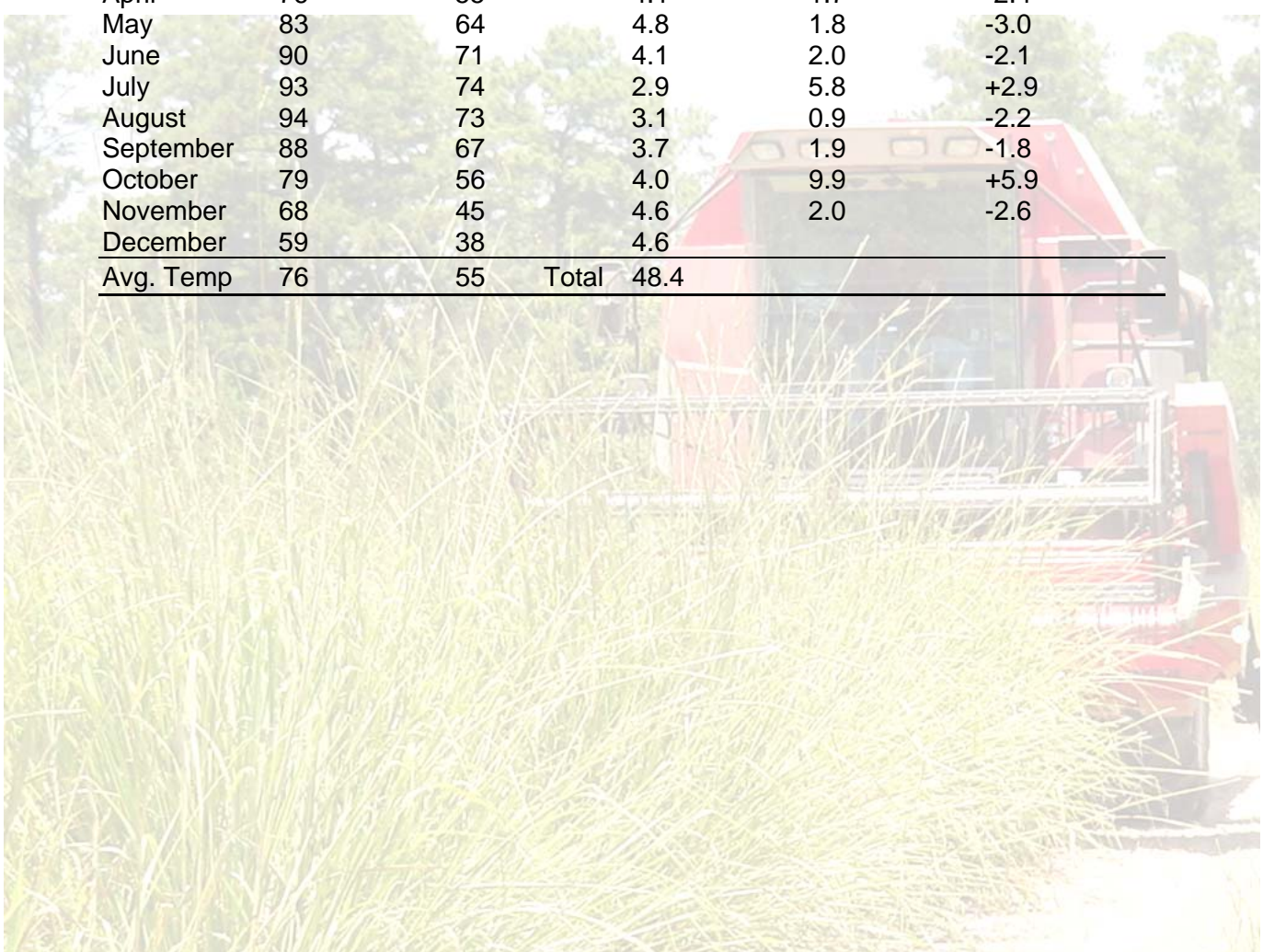
## PMC Site Information

The PMC is located at the US Forest Service Stephen F. Austin Experimental Forest about ten miles southwest of Nacogdoches, Texas. Presently, 26 acres are utilized for plant evaluation studies and foundation seed production. Soils at the PMC are acidic, but considered productive. The soils are: Attoyac fine sandy loam, Bernaldo fine sandy loam, Woden fine sandy loam, and Bernaldo-Besner complex. These soils are gently sloping (0 to 4 percent).



