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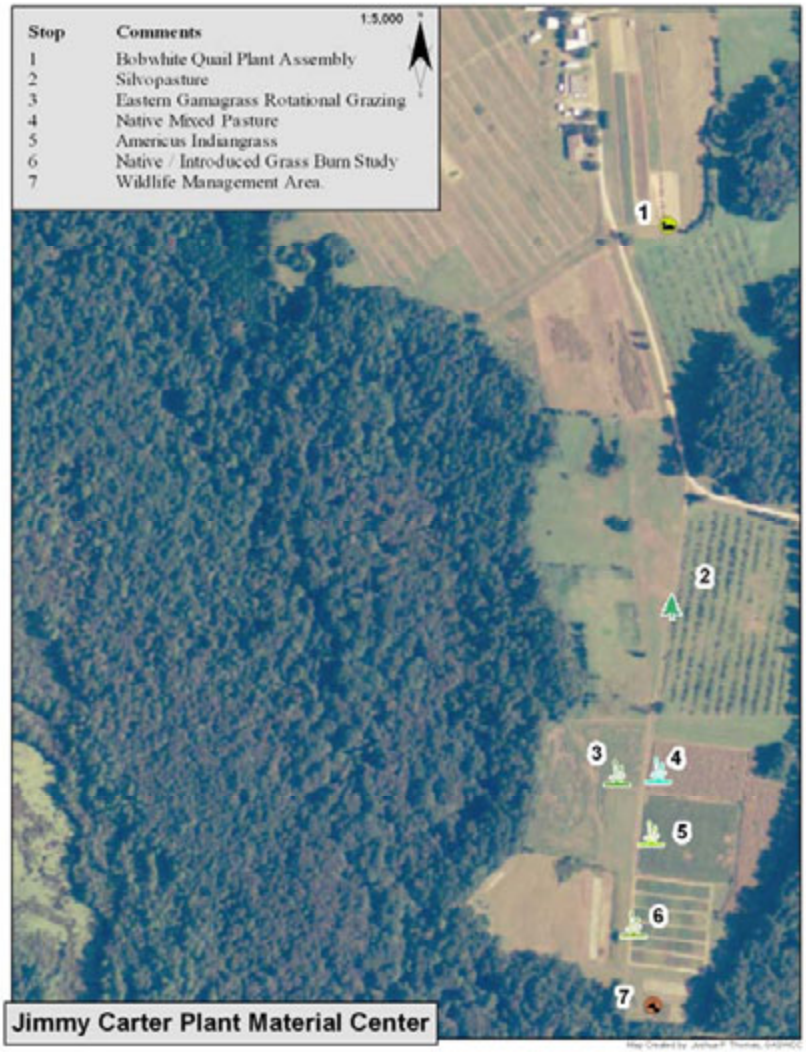

A Technical Summary of Plant Materials Studies
At the Jimmy Carter Plant Materials Center
Americus, Georgia

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STATE CONSERVATIONISTS ADVISORY COMMITTEE

Purpose: The purpose of the committee is to provide leadership in the coordination, communication, support, and integration of applied plant science technology within and between states, the Regional and National Plant Materials Advisory Committees and other partners.

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Niles Glasgow	Columbia, SC
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Mary K. Combs	Raleigh, NC

PLANT MATERIALS TECHNICAL COMMITTEE

The Plant Materials Technical Committee provides input to the PM Advisory process. The PM Technical Committee may be on a state, multi-state or other regional/local level for a single PMC or for multiple Plant Materials Centers. Responsibilities include:

- Provides overall technical leadership in the identification, integration, and prioritization of plant technology needs.
- Develops recommendations for addressing needs and submits information to the State Conservationist's Plant Materials Advisory Committee for review and approval.
- Promotes the transfer of developed applied science technology.

Technical Committee Members

NAME	LOCATION
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Zona Beaty, SRC NRCS	Athens, GA
Eddie Jolley, NRCS	Auburn, AL
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INTRODUCTION

The Jimmy Carter Plant Materials Center (PMC) is part of a national plant materials program operated by the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). The purpose of the PMC is: to assemble, evaluate, and release new plant materials for conservation use; to determine techniques for their successful use; to provide for their commercial increase; and to promote the use of plant materials needed to meet the objectives of the National Conservation Program.

The Plant Materials Center serves NRCS field offices, public agencies, commercial seed and plant producers, and the general public in Georgia, Alabama, South Carolina, North Carolina, and parts of Florida and Tennessee. These states present a wide range of climatic and soil conditions and include a total of 13 major land resource areas (MLRAs) representing 120,377,913 acres across the Southeastern United States.

PMC activities are guided by a five-year program focusing on the development of the following high priority items for **Farm Bill Implementation**:

I. Evaluation of native grasses for grazing lands that support sustainable agriculture (conservation buffers, forage, erosion control, wildlife habitat improvement, urban landscapes, bio-fuels, Farm Bill Implementation).

II. Evaluation of native plants for water quality (riparian forest areas, conservation buffers, filter strips, constructed wetlands, and streambank stabilization, Farm Bill Implementation).

III. Evaluation of plants for conservation tillage (green manure, organic gardening, carbon sequestration and winter cover)

LOCATION AND FACILITIES

The PMC is located on the northwest corner of Americus, Georgia approximately 40 miles north of Albany, Georgia. The facility consists of 327 acres of land with 19 buildings, including a new office building (conference room), greenhouse, seed cleaning /seed storage facilities, pesticide storage, and an underground irrigation system that covers approximately 85 acres. The center's land includes seven soil types, with Orangeburg predominating. Approximately two-thirds of the acreage is open for cultivation, and Muckalee Creek runs through the southwest corner.

HISTORY

The PMC was established in 1936 to produce planting material, mainly pine seedlings for use by the Civilian Conservation Corps (CCC) and for NRCS demonstration projects. The site was originally rented, but was purchased by the federal government in 1942. The center was operated on contract by the University of Georgia Experiment Station from 1954 to 1975, was SCS-operated from 1976 to 1994, and is currently NRCS-operated. Historically, the PMC's objective has been to find erosion-minimizing plants. Today the center seeks to solve problems confronting soil, water, air, plants, and animals.