Table 1. Monthly Average Temperatures and Rainfall for 2006 at Nacogdoches, Texas

Month	Temperature		Rainfall (in.)		+ / - Avg.
	High	Low	Avg.	PMC	
January	57	36	4.4	5.8	+1.4
February	62	40	3.9	5.6	+1.7
March	69	47	4.2	4.2	0.0
April	76	55	4.1	1.7	-2.4
May	83	64	4.8	1.8	-3.0
June	90	71	4.1	2.0	-2.1
July	93	74	2.9	5.8	+2.9
August	94	73	3.1	0.9	-2.2
September	88	67	3.7	1.9	-1.8
October	79	56	4.0	9.9	+5.9
November	68	45	4.6	2.0	-2.6
December	59	38	4.6		
Avg. Temp	76	55	Total	48.4	



## Initial Evaluations

**Title:** Initial Evaluation of Little Bluestem (*Schizachyrium scoparium*)  
**Study No:** ETPMC-0565-P-PA  
**Duration:** 2005 – 2008

### Introduction

Little bluestem is a warm season native perennial grass found throughout the United States. This plant is considered one of the major grasses of the tall grass prairies. It grows on a variety of soils and is distributed throughout most of Texas. The objective of this initial evaluation is to choose the best performing accessions for advanced study and release of an adapted cultivar. Seed of little bluestem accessions were collected by NRCS personnel from 2002 to 2004.

### 2006 Activity

2006 began the second growing season for the little bluestem initial evaluation. Due to dry conditions in 2005, some accessions were replanted in the spring. Within the assembly, twelve accessions exhibited bluish colored foliage while the other accessions exhibited various shades of green. This variation is similar to findings of a switchgrass study conducted by Eberhart and Newell (1959). In August, the assembly was divided into seed maturity groups of early, late, and very late. Evaluation notes on the accessions were taken during the growing season. Visual evaluations were completed for foliage abundance, seed production amount and lodging. Ratings were scored as 1=best and 9=poor. Foliage color and seed maturity is noted in Table 2 and plant performance in Table 3.

**Table 2: Little bluestem Initial Evaluation Foliage Color and Seed Maturity**

#### Blue foliage

**Early Seed Maturity:** 9067258, 9067257, 9067288, 9067346, 9067208, 9067345, 9067263, 9067200, 9067259, 9067336

**Later Seed Maturity:** 9067292, 9067237, 9067283, 9067228, 9067279, 9067271, 9067716, 9067719, 9067353, 9067354, 9067355

**Very Late Seed Maturity:** 9067222

#### Green Foliage

**Early Seed Maturity:** 9067206, 9067226, 9067717, 9067695, 9067682, 9067692, 9067701, 9067688, 9067249, 9067711

**Later Seed Maturity:** 9067720, 9067721, 9067722, 9067723, 9067705, 9067713, 9067699, 9067690, 9067710, 9067330, 9067691, 9067693, 9067696, 9067697, 9067703, 9067706, 9067724

**Very Late Seed Maturity:** 9067725, 9067726, 9067216, 9067251, 9067727, 9067252, 9067728, 9067322, 9067297, 9067352, 9067687

#### **Reference:**

Eberhart, S.A. and L.C. Newell. Variation in Domestic Collections of Switchgrass (*panicum virgatum* L.) Agron. J. 51:613-616. 1959.