PARTNERSHIPS

The PMC has conducted cooperative programs with the following organizations:

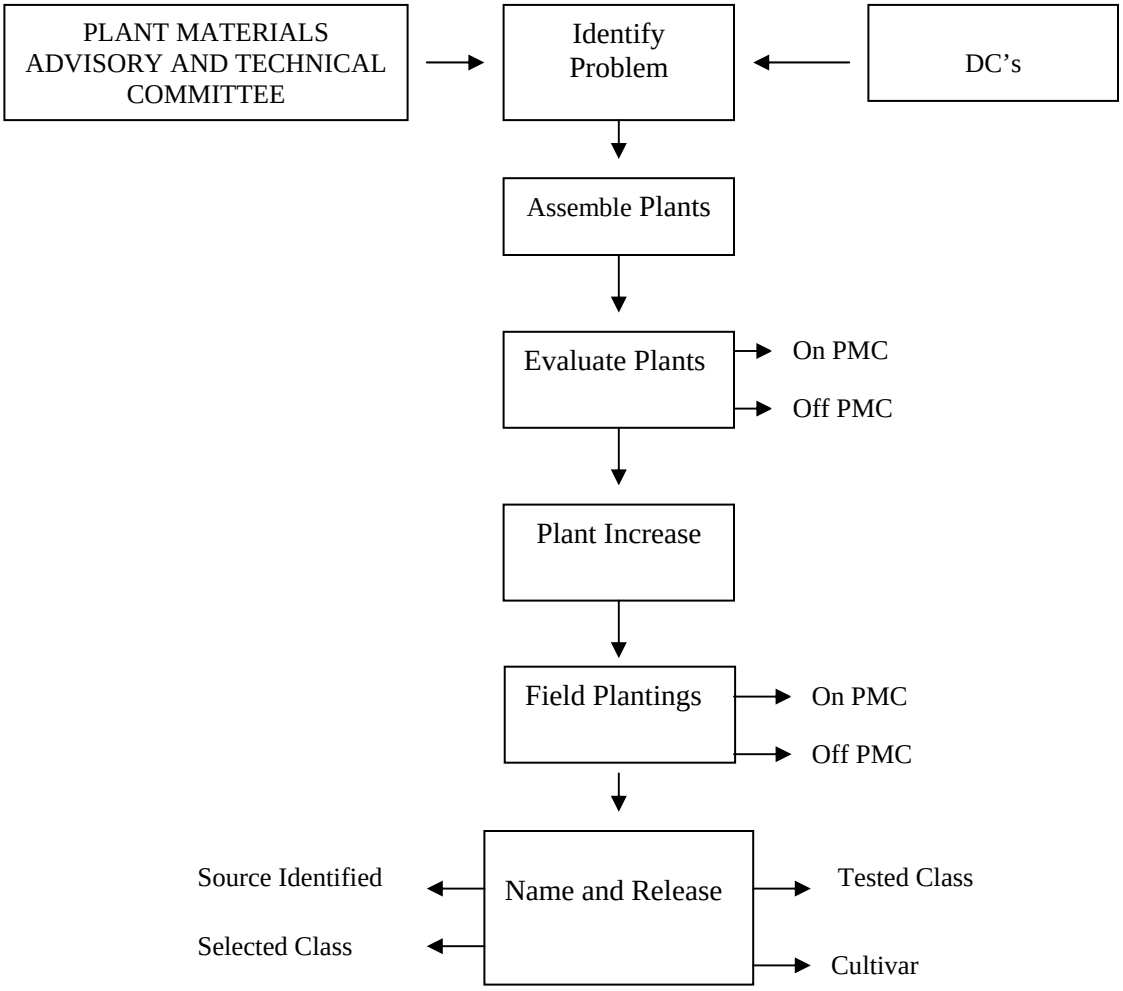
Alabama Agricultural Experiment Stations
Alabama Crop Improvement Association
Fort Valley State University
Georgia Crop Improvement Association
Alabama S&W Conservation Commission
Clemson University
Quail Unlimited
Alabama A&M University
Auburn University
Georgia Forestry Commission
Georgia Department of Transportation
RC & D Councils
North Carolina A&T University

PARTNERSHIPS (CONTINUED)

Georgia Seed Development Commission	Georgia Agricultural Experiment Stations
Wildlife Management Institute	Georgia Department of Natural Resources
The University of Georgia	Tuskegee University
United States Environmental Protection Agency	United States Army Corps of Engineers
United States Department of Energy	United States Forest Service
United States Fish & Wildlife Service	Georgia Soil & Water Conservation Comm.
United States Department of Defense	Lamar Co. S&WCD
United States Department of Agriculture (ARS)	Flint River S&WCD
Lower Chattahoochee S&WCD	Alabama Forest Commission
Georgia Association of Conservation Districts	Alabama Association of Conservation Districts

PLANT MATERIALS PROGRAM

The Plant Materials Program has established a **systematic process to evaluate and release plants** to address the conservation problems outlined in the long-range program. The intensity and time of evaluation will vary according to the class of release. A cultivar will require many years of intense evaluation whereas a source identified plant can be released in 1-2 years with little evaluation. The following flow chart illustrates the steps involved in this process:



In addition to the release of new plants, the **PMC develops new technology to better utilize plant materials for our high priority concerns.**

DESCRIPTION OF THE SERVICE AREA

The Jimmy Carter PMC serves Alabama, Georgia, South Carolina, North Carolina, and parts of Tennessee and Florida. These states present a wide range of climatic and soil conditions.

Elevations range from sea level to over 6,000 feet. Low temperatures will vary from -20 degrees F at the higher elevations to 10 degrees F along the coast while summer high temperatures range from 70 F in the mountains to 110 F at lower elevations.

Frost-free days vary from 260 days near the coast to 130 days at the higher elevations.

Annual rainfall over the area ranges from 45 to 80 inches.

The states served by the center are represented by the eleven major land resource areas.

MAJOR LAND RESOURCE AREAS SERVED

123 Nashville Basin
128 Southern Appalachian Ridges and Valleys
129 Sand Mountain
130 Blue Ridge
133A Southern Coastal Plain
134 Southern Mississippi Valley Silty Uplands
135 Alabama and Mississippi Blackland Prairies
136 Southern Piedmont
137 Carolina and Georgia Sandhill
152 Gulf Coast Flatwoods
153 Atlantic Coast Flatwoods

Soil Conditions vary widely -- deep droughty sand, heavy plastic clay subject to excessive intermittent wetness and drying, highly acid to alkaline extremes, and swamps and marshes - fresh and salt. Farming enterprises also vary widely. The area contains a number of heavily populated suburban areas surrounding centers of industry and commerce. The mountains, seashore, and other areas of natural beauty are being rapidly developed to meet the demand for recreation. Such diversity of climate, soil, and enterprises requires many different types and kinds of vegetation to provide for protecting the land when it is properly treated for soil and water conservation.

Summary of Weather Conditions- Jimmy Carter PMC-2007

1929-2007

	TEMPERATURE (°F)		PRECIPITATION (Inches)			
Month	**2007 Max**	**2007 Min**	**Month Total 2007**	**78 Year Average**	**78 Year High Month**	**78 Year Low Month**
January	59	38	4.10	4.33	11.19	.64
February	58	34	2.97	4.56	12.28	.56
March	75	45	1.97	5.28	12.11	.28
April	74	46	2.25	3.78	12.26	.00
May	86	57	0.0	3.22	8.35	0.0
June	90	66	5.24	4.35	11.69	.03
July	91	67	4.13	5.27	24.79	1.25
August	96	72	4.56	4.13	11.76	.99
Sept	86	64	2.79	3.51	14.00	.10
October	78	56	1.57	2.07	9.60	.00
Nov	68	42	1.80	3.00	10.63	.05
Dec	63	41	7.91	4.16	12.29	.42
Total	-	-	39.29	47.66		

PROJECT 13I128R - EVALUATION AND INCREASE OF BIG BLUESTEM (*ANDROPOGON GERARDII*)

INTRODUCTION:

Big bluestem (*Andropogon gerardii*) is a perennial, warm season grass. It is cross-pollinated and has several ploidy levels (X = 20, 40, 60). Big bluestem is photoperiod sensitive. It is widely distributed in the United States. It occurs in tall grass prairies of the Midwest as well as in forested areas of the southeast. It also has potential for other conservation concerns, such as, wildlife habitat improvement (WHIP), farm bill implementation, erosion control, and warm season native forages. It has been utilized for forage and hay production. This study attempts to evaluate big bluestem ecotypes for cultivar development for the Southeast.