**Table 3.**  
**Initial Evaluation of Little bluestem**

Accession #	Foliage			Seed Production			
	Abundance	Height (cm)	Width (cm)	Maturity Date	Height (cm)	Amount	Lodging
9067292	3	75	72	10/30	124	5	5
9067222	3	80	60	11/20	106	5	7
9067721	3	38	42	11/20	125	5	5
9067352	3	29	50	11/20	106	5	5
9067251	3	56	58		130	5	6
9067252	3	50	55		126	5	6
9067714	4	20	40	11/20	75	5	5
9067200	5	70	65	10/6	140	4	5
9067345	5	64	58	10/6	148	4	5
9067268	5	35	35	11/20	110	4	4
9067259	5	58	56	9/1	140	5	5
9067263	5	54	61	9/17	135	5	6
9067226	5	52	55	9/17	130	5	5
9067695	5	50	57	9/17	130	5	5
Aldous	5	11	20	9/17	90	5	5
9067346	5	56	60	10/1	125	5	5
9067206	5	47	61	10/6	145	5	5
9067208	5	53	57	10/6	150	5	5
9067257	5	60	60	10/6	130	5	4
9067258	5	63	54	10/6	135	5	5
9067279	5	60	64	10/6	135	5	4
9067249	5	47	56	10/6	115	5	5
9067336	5	64	60	10/6	150	5	5
9067682	5	35	53	10/6	110	5	5
9067716	5	53	54	10/12	140	5	5
9067267	5	16	17	10/20	65	5	7
9067271	5	55	50	10/20	130	5	6
9067330	5	46	46	10/20	110	5	5
9067690	5	30	45	10/23	125	5	5
9067705	5	30	35	10/23	130	5	5
9067710	5	16	30	10/23	70	5	5
9067688	5	60	55	10/25	130	5	5
9067693	5	34	48	10/25	100	5	5
9067699	5	48	48	10/25	110	5	5
9067717	5	47	44	10/25	113	5	5
9067701	5	50	53	10/26	130	5	5
OK select	5	11	17	10/26	64	5	5
9067228	5	55	58	10/30	148	5	5
9067283	5	47	40	10/30	140	5	5
9067325	5	25	26	10/30	63	5	5
9067297	5	45	48	10/30	114	5	6
9067691	5	15	35	10/30	140	5	5

Accession #	Foliage			Seed Production			
	Abundance	Height (cm)	Width (cm)	Maturity Date	Height (cm)	Amount	Lodging
9067692	5	45	62	10/30	135	5	5
9067696	5	41	55	10/30	120	5	5
9067702	5	14	22	10/30	91	5	5
9067703	5	48	71	10/30	125	5	5
9067704	5	48	47	10/30	80	5	5
9067354	5	16	17	10/30	63	5	5
9067355	5	22	31	10/30	90	5	5
9067353	5	14	22	11/1	100	5	5
9067697	5	17	48	11/5	114	5	5
9067237	5	60	57	11/12	122	5	5
9067322	5	20	20	11/20	90	5	n/a
9067324	5	45	52	11/20	116	5	5
9067726	5	23	38	11/20	95	5	5
9067727	5	25	40	11/20	102	5	5
9067728	5	25	40	11/20	100	5	5
9067719	5	52	57	11/20	140	5	5
9067720	5	29	47	11/20	107	5	5
9067700	5	9	20	11/20	55	5	5
Cimarron	5	10	17	10/20	75	6	5
9067724	5	45	61	10/25	115	6	5
9067722	5	26	34	10/30	110	6	5
9067711	5	50	58	10/30	120	6	5
9067713	5	44	53	10/30	90	6	6
9067718	5	29	54	10/30	90	6	5
9067706	5	50	50	11/4	110	6	5
9067709	5	9	22	10/30	62	7	5
9067723	5	25	38	11/20	105	7	5
9067725	5	28	36	11/20	107	7	6
9067687	5	3	20	11/20	50	7	7
9067318	6	13	19	11/20	57	5	5
9067707	6	18	13	11/20	47	5	5
9067680	6	10	21	10/20	70	6	6
9067686	6	41	39	11/20	90	6	5
9067288	7	46	52	9/1	115	5	5
9067266	7	42	41	10/12	118	5	5
9067694	7	40	46	10/25	90	6	5
9067216	7	20	46	11/20	72	6	5
9067715	7	26	34	10/20	70	7	5



**Title:** Initial Evaluation of Gayfeather (*Liatris* spp.)  
**Study No:** ETPMC-P- 0568 - WL  
**Duration:** 2005-2008

**Introduction**

Gayfeather (*Liatris* spp.) are mostly showy, slender, erect narrow leaved perennials with stems originating from a base. The species are found in open to moderately timbered sites. Sandy soils are generally preferred. For species in Texas and Louisiana, heights range from 30 to 100 cm. tall. Livestock will graze on young plants, but mature plants are not as palatable.

**2006 Activity**

A total of 26 accessions make up the initial evaluation block. However, ten of the initial accessions did not perform well this year. Evaluation notes on foliage and seed production characteristics were taken. Foliage amount and lodging were visually evaluated with ratings of 1 = best and 9 = poor. Bloom color varied from white to dark purple.

**Table 4. Performance of Gayfeather Initial Accessions**

Accession #	Foliage		Amount	Lodging
	Height (cm)	Width (cm)		
9067256	34	26	5	5
9067300	102	28	4	5
9067307	70	26	5	6
9067309	72	25	5	6
9067316	41	19	5	6
9067323	36	15	5	6
9067329	40	20	5	5
9067335	14	22	5	5
9067348	55	25	5	4
9067351	25	39	3	5
9067254	19	8	5	5
9067347	25	14	5	5
9067303	57	22	5	5
9067333	85	57	5	6
9067301	50	20	6	7

**Reference:**

Diggs, G.M., B. Lipscomb, and R.O’Kennon. Shinner and Mahler’s Flora of North Central Texas. Botanical Research Institute. Fort Worth, Texas, 1999.  
 Grelen, H.E. and R.H. Hughes. Common Herbaceous Plants of Southern Forest Range. Research Paper SO-210. 1984.

**Title:** Initial Evaluation of Splitbeard Bluestem (*Andropogon ternarius*)  
**Study No:** ETPMC-P-0567-PA  
**Duration:** 2005-2008

### Introduction

Splitbeard bluestem is a native perennial grass which grows 80 to 120 cm. tall. This species has a light fluffy colored seed and flowers from August to November. Splitbeard bluestem is adapted in Texas and the southeastern United States. It is commonly associated with little bluestem on well drained sandy sites.

The objective of this initial evaluation study is to choose the best accessions for further evaluations. The intended uses of this plant are pasture/hay planting and wildlife habitat.

### 2006 Activity

This was the second growing season. Evaluation notes of foliage characteristics and seed production of the accessions were taken. Foliage abundance, seed amount, and lodging were visual scored with ratings of 1 = best to 9 = poor. Performance of the accessions is noted in Table 5.

**Table 5. Performance of Splitbeard bluestem Initial Accessions**

Accession #	Foliage			Seed Production			
	Abundance	Height (cm)	Width (cm)	Maturity Group	Height (cm)	Amount	Lodging
9067199	5	55	63	earlier	180	6	5
9067203	5	62	75	later	170	5	5
9067204	5	68	77	earlier	140	5	5
9067210	5	66	74	earlier	160	5	4
9067230	5	33	24	very late	93	5	5
9067224	5	54	51	later	145	5	5
9067248	3	71	73	later	145	5	5
9067260	5	49	60	later	125	5	5
9067261	5	46	59	earlier	120	5	5
9067262	5	59	77	later	145	5	6
9067265	5	46	65	later	125	7	5
9067280	5	42	58	later	120	7	5
9067298	5	77	55	very late	135	5	5
9067302	5	45	63	earlier	140	6	6
9067319	5	45	69	very late	139	7	5
9067320	5	38	54	very late	110	6	5
9067326	5	60	70	later	140	5	5
9067327	5	51	62	later	150	5	6
9067338	5			later	120	5	5
9067340	5	41	55	earlier	133	5	4
9067341	5	61	70	earlier	150	5	6
9067342	5	53	55	later	140	5	7
9067343	3	53	63	earlier	160	6	5
9067344	5	44	62	earlier	150	5	6

### Reference:

Grelen, H.E. and R.H. Hughes. Common Herbaceous Plants of Southern Forest Range. Research Paper SO-210. 1984.



**Title:** Initial Evaluation of Pinehill Bluestem (*Schizachyrium scoparium* var. *divergens*)  
**Study No:** ETPMC-P-0566-PA  
**Duration:** 2005-2008

### Introduction

Pinehill bluestem, also known as eastern little bluestem, grows in open woods and forest margins. This species is apparently more shade tolerant than little bluestem. This species is found in the southeastern United States west to the Blackland prairie region in Texas.

### 2006 Activity

Out of the twelve accessions initially collected, only four accessions were evaluated this year. The other accessions failed to produce transplants. Evaluation notes were taken on foliage characteristics and seed production. Foliage abundance, seed amount, and lodging were visual scored with ratings of 1 = best to 9 = poor. Performance is noted in Table 6.