MATERIALS AND METHODS:

In 1989-1990, the PMC assembled 750 vegetative ecotypes of southeastern big bluestems. These ecotypes were placed into an initial evaluation block. Each entry was planted to ten-foot rows with one foot between clones. All entries were separated by three-foot middles. Each entry was replicated twice.

RESULTS AND DISCUSSION:

In 1990 and 1991, the evaluation process began. The following were the evaluation criteria: 1) vigor, 2) stem color, 3) inflorescence color, 4) foliage amount, 5) foliage height (cm), 6) foliage color, 7) forage potential, 8) disease/insect resistance, 9) boot date, bloom date, maturing date, and percent germ, 10) seed amount, 11) uniformity, 12) leaves height on stem, 13) total height, 14) stem size, 15) tillering, 16) steminess, 17) basal foliage, 18) lodging, 19) late maturity.

In spring 1992, Dr. Edzard van Santen of Auburn University began a cooperative big bluestem study with the Jimmy Carter PMC. The following criteria were added to the existing evaluation process: 1) percent stand, 2) forage mass, 3) greening up date, 4) biomass at flowering (green weight and dry weight), 5) surface area of plot, 6) morphological data, and 7) % ADF of stem.

In June 1993, four pairs of cow/calf units were allowed to graze the big bluestem area. Cattle were removed and Dr. van Santen evaluated the cattle's preference for specific ecotypes. After regrowth, cattle were again allowed to graze the vegetation down to 8-inch stubble residues.

Dr. van Santen's data was processed and determined which ecotypes were selected for **'biomass type'** crossing blocks in 1994. These blocks should produce germplasm for comparison testing against a standard big bluestem cultivar. The three blocks consist of early maturing ecotypes, late maturing ecotypes and median maturing ecotypes.
Early maturing crossing block
Lines - 23, 52, 54, 62, 71, 78, 81, 84, 94, 97, 140, 142, 161, 231, 260, 305, 322, 336, 351, 368, 481, 484, 542, 561, 578, 595, 624, 661, 676, 704,719
Median maturing crossing block
Lines - 1, 7, 10, 18, 20, 38, 44, 57, 61, 69, 75, 77, 85, 88, 89, 91, 93, 111, 116, 159, 200, 204, 223, 373, 432, 438, 452, 496, 497, 513, 532, 560, 580, 592, 598, 627, 689, 691, 709, 738
Late maturing crossing block
Lines - 4, 14, 32, 42, 46, 48, 50, 58, 59, 66, 73, 76, 98, 99, 106, 107, 122, 123, 124, 126, 127, 130, 131, 134, 143, 366, 399, 406, 692

Each line was represented by three replications per crossing block to ensure proper pollination.

In 1995, seed was collected from the three-biomass crossing blocks. All seed collected expressed high dormancy characteristics. Dr. van Santen worked to resolve this seed dormancy problem.

In March 1998, Dr. van Santen determined which ecotypes should constitute crossing blocks for production of big bluestem '**forage type**' germplasm. The crossing blocks consist of early maturing ecotypes, median maturing ecotypes and late maturing ecotypes. Each line was replicated three times per crossing block to ensure proper pollination.

Early maturing crossing block
Lines - 15, 84, 105, 110, 135, 136, 140, 154, 166, 179, 198, 215, 216, 218, 245, 247, 260, 290, 297, 361, 364, 385, 389, 397, 436, 439, 455, 484, 488, 500, 548, 561, 568, 641, 661, 693, 707, 743.

Median maturing crossing block
Lines - 7, 17, 18, 26, 77, 114, 155, 181, 200, 214, 228, 234, 252, 266, 296, 328, 334, 377, 414, 420, 446, 447, 472, 482, 505, 510, 520, 524, 537, 559, 569, 584, 649, 651, 689, 700, 717, 725.

Late maturing crossing block
Lines - 3, 4, 14, 42, 46, 49, 59, 60, 66, 90, 98, 122, 124, 126, 131, 144, 170, 206, 219, 249, 254, 261, 298, 312, 325, 333, 341, 362, 366, 406, 426, 540, 575, 635, 658, 678, 679, 747.

In 2001 wildlife biologists with NRCS selected big bluestem lines to constitute a **wildlife type** big bluestem seed production block.

In 2004 late maturing seed was collected and tested for germination and seedling vigor. Results indicate very little seed fill and germination. Therefore in 2005 the PMC altered the cultural techniques used on the big bluestem fields. Fields were burned during growing season instead of dormant season to stimulate inflorescence production and sprayed in summer with insecticide to prevent possible insect (midges) infestation of the seed heads. Seed was harvested in October 25, 2005. This seed showed very little germ percent in seed laboratory results. In **2006** seed production fields were **not burned** or **sprayed** for insects. Seed laboratory results for late maturing **forage and biomass** big bluestem were pure seed 13.91%, **germination 37%**. **Wildlife selection** pure seed was 14.75% and **germination 54%**. Due to these improved seed germination results**, Dr van Santen of Auburn University** planted the forage/biomass and the wildlife seed to the greenhouses at the Auburn University in late summer 2007. The PMC **transplanted the resulting big bluestem seedlings to the field** in Americus in **August 2007**. Seedlings from the same lots were also planted at Auburn University. Seed increases from these field plantings will be used to compare against known cultivars in replicated tests (forage/biomass/wildlife).

Big Bluestem at the Jimmy Carter PMC

PROJECT 13A142R - GRAZING MANAGEMENT OF EASTERN GAMAGRASS

INTRODUCTION:

Eastern gamagrass, *Tripsacum dactyloides*, is a warm-season, native, perennial grass suited to most of the Eastern United States. One of its potential uses is forage for livestock. The Jimmy Carter Plant Materials Center in Americus, Georgia is demonstrating intensive grazing management of this plant. The Lamar County Soil and Water Conservation District is cooperating by providing cattle for the demonstration. The uses of eastern gamagrass are grazing land, wildlife habitat improvement, critical area stabilization, biofuels, alternative fuels, streambank stabilization, nutrient reclamation/uptake, filter strip, conservation buffers, and urban conservation.

MATERIALS AND METHODS:

In the spring of 1993, a 4.5 acre field of Eastern gamagrass, (variety 'Pete'), was planted in 36 inch rows using a corn planter. This 4.5-acre pasture was allowed to establish through 1994 and into 1995.

This demonstration is located on the northwest side of the town of Americus, Georgia, where mean annual precipitation is 125 cm (about 49"), and the mean annual temperature is 18.5 degrees Celsius (about 65.3 degrees Fahrenheit).