**Table 6. Performance of Pinehill bluestem Initial Accessions**

Accession #	Foliage			Seed Production			
	Abundance	Height (cm)	Width (cm)	Maturity Date	Height (cm)	Amount	Lodging
9067209	5	23	36	10/31	107	5	6
9067204	5	60	62	10/12	128	5	5
9067310	5	56	50	10/24	140	5	6
9067314	5	54	61	10/16	135	5	5

### Reference:

Diggs, G.M., B. Lipscomb, M. Reed, and R.J. O'Kennon. Illustrated Flora of East Texas. Botanical Research Institute of Texas and Austin College. 2006.

## Advanced Evaluation

**Title:** Advanced Evaluation of Beaked panicum (*Panicum anceps*) Accessions  
**Study No:** ETPMC-P-0054-WL  
**Duration:** 2001-2006

### Introduction

Beaked panicgrass (*Panicum anceps*) is a warm season native perennial. The plant varies in height from 2 to 4 feet. This grass reproduces by seeds, tillers, or short rhizomes. The seed resembles the curved beak of a bird, hence its common name.

Beaked panicgrass is adapted from New York to Kansas and southeastern US. The grass is adapted to moist sandy sites and grows in poorly drained flats, depressions and bottomlands. Conservation uses for beaked panicgrass include revegetation of surface mined lands, timber roads, and other critical erosion sites. Beaked panicgrass is utilized by wildlife. Cattle also graze on this grass.

### 2006 Activity

Seed production of #9067102 decreased this year from 2.8 lbs. to 1.8 lbs. from a seed production area of 0.032 acre. The reduction can be attributed to dry growing conditions. This accession has been isolated for three years from the rest of the advanced evaluation accessions because of its shorter stature and foliage characteristics. Four of the accessions (#9067071, #9067094, #9067079, and #28510) are similar in growth and seed production attributes. These were combined into one seed harvest this year.



At left: Accession #9067102 from Harrison County, Texas

### Reference:

Leithead, H.L., L. Yarlett, and T. Shiflet. 100 native forage grasses in 11 southern states. Agriculture Handbook 389. USDA. 1971.



## Technology Development

**Title:** Seeding Rate of Harrison germplasm Florida paspalum Select Release  
**Study No:** ETPMC – 0359 – WL  
**Duration:** 2004 - 2007

### Introduction

Florida paspalum (*Paspalum floridanum*) is a native warm season perennial grass that grows five to six feet tall. This grass provides cover and food for wildlife. The seed is eaten by turkey and gamebirds. This species is adapted to the eastern part of the United States.

In 2004, the East Texas Plant Materials Center released Harrison germplasm Florida paspalum selected release to the commercial market. The objective of this study is to determine the optimum seeding rate for this release.

### 2006 Activity

The experimental design was three randomized complete replications with five seeding rates of 4, 6, 8, 10, and 12 pls lbs. /acre. Plot size was 2' x 6' with three rows spaced eight inches apart to simulate drill planting. The soil for the plots is an Attoyac fine sandy loam. No chemical or mechanical weed control was applied to the plots. The plots were hand planted on April 24, 2006.

### Summary

Results from the 2006 seeding were disappointing. Dry soil conditions and weed pressure adversely affected seed emergence and growth. There was not enough data generated from the plots for proper analysis. Study is being maintained and will be evaluated for an additional 2 years.

### Reference:

Leithead, H.L., L. Yarlett, and T. Shiflet. 100 native forage grasses in 11 southern states. Agriculture Handbook 389. USDA. 1971.

**Title:** Determining the Effect of Age of Seed on Germination of Harrison germplasm Florida paspalum select release  
**Study No:** ETPMC-T-0670-WL  
**Duration:** 2006-2007

### Introduction

In 2004, the East Texas Plant Materials Center released Harrison germplasm selected release to the commercial market.

Seed age has been shown to be effective in reducing seed dormancy of warm season grass species (Shaidee et al., 1969). Prechilling, which is moistening the seed and cold storage, has been used in germination of switchgrass (*Panicum virgatum*) (Zarnstorff et al., 1994; Douglas and Grabowski, 1995). There is no information on the effect of seed age and prechill on germination of Florida paspalum. The objective of this study was to examine seed age and prechill on germination of two Florida paspalum seed lots.

### Materials and Methods

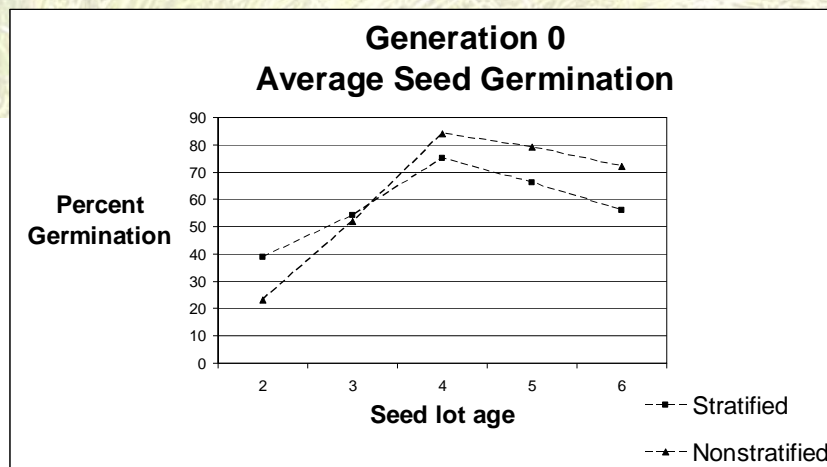
Generation 0 (harvested 2000 to 2004) and generation 1 (harvested 2003-2005) seed lots were used. Seed lots were stored in a temperature and humidity controlled environment. Before germination, seed lots were separated into light and heavy fractions by a South Dakota seed blower. Only the heavy fraction was used for testing. Prechilled seed was stored in a refrigerated environment for 14 days at 38°F. A solution of 2% KNO<sub>3</sub> was used to moisten the paper substrate. The test continued for 28 days with alternating temperatures of 86°/68° F and light. The experimental design was a randomized complete block with four replications. Germinated seed were counted and discarded at 7, 14, 21, and 28 days. The test was repeated and an average germination percentage determined.

### 2006 Activity

Stratification of the seed lots began on January 26 and March 13. Stratification ended and germination tests began on February 9 and March 27. Germination tests concluded on March 9 and April 24.

### Results

#### Germination 0 seed lot

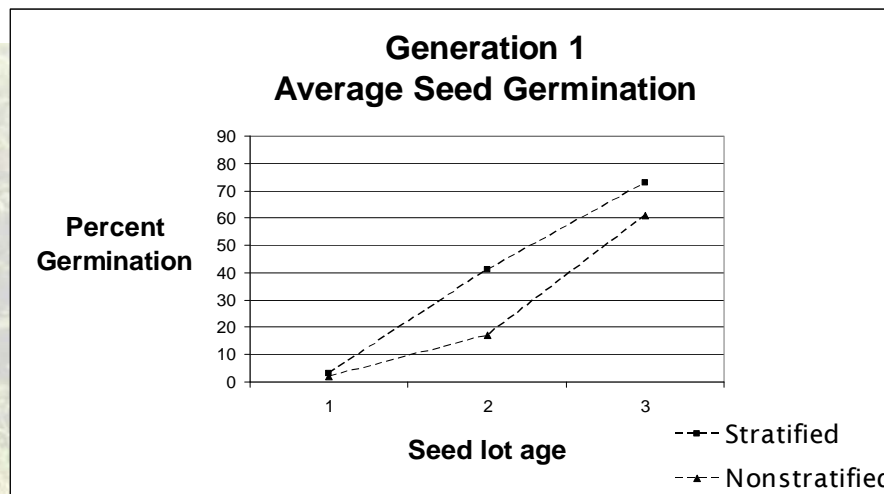




Germination of three to six year old seed was not increased by prechill (stratified) treatment. Instead germination was more influenced by seed age than prechilling. Prechilling increased germination in two year old seed.

### Generation 1 seed lot

Seed dormancy was high in one year old seed. Seed dormancy was also present in the three year old seed as indicated by the positive response to prechilling. See Figure 7.



### Conclusions

Preliminary results suggest seed dormancy of these two seed lots of Harrison germplasm Florida paspalum can be reduced with a minimum of three years of storage in a controlled environment (50°F and 50% relative humidity) resulting in improved stands. This study will be conducted again in 2007.

### References:

- Douglas, J.L. and J.M. Grabowski. 1995. Seed germination of Alamo switchgrass as influenced by age of seed and prechill. Technical Note. Vol.11 No. 4. Coffeerville, MS.
- Shaidee, G., B.E. Dahl, and R.M. Hansen. 1969. Germination and emergence of different age seeds of six grasses. J. Range Manage. 22: 240-245.
- Zarnstorff, M.E., R.D. Keys and D.S. Chandler. 1994. Growth regulators and storage effects on switchgrass germination. Agron. J. 86:667-672.