The demonstration site is divided into ten paddocks, approximately 0.2 hectares (about 0.45 acre) each, using a single strand of electric fence wire about 90 cm high. Water is provided to each paddock using one inch black plastic pipe and 60 gallon portable water trough. The water source is Muckalee Creek.

In April 2004 the Lamar County Soil and Water Conservation District provided ten heifers. Each heifer weighed about 658 pounds prior to grazing.

The heifers were weighed, vaccinated, wormed, dusted, and ear tagged.

May 17, 2004 the heifers were moved into the first eastern gamagrass paddock to begin a 2.5-3.5 day grazing period in each paddock.

In the spring, 600 pounds per acre of 10-10-10 fertilizer was applied to the pasture, and then approximately 150 pounds of ammonium nitrate was applied to each paddock after each grazing event.

In previous years manure samples were taken on a periodic basis to determine crude protein and digestible organic matter of the eastern gamagrass consumed by the animals. The Grazing Animal Nutrition Laboratory at Texas A&M University was utilized to determine these readings. The NUTBAL Nutritional Balancer software was used to predict animal nutritional needs.

RESULTS AND DISCUSSION:

Cattle were rotated successively through the ten paddocks with 2.5-3.5 days grazing period in each paddock for four cycles. Eight to ten inches of plant stubble was left after each grazing event. The cattle were rotated through the entire ten paddocks until October 6, 2004.

The results from typical manure samples taken from the heifers are as follows:
Crude Protein ranged from 11.8 to 14.14%. Digestible organic matter ranged from 63.68 to 66.49 %.

AVERAGE WEIGHTS 2004

	DATE	WEIGHT	TOTAL GAIN	AVG. DAILY GAIN
Beginning	May 17	658 lbs	-	-
Ending	OCT 06	732 lbs	74 lbs	0.44 lbs

In **2001-2003 heifers** have shown an average daily weight gain (**ADG) of approximately 1.0 lbs** after grazing the easterngamagrass at the Jimmy Carter Plant Materials Center in Americus, Georgia. In **2004 heifers** were less inclined to consumeforage compared to previous herds and only produced an ADG of .44 lbs. Similar procedures with **steers in 1999 and 2000** produced an average daily gain of **1.75 lbs and 1.5 lbs, respectively**. Due to increased workload on other projects the eastern gamagrass pasture was rested for regeneration in 2005. Due to reduced personnel cattle did not graze test in 2006-2007.

Observations and results of NIRS analysis of fecal samples for crude protein suggest that forage quality is adequate for typical livestock operations in this region.

In the summer of **2007** the Eastern gamagrass demonstration along with all the other pasture demonstrations at the PMC were combined into one comprehensive study of **Complete Rotational Grazing System for the Coastal Plain of the Southeast US.** This system will be a year long (12 month) sustained rotational grazing operation involving our eastern gamagrass pasture, silvopasture, Indiangrass field, native mixed warm season grass field, and a new field of improved bermudagrass. The new study will involve NRCS grazing specialists from Georgia, Alabama and the regional tech center in Greensboro NC. It will attempt to demonstrate a practical year around rotational grazing system utilizing several grazing options during the year. The new study is scheduled to begin in **spring 2008.**

Grazing Paddock in Pete Eastern gamagrass

PROJECT 13A144R - GRAZING MANAGEMENT OF YELLOW INDIANGRASS (*SORGHASTRUM NUTANS*)

INTRODUCTION:
Yellow indiangrass (*Sorghastrum nutans*) is a native perennial warm season grass. It can be utilized for forage and hay production. This test attempts to demonstrate the use of a PMC selection known as PI-514673. Emphasis will be placed upon establishment and management techniques for forage production for the Southeast.

MATERIALS AND METHODS:

In the fall of 1993, a three-acre bahiagrass pasture was sprayed with Roundup. In February 1994, the pasture was disked. In March 1994, 450#/Ac of 0-14-14 fertilizer was applied. On May 5, 1994 the pasture area was disked and cultipacked to firm the seedbed. Indiangrass seed was applied with a Solo fertilizer spreader set on No. 24 for a 12-14 foot swath. The rate of seeding was 25 #/Ac or 10# pls/Ac. The area was then cultipacked perpendicular to original cultipacking for proper seed covering. In June 1994, broadleaf weeds were sprayed with 2-4-D at a rate of 1 qt/Ac. A good stand of indiangrass was observed during the summers of 1995 - 1996.

In May 1997, 10-10-10 fertilizer was applied at the rate of 600 #/Ac. The first week of June, 150 #/Ac of ammonium nitrate were spread on the area. On May 27, 2, 4-D herbicide was sprayed at 1 qt/Ac to control broadleaf weeds. Similar cultural practices were followed thereafter.

RESULTS AND DISCUSSION:

In 2000, 12 steers from Lamar Co. S&WCD strip grazed the indiangrass field from late June until early July. Cattle quickly adapted to the new source of forage. Fecal samples from this grazing episode indicated plant crude protein of 7.64 - 10.03 % and digestible organic matter of 64.14 - 67.60

In October 2005 and 2006, Americus Indiangrass seed was harvested from the indiangrass field to support **Cultivar Release.** In **2007** the **Indiangrass** field became part of the **Complete Grazing System for the Coastal Plain of the Southeast US** (Mentioned in previous study) The new study of continuous rotational grazing is scheduled to begin in **Spring 2008**.

Americus Indiangrass Field has been utilized during Prescribed Burn Training (NRCS, Georgia Forestry Commission, Georgia Soil & Water Conservation Commission and Private Landowners)

PROJECT 13A150R - QUANTITATIVE AND QUALITATIVE RESPONSE OF NATIVE GRASSES VERSUS INTRODUCED WARM SEASON PASTURE PLANTS AS INFLUENCED BY DIFFERENT BURN REGIMES

INTRODUCTION:

Very little comparative testing between native and introduced warm season forage plants has been documented in the Southeastern United States. This test attempts to establish, evaluate, and analyze different warm season pasture plants and mixtures subjected to different burn regimes. Data should provide qualitative and quantitative information relative to native and introduced pasture species performance in different burn management regimes. The response variable is species composition. This is a cooperative effort between the NRCS and Dr. Mary S. Goodman of Auburn University.

MATERIALS AND METHODS:

On May 6, 1997, the following experimental split plot design was established:
Split plot (cultivars) with main plots (burn regime) in RBD with three (3) reps. Main plots (50' x 300') are burn #1 and burn #2. Split plots (50' x 50') are six cultivars and cultivar mixes. (1) pure 'Cave-In-Rock' switchgrass (2) pure 'Earl' big bluestem , (3) pure 'coastal' bermudagrass, (4) pure 'Pensacola' bahiagrass, (5) a mixture of 30% "Oklahoma Select" little bluestem, 25% "Earl" big bluestem, 20% 'Americus' indiangrass, and 25% "Cave in Rock" switchgrass, (6) a mixture of 50% little bluestem and 50% 'Serala' lespedeza. Grass seeds were planted at a rate of 10 # pure live seed (PLS) per Acre and coastal bermuda- grass was planted at a rate of .15 Bushel per 120 sq. ft. an acre. Serala lespedeza was seeded at 20 lbs per acre.