**Title:** Seeding Rate of Crockett germplasm herbaceous mimosa select release  
**Study No:** ETPMC-T-0462-CR  
**Duration:** 2004-2007

### Introduction

Herbaceous mimosa (*Mimosa strigillosa*) is a warm season perennial legume native to the southeastern United States. The plant grows to a height of 6-8". This legume is also a good seed producer. It spreads by stems which root at the nodes and form new plants. Stems can grow up to four feet in length during the growing season. Herbaceous mimosa resembles catclaw sensitive briar (*Schrankia nuttallii*) but does not have thorns. One of the most notable characteristics of the plant is its bright pink bloom, hence another common name of powder puff. The plant prefers full sun and once established is drought tolerant. Herbaceous mimosa is tolerant of lower pH conditions. Germination can occur at pH of 4.1. The optimum pH appears to be between 6.2 and 7.1.

In 2003, Crockett germplasm herbaceous mimosa selected release was made available to the commercial market. The objective of this study is to determine a pure live seeding rate for this release.

The experimental design was three randomized complete replications with five seeding rates of 4, 7, 10, 13, and 16 pls lbs. /acre. Plot size was 2' x 6' with three rows spaced eight inches apart to simulate drill planting. The soil for the plots is an Attoyac fine sandy loam. No chemical or mechanical weed control was applied to the plots.

### 2006 Activity

The plots were hand planted on April 20, 2006.

### Summary

Transect results were inconclusive. The dry conditions may have adversely affected plant growth.



**Title:** Effect of Nitrogen Fertilization upon Seed Production of Three Eastern gamagrass Accessions  
**Study No:** ETPMC-T-0671-PA  
**Duration:** 2006-2009

### Introduction

Eastern gamagrass is a native warm season perennial adapted throughout most of the eastern United States. The primary use of this plant is as a livestock forage with potential uses in vegetative barriers and soil phytoremediation.

Nitrogen fertilization increases seed production of grass species such as tall fescue (*Lolium arundinaceum* Schreb.) (Buckner,1985). Low seed yield by eastern gamagrass has limited its acceptance in the commercial market. Therefore, the objective of this study is to determine if N fertilization does effect seed production of 'Medina', 'Jackson', and #9043629 (Nacogdoches, Co.).

### Materials and Methods

The study will be conducted at the East Texas Plant Materials Center near Nacogdoches, Texas. The study plot soil type is an Attoyac fine sandy loam. The experimental design is a randomized complete bock with three replications. Phosphorus and potassium fertility was brought up to a medium level. Reproductive tillers will be counted and seed harvested from each plot. Evaluation will be begin in 2007.

### 2006 Activity

On May2, study plots were vegetatively planted. Water was applied to the plots to aid in transplant growth. Urea fertilizer (0-0-34) was applied to the accession plots at a per acre rate of 75 lbs. on June 7<sup>th</sup>.



At left: Eastern gamagrass study plot.

### Reference:

Buckner, R.C. 1985. The fescues. P.233-244 in M.E. Heath, R.B. Barnes and D.S. Metcalfe (ed.) Forage, the science of grassland agriculture. 4<sup>th</sup> ed. Iowa St. Univ. Press, Ames, IA.

**Title:** Phytoremediation of Soil Nutrients by Short Rotation Woody Crops

**Study No:** ETPMC-T-0776-NU

### **Introduction**

Poultry production is a major segment of the agricultural enterprises of East Texas. The house litter is commonly applied to improve pastures as a fertilizer. Over time soil phosphorus levels have increased significantly. Eight species of short rotation woody crops will be quantitatively for the use of soil nutrients. All species are well established and at a growth stage to readily utilize available nutrients. This study will analyze nutrient use, biomass production and carbon sequestration.