RESULTS AND DISCUSSION:

PHASE I

In 1998 all plots were burned. Since 1999, burn #1 plots were burned every year and burn #2 plots burned every two years during dormant season. In 1998 - 2002, percent species composition was recorded for each plot. In 1999- 2002, species frequency was recorded for each plot. Dr. Mary S.Goodman conducted analysis of percent species composition and species frequency. **The following is an abstract from a poster based on this study presented by Dr Goodman and the PMC at the Second National Conference on Grazing Lands held in Nashville Tennessee December 7-10 2003.**
Accumulation of desirable canopy cover is necessary during pasture establishment to protect pasture soil and provide optimum forage quantity and quality. The objective of this study was to evaluate long-term responses of desirable and invasive cover components of forage swards to burn frequency during pasture establishment in a humid, southeastern environment. Forages were sown or sprigged spring 1997 at Americus Ga. in 6 blocks of six 50 by 50 foot plots that included (a) little bluestem +big bluestem +switchgrass +indiangrass (b) little bluestem + serecia lespedeza (c) bahiagrass (d) bermudagrass (e) big bluestem (f) switchgrass. All blocks were burned spring 1998; thereafter, one-half of the blocks were burned every, and one-half every-other year. Percent canopy cover was estimated each fall (1998-2002) and analyzed as a split plot design with year after establishment the main plots; burn frequency the subplots. Percentages of 70-year average rainfall (48in) for 1997 to 2002 were 117, 92,60, 77, 100, 98, respectively. Burn frequency had significant and varying impacts on cover of specific desirable and invasive species and these impacts often occurred in interaction with impacts of year after establishment and mixture. For example, little bluestem cover in first mix was not different in year 1 (13%) versus year 5 (17%) after establishment if the mix was burned every year. However, when burned every other year, little bluestem cover in first mix was higher (P=.016) in year 5 (38%) versus year 1 (16%). In second mix little bluestem cover was higher (P=.010) after year 5 when burned every year (32%) versus every other year (16%). Also bahiagrass as an invasive was reduced after year 5 compared to year 1 in some cases. During pasture establishment, desirable and invasive cover components responded positively and negatively to burn frequency over time and these responses varied within a species when sown in different mixtures.

PHASE II

The **burning regime** for the study was changed in 2004 from a **cool season burn** to a **growing season burn (May-June).** Also **burning frequency** was changed from burn every year and burns every other year to **burn every year and burn every third year**. Percent species composition was recorded from all plots .Data was analyzed in an Analysis of Variance (ANOVA)

for **2004-2007**.Data was analyzed utilizing year as main plot and burn frequency as sub –plot. All data was analyzed using LSD comparison at $p<0.05$. Data in Table 1 and Table 3 was transformed to smooth distribution points. Due to lack of personnel burn was late in 2006 (August 2006).

Data in **Table 1** indicate that 'Earl' big bluestem in a four-way mixture of big bluestem, 'Americus' Indiangrass, "Cave in Rock" switchgrass, and "Oklahoma select" little bluestem shows no differences in percent composition for years or burn frequency. This could imply big bluestem requires more than one complete cycle of the burn regime to show percent composition differences possibly due to the large vegetative habit of the taxa.

Data in **Table 2** indicate that 'Americus' Indiangrass in a four –way mixture produces higher percent composition if burned every year compared to burning every third year. This increase in percent composition may be due to the cultivars ability to utilize nutrients cycled by yearly burns instead of waiting for a pulse of nutrients every three years. After the Indiangrass acclimated to the growing conditions in year two, the percent composition leveled during following years.

Data in **Table 3** indicate that across the years of 2004-2007 the burn regime of every third year produced higher percent composition of 'Cave in Rock' switchgrass in the four-way mixture. Cave in Rock percent composition is adversely affected by burning every year in the four - way mixture. It may not have enough stored nutrients for re-sprouting to respond to a yearly burn regime.

A late growing season burn conducted August 2, 2006

A normal growing season burn conducted June 6, 2007

Graph 1 shows simple effect means on percent composition of “Oklahoma Select” little bluestem in four way mixture. This data indicates a difference in burn regimes during 2006. The burn every year plot was burned late (August) the burn every third year plot was not burned. The late burns with increased fire intensity probably lead to the lower percent little bluestem composition in 2006. With resumed early growing season burn (May-June) in 2007 results reflect previous years with no percent composition difference between the burn regimes.

Table 4 indicates that the percent composition of “Earl” big bluestem in a monoculture was reduced in 2006-2007. Without the buffering effect of the four way mixture the big bluestem monoculture percent composition was adversely affected by the late (August) burn of 2006 and dry conditions of 2007(see weather page). No difference in burn regimes was detected.

Table 5 data indicates similar findings to Table 4 “Cave in Rock” switchgrass in a monoculture was reduced in 2006-2007. Without the buffering effect of the four way mixture the switchgrass monoculture percent composition was adversely affected by the late burn in 2006 and dry conditions in 2007. No difference in burn regimes was detected.

Table 6 data indicates that the percent composition of ‘Pensacola’ bahiagrass in a monoculture is not affected by burn regime or by years. ‘Pensacola’ has proven to be very adapted to the burn regimes over the test with very consistent percent composition results.

Table 1. Percent Composition of 'Earl' Big Bluestem in Four–Way Mixture Burned Every Year and Every Third Year ,USDA-NRCS Jimmy Carter Plant Materials Center, Americus, Ga. 2004-2007.

Burn Regime [1/]	2004	2005	2006	2007	Mean
	---------- %----------				
Year 1	16.46	14.06	8.83	5.03	11.10 a
Year 3	12.50	8.06	9.13	8.00	9.42 a
Mean	14.48 a[2/]	11.06a	8.98a	6.51a	

1- burn regime—Year 1 = burn every year in growing season; Year 3 = burn every third year in growing season 2- means in rows and columns followed by the same letters are not statistically significant at P<0.05

Table 2. Percent Composition of 'Americus' Indiangrass in Four-Way Mixture Burned Every Year and Every Third Year, USDA-NRCS Jimmy Carter Plant Materials Center, Americus, GA, 2004-2007.

Burn Regime[1/]	2004	2005	2006	2007	Mean
	----------%----------				
Year 1	14.33	30.43	23.00	28.73	24.12a
Year 3	7.30	23.96	19.36	8.10	14.68b
Mean	10.81b[2/]	27.20a	21.18ab	18.41ab	

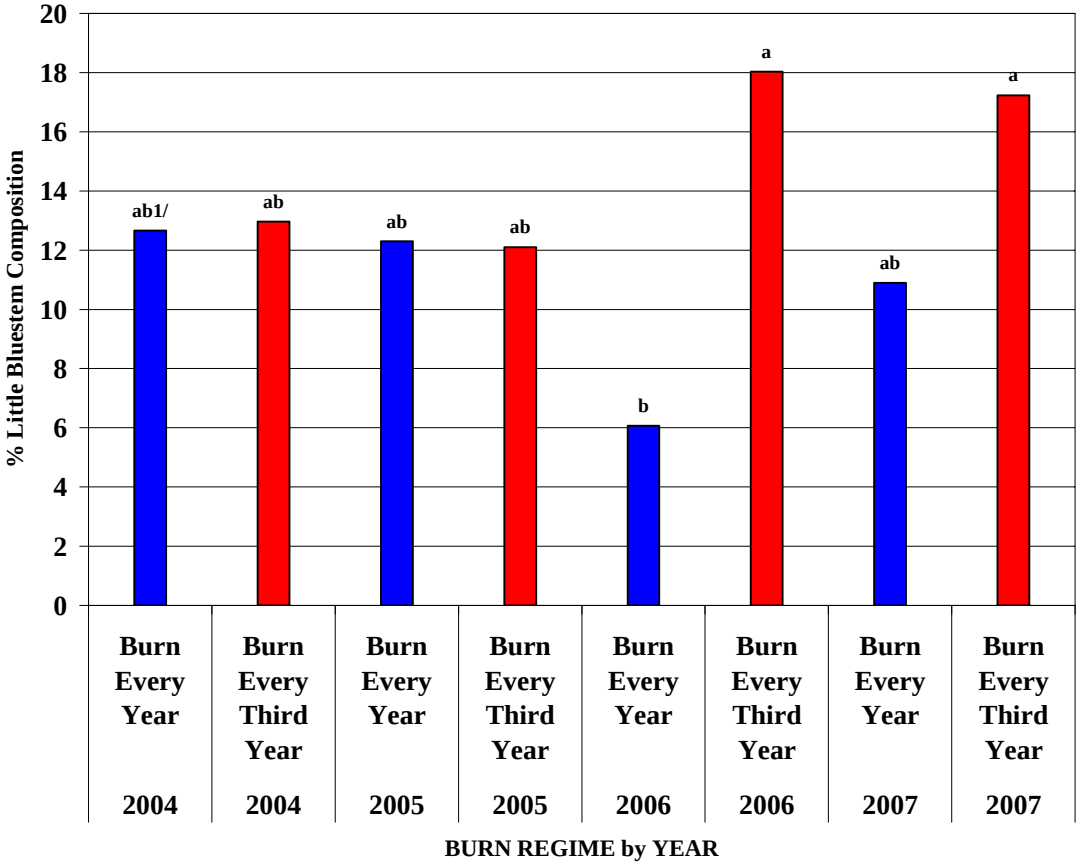
1 – burn regime – Year 1 = burn every year in growing season; Year 3 = burn every third year in growing season 2 – means in rows or column followed by the same letters are not statistically significant at P<0.05.

Table 3. Percent Composition of 'Cave in Rock' Switchgrass in Four-Way Mixture Burned Every Year and Every Third Year, USDA-NRCS Jimmy Carter Plant Materials Center, Americus, GA, 2004-2007.

Burn Regime[1/]	2004	2005	2006	2007	Mean
	----------%----------				
Year 1	6.73	6.33	3.70	1.57	4.58 b
Year 3	18.10	10.67	9.30	6.30	11.09a
Mean	12.42a[2/]	8.50a	6.50a	3.93a	

1 – burn regime – Year 1 = burn every year in growing season; Year 3 = burn every third year in growing season 2 – means in rows or column followed by the same letters are not statistically significant at P<0.05.

Graph 1 Percent Composition of 'Oklahoma Select" Little Bluestem in Four-Way Mixture Burned Every Year and Every Third Year During Growing Season, USDA-NRCS Jimmy Carter Plant Materials Center, Americus, Ga. 2004-2007



1/Bars with same letters are not statistically significant at P<0.05

Table 4. Percent Composition of 'Earl' Big Bluestem Monoculture Burned Every Year and Every Third Year, USDA-NRCS Jimmy Carter Plant Materials Center, Americus, GA, 2004-2007.

Burn Regime[1/]	2004	2005	2006	2007	Mean
	----------%----------				
Year 1	71.43	75.93	51.00	53.67	63.01a
Year 3	67.73	71.23	67.57	67.37	68.48a
Mean	69.58 a[2/]	73.58a	59.28b	60.52b	

1 – burn regime – Year 1 = Burn every year in growing season; Year 3 = Burn every third year in growing season 2 – means in rows and columns followed by the same letters are not statistically significant at P<0.05.

Table 5. Percent Composition of 'Cave in Rock' Switchgrass Monoculture Burned Every Year and Every Third Year, USDA-NRCS Jimmy Carter Plant Materials Center, Americus, GA, 2004-2007.

Burn Regime[1/]	2004	2005	2006	2007	Mean
	---------- % ----------				
Year 1	36.80	23.43	3.22	6.72	17.54a
Year 3	34.00	31.53	24.57	13.47	25.89a
Mean	35.40 a[2/]	27.48a	13.89b	10.09b	

1 – burn regime – Year 1 = Burn every year in growing season; Year 3 = Burn every third year in growing season 2 – means in rows and columns followed by the same letters are not statistically significant at P<0.05.

Table 6. Percent Composition of 'Pensacola' Bahiagrass Monoculture Burned Every Year and Every Third Year, USDA-NRCS Jimmy Carter Plant Materials Center, Americus, GA, 2004-2007.

Burn Regime[1/]	2004	2005	2006	2007	Mean
	----------% ----------				
Year 1	80.70	76.23	65.87	60.37	70.79a
Year 3	71.47	64.80	61.43	76.20	68.47a
Mean	76.08a[2/]	70.52a	63.65a	68.28a	

1 – burn regime – Year 1 = Burn every year in growing season; Year 3 = Burn every third year in growing season 2 – means in rows and columns followed by the same letters are not statistically significant at P<0.05.

PROJECT 13A151B - SILVOPASTURE DEMONSTRATION PROJECT

INTRODUCTION:

In past years, silvopasture studies were conducted by various research institutions in the southeast. They found that tree production and cattle production could be accomplished in one management regime. However, there is a lack of silvopasture demonstration at the present time. This study was established to demonstrate the establishment, management and maintenance of a system designed to produce several valuable products (cattle, pasture, and trees) over the long-term.

MATERIALS AND METHODS:

In 2000, longleaf pine trees were planted on the PMC. Containerized trees were planted on 6 foot spacing within a row with 10 feet between double rows and 40 feet between outside rows. Tree density was about 290 trees per acre. Trees were planted into existing 'coastal bermudagrass' and 'Pensacola' bahiagrass mixed pasture. Pasture was sprayed to reduce grass competition. Spraying was continued in 2002. **Dr. Goodman of Auburn University** is working with the PMC to produce maximum data and knowledge from this study concerning forage production, forage composition, and soil characteristics.

RESULTS AND DISCUSSION:

The overall objective of this project is to identify sustainable management approaches for maintenance of perennial pasture productivity and soil quality during (a) conversion to silvopasture and (b) establishment of rotational stocking within silvopasture. A successful stand of 'Dixie' crimson clover (*Trifolium incarnatum*) was obtained from the Fall 2004 planting. Pastures were sampled in January 2005 for fertilization requirements. Fertilizer was applied according to soil test recommendations in May; no fertilizer N was added to the clover treatment plots. The following information was gathered in **2005.** In May, species composition measurements determined that canopy cover of crimson clover was approximately 15% in both bahiagrass (*Paspalum notatum*) silvopasture and open-pastures. Soil samples were collected at full clover bloom in May and again in early August at two points on 5 separate transect positioned perpendicular to the tree strips in each silvopasture and in a similar configuration in the open-pasture paddocks.