### **Materials and Methods**

There are two treatment areas, control and fertilized (overload of phosphorus) with eight replications, three in control and five in fertilized. The study includes six tree species planted but two of the species have two origins so we will consider that there are eight tree species: black locust, *Robinia pseudoacacia*; green ash, *Fraxinus pennsylvanica*; sweetgum, *Liquidambar styraciflua*; sycamore, *Platanus occidentalis*; (2) cottonwood, *Populus deltoids*; (2) loblolly pine; *pinus taeda*. There are three coppice species (black locust, sycamore, and cottonwood) in both plots but we will collect data only from the planted stock, not root sprouts. Tree selected for biomass determination will be trees numbered from South to North, 4, 6, and 8 from the 10-tree row. The total number of trees that will be collected is estimated at one hundred and ninety-two trees. Measurements to be taken from all of the total number of trees are: total height, basal diameter, diameter at breast height, and number of stems. Biomass, specific density, uptake of nutrients and projected growth rate will be determined from samples of stem, braches and leaves.

### **2006 Activity**

Trees were cut and measured for biomass production. Growth measurements were taken. Samples were gathered from stems, branches, and leaves.



## Intercenter Strain Trials

**Title:** Evaluation of Brownseed paspalum (*Paspalum plicatum*) and Evaluation of Hooded windmillgrass (*Chloris cucullata*) and Shortspike windmillgrass (*Chloris x subdolichostachya* Muell.)

**Duration:** 2005-2007

### Introduction

These two species are being evaluated at the PMC as part of an adaptation study for the Kika de la Garza Plant Materials Center in Kingsville, Texas.

Brownseed paspalum grows in forest openings, along roadways, and firebreaks. This grass prefers wet meadows, ditches, and disturbed areas. The seed is 1/8" long, medium brown color, and shiny coat. Foliage color is gray green or blue green.

Hooded windmillgrass is found in the plains and sandy areas of Texas, Oklahoma, and New Mexico. This grass spreads by rhizomes or seed.

### 2006 Activities

2006 began the second growing season for the brownseed paspalum and windmillgrass accessions. On July 13, the brownseed paspalum accessions were evaluated. On July 28, the windmillgrass accessions were evaluated. Evaluations were scored using visual observations. A seed harvest of the brownseed paspalum was completed on June 12.

Table 7. Average Ratings for Brownseed paspalum Accessions

Accession	9064466	9088647	9088651	9088681	9089219
% survival	93	95	91	79	94
Vigor	1	4	5	4	5
Seed prod.	3	5	5	5	5
Visual scoring	1=excellent	3=good	5=fair	7=poor	9=very poor

Table 8. Average Ratings for Hooded windmillgrass and Shortspike Accessions

Accession	313	301	260	283	
% survival	100	95	100	100	
Vigor	4	4	3	3	
Seed prod.	3	4	4	3	
% cover	50	60	90	82	
Visual scoring	1=excellent	3=good	5=fair	7=poor	9=very poor

### Summary

Ergot was prevalent in the brownseed accessions. The amount of disease would adversely effect seed production and quality. The hooded windmillgrass and shortspike accessions did not exhibit ergot. Both plant species will be evaluated in 2007.

## Presentations and PMC Tours

Date	Audience	Location	Presenter(s)
11/15/2005	NRCS PMC Personnel	Manhattan, KS	J. Stevens
11/30/2005	SFASU Forestry Class	East Tx. PMC	J. Stevens
02/22/2006	PMC Advisory Committee	East Tx. PMC	J. Stevens M. Brakie T. Allen
05/31/2006	Field Day participants	East Tx. PMC	J. Stevens M. Brakie
05/31/2006	Field Day Participants (Tour)	East Tx. PMC	M. Brakie
06/01/2006	Regional State Conservationists	East Tx. PMC	J. Stevens

## Publications

Plant Collection Guide for *Rudbeckia hirta* – Rob Ziehr / Jim Stevens

2006 East Texas PMC Technical Report – Melinda Brakie / Jim Stevens

Technical Note - Nitrogen Use of 'Jackson' eastern gamagrass – Melinda Brakie

Technical Note – Nitrogen Use of 'Medina' eastern gamagrass – Melinda Brakie

2006 East Texas PMC Field Day – Jim Stevens

Plant Collection Guide for *Echinacea* sp. – Jim Stevens

Initial Evaluations and Projects of the East Texas PMC. Proceedings of Central Plant Materials Meeting – Jim Stevens

2005 East Texas PMC Progress Report – Jim Stevens / Melinda Brakie

East Texas PMC News (fall/ winter) – J. Stevens

East Texas PMC Field Day/ Lufkin Daily News and Nacogdoches Daily Sentinel – Christine Diamond / Jim Stevens

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