On each transect, one sample site was located 1 m from the center of the tree base and the other at the midpoint between adjacent sets of tree strips. In May, the samples were analyzed to characterize percent water-stable aggregates (aggregate stability); soil compaction was measured *in situ* at 5-cm increments to 20 cm in July. In August, 15-cm soil cores were collected to characterize root biomass. Shoot biomass above 5 am was clipped from 10 0.25-m^2 quadrants in each paddock along transects at points used for soil sampling in May, July and August. No treatment or spatial differences were found in percent water-stable aggregates (%WSA) however, there was a significant temporal difference as %WSA increased overall by 23% in August versus June. Soil strength (J/m^2) increased with depth however, sample sites closest to the tree base showed a 50, 56 and 43% reduction in soil strength at 5, 10 and 15 cm, respectively. There were no shoot biomass yield differences as a result of spatial comparisons in May however; clover-treatments had a significantly higher biomass yield by 28% in clover- versus comparable N-fertilizer treatment paddocks. No differences in shoot biomass yield were detected in July however, in the silvopasture in August; there was a significant 10% reduction in biomass yield at sampling points closest to the tree line. Weather stations were located in silvopasture (5-yr old *Pinus palustrus*) and open pasture at Americus and Chipley, FL (20-yr old *Pinus taeda*).

In the summer of **2007 Dr Goodman and her staff** presented a paper concerning their research at the **Jimmy Carter Plant Materials Center**. The following is an abstract from that paper. Silvopasture is considered a sustainable Agroforestry practice as a result of benefits the system offers for biodiversity, economic returns, and environmental quality. However, little is known about the temporal and spatial dynamics of forage productivity and soil quality in pastures being converted to silvopasture.

The objectives of this research were: 1) to determine the impact of N source (fertilizer-N versus legume-N) on forage productivity and quality in silvo- versus open-pasture systems, and 2) to determine the impact of N source on soil aggregate stability, fungal hyphal density, and compaction in silvo- versus open-pasture systems.

This research was conducted during 2005 and 2006 at Americus, Georgia, USA in 5- to 6-y old longleaf pine (*Pinus palustris* Mill.)-bahiagrass (*Paspalum notatum* Flugge) silvopasture and adjoining bahiagrass pasture without trees. Treatments included either fertilizer-N or overseeded crimson clover (*Trifolium incarnatum* L. 'Dixie'). May 2005 shoot dry matter was higher for the legume-than fertilizer-N treatment, and higher for open- than silvopasture.

May 2006 shoot dry matter was different among alley positions relative to trees in silvopasture. May 2005 forage N concentration was higher for the legume-than fertilizer-N treatment. May 2006 water stable aggregates were higher for the legume-than fertilizer-N treatment. Initial soil compaction at 15 and 20 cm was higher for open- than silvopasture. Compaction at all depths was also higher for silvopasture soil positions furthermost from trees. N source was the major cause of differences in forage productivity and quality, while pasture type had the greatest impact on soil compaction.

In 2008 the silvopasture study will become part of the **Complete Rotational Grazing System for the Coastal Plain of the Southeast U.S**.

Crimson Clover Plots in Silvopasture Study at PMC in May

PROJECT 13A152R- ROTATIONAL GRAZING MANAGEMENT OF A MIXED NATIVE GRASS PASTURE

INTRODUCTION:

Native grass pasture systems are used commonly in the Midwestern U.S. However, these systems are rarely utilized in the Southeastern United States. This study attempts to establish a mixture of native warm season grasses and to demonstrate their use in a managed rotational grazing system.

MATERIALS AND METHODS:

In April 2001 the PMC planted a 5-acre native mixed grass pasture using a Truax no-till drill. Since the planting area is sandy soil, a cover of oats was grown to stabilize the soil. Before planting the warm season grasses, the oats were sprayed with herbicide. The oat field was not mowed before planting because the mowed debris can interfere with the planting mechanisms of the planter. The oats were not completely killed before planting. Drill was set to plant switchgrass ('Cave in Rock' and 'Alamo' combined) at 4 # pls/Ac, 'Americus' indiangrass at 2.5 # pls/Ac, Oklahoma selection of little bluestem at 4.1 # pls/Ac, and 'Earl' big bluestem at 2.5 # pls/Ac. Each year the entire pasture is burned.

RESULTS AND DISCUSSION:

In 2002-2007 transects of the field were conducted to determine the percent species composition of the mixture after establishment. The results were as follows:

Percent Species Composition of Native Mixture from 2002-2007

PLANT SPECIES	2002	2003	2004	2005	2006	2007
ALAMO	25	40	40	48.8	50	52
CAVE in ROCK	7	12	14.5	8.8	15	22
AMERICUS	4	2	11	5	8.5	9
EARL	5	14	16.5	16.3	7	4
Oklahoma Select	12	8	11	5	6.5	4
WEED/OPEN	47	24	7	16.1	13	9

Through **2007 'Alamo' switchgrass** continues to dominate the stand. This dominance has been experienced in other planting in the prairie states. Switchgrass is an early seral stage dominant and should decline over time. More recent recommendations suggest planting a lower seeding rate of switchgrass in the future. This study indicates such a recommendation would be justified for more balanced forage diversity. The mixed native grass pasture will be part of the **Complete Rotational Grazing System for the Coastal Plain of the Southeast US study** in 2008. The mixed native grass pasture is also utilized to teach prescribed burn training with the Georgia Forestry Commission.

PROJECT GAPMC-T-0154-CP ALTERNATIVE CROPS FOR SMALL FARMER'S DEMO AT THE JIMMY CARTER PMC (PHARMACEUTICAL PLANTS)

INTRODUCTION:

Humans have utilized plants for thousands of years. For example therapeutic agents for treating many aliments are derived from various herbs. Several plants produce economically important organic compounds such as **phytochemicals** and pesticides. The USDA-ARS is looking at many legumes for pharmaceutical purposes such as velveteen (contains **L-DOPA**, which is used to treat **Parkinson's disease**). Dr. Morris with ARS (Griffin Georgia) states many obscure legumes can provide valuable multiple resources in addition to medicines such as human food, animal feed, cover crops, green manure and erosion control. This study will attempt to assemble, grow, increase and demonstrate new and different crops for small farmers. These farmers will subsequently produce valuable plant material for many uses including medicine, food, and conservation.

MATERIALS AND METHODS:

Pharmaceutical plants that do not produce much seed at Griffin Georgia are grown in rod rows at the JCPMC for seed increase.

RESULTS AND DISCUSSION:

In **2007 the PMC grew the following cool-season plant taxa** for potential work by **Dr. Brad Morris** and the pharmaceutical industry. Seed for future increase and study will be delivered to Dr Morris.

PI Number	Taxa	Country of Origin
478398	*Ornithopus sativus*	Germany
274641	*Ornithopus sativus*	Poland
284140	*Ornithopus sativus*	Portugal
458014	*Ornithopus sativus*	Tunisia
290725	*Ornithopus sativus*	United Kingdom
284141	*Ornithopus sativus*	Portugal
284136	*Ornithopus sativus*	Portugal
274640	*Ornithopus sativus*	Portugal
284139	*Ornithopus sativus*	South Africa
517001	*Ornithopus pinnatus*	Morocco
384134	*Ornithopus perpusillus*	Netherlands
274642	*Ornithopus sativus*	Poland
284137	*Ornithopus sativus*	Kenya
284131	*Ornithopus compressus*	Portugal

PROJECT GAPMC-T-0155-GW CARBON SEQUESTRATION STUDY

INTRODUCTION:

Concerns over global warming have increased interest in carbon and carbon sequestration. Scientists estimate agriculture is responsible for about 7% of the total U. S. contribution of greenhouse gases. Plants remove carbon dioxide from the atmosphere and store it in plant parts as carbon. When plants die and decompose some carbon is released back to the atmosphere while some is sequestered as soil carbon, especially under conservation tillage systems. This amounts to a natural giant carbon storage sink. This study will compare perennial crops ability to sequester carbon. This will be determined by soil organic matter testing of several entries in a long-term study.

MATERIALS AND METHODS:

A randomized complete block design with four replications was planted to 'Earl' big bluestem, 'Iuka' eastern gamagrass and 'Alamo' switchgrass in May 2001 with a check of naturalized weed species. Soil organic matter content measured at 0-2 and 2-6 inch depth for each ground cover over time will be the main measured variable.

RESULTS AND DISCUSSION:

Table 1 indicates no difference between ground cover for % soil organic matter sequestered. It could take several years to develop a difference in ground cover % soil organic matter content. However 2007 data shows an **increase of 46% in soil organic matter at the 0-2 inch depth compared to the 2-6 inch depth.**

Table 1 Percent Soil Organic Matter Sequestered by Ground Covers Taken from 0-2 Inch and 2-6 Inch Depth in Carbon Sequestration Study at Jimmy Carter PMC-2007

Soil Depth	'Earl' Big Bluestem Cover	'Alamo' Switchgrass Cover	'Iuka' Eastern Gamagrass Cover	Natural weed Cover	Mean
	---------- % ----------				
0-2 Inches	2.42	2.21	2.21	2.18	2.25a
2-6 Inches	1.52	1.45	1.44	1.74	1.54b
Mean	1.96a [1/]	1.83a	1.82a	1.96a	

1 – means in rows and columns followed by the same letters are not statistically significant at P<0.05.

Iuka Eastern Gamagrass shows Potential as Carbon Sequester

PROJECT GAPMC-P-0456-WL LONGLEAF PINE NATIVE UNDER STORY PLANT COLLECTION AND INCREASE STUDY

INTRODUCTION:

The longleaf pine ecosystem of the Southeast is one of the most threatened in the United States. The loss of longleaf pine forests and related plant communities not only jeopardizes the extant plant species but also the native fauna that depend on the resources and structure provided by the vegetation. The objectives of this study are to locate, collect, and grow various native grasses, legumes and forbs which make up the understory vegetation of longleaf pine forest of the southeast United States. Later, seed will be increased for field planting and distribution to growers Any seed produced by small farmers from these native seeds will be marketed for planting on **CRP longleaf pine sites**. Also seed grown by small farmers will be used to **restore natural areas** to longleaf pine and its native understory plant species.

MATERIALS AND METHODS:

Old growth longleaf pine sites have been identified in Southwest Georgia for seed collection. The PMC staff will collect longleaf pine understory seed from locations in Worth, Irwin, Miller and Decatur Counties Georgia. The understory vegetation will be grown on upland soil at the JCPMC. The soil series is Orangeburg sandy loam. New Material will be added as needed. Plant Material will be in rod rows, 20 feet long and 6 foot spacing and 10 foot alleys. Basic phenological notes will be taken on the accessions. Seed will then be placed into increase blocks at the PMC for seed production and future use. Since this study is primarily a collection and increase of native understory vegetation for longleaf pine no statistical design will be employed**.**

RESULTS AND DISCUSSION:

The following is a list of **taxa collected in 2004**: Pineywoods Dropseed *Sporobolus junceus, Helianthus radula,* Little Bluestem *Schizachyrium scoparium, Lespedeza angustifolia, Lespedeza hirta, Lespedeza virginica,* Wiregrass *Aristida stricta,* Grass Leaved Golden Aster *Pityopsis adenolepis,* Blue Sage *Salvia* azurea, Sweet Goldenrod *Solidago odora, Crotalaria purshii,* Pencil Flower *Stylosanthes biflora,* Scurf Pea *Psoralea canescens,* Sensitive Brier *Mimosa microphylla,* Goat's Rue *Tephrosia virginiana,* Dollar Plant *Rhynchosia reniformis,* Wild Indigo *Baptisia lanceolata,* Black-Eyed Susan *Rudbeckia hirta, Andropogon gyrans.* In **2005** Queens delight *Stillingia sylvatica* , Split beard bluestem *Andropogon ternarius*, Dusty clover *Lespedeza capitata*, Rattle-box *Crotalaria rotundifolia*, Purple Elephants-foot *Elephantopus nudatus* was added to the seed collection. In **2006** Hairy small-leaf ticktrefoil *Desmodium ciliare* Velvetleaf ticktrefoil *Desmodium viridiflorum*, Pinebarren ticktrefoil *Desmodium strictum*, White–topped aster, *Aster tortifolius***,** Rattlesnake Master, *Eryngium yuccifolium*, Blazing star *Liatris gracilis, Liatris elegans, Liatris tenuifolia,* Beaked panicum,*Panicum anceps*, Thoroughwort, *Eupatorium semiserratum, Eupatorium hyssopifolium*, Lopsided indiangrass**,** *Sorghastrum secundum*, Slender bluestem, *Schizachyrium tenerum,* Deers tongue, *Carphephorus odoratissimus,* Black senna, *Seymeria cassioides,* Summer farewell, *Dalea pinnata*, Narrow plumegrass, *Erianthus strictus* and Golden aster, *Chrysopsis gossypina*, was added to the seed collection. In **2007** Ironweed *Veronia angustifolia,*Wild sensitive Plant *Chamaecrista nictitans,* Chinquapin *Castanea pumila,* Slimleaf ticktrefoil *Desmodium tenuifolia*, Panicledleaf ticktrefoil *Desmodium paniculatum*, Stiff ticktrefoil *Desmodium obtusum,* Thin paspalum *Paspalum setaceum,* Purpletop *Tridens flavus,* and Throughwort *Eupatorium altissimum,* was added to the seed collection.

Seed Collection in Worth Co Georgia

PROJECT GAPMC-T-0457-WL ASSEMBLY OF PLANTS FOR BOBWHITE QUAIL HABITAT IMPROVEMENT

INTRODUCTION:

There is renewed interest in plant material for use in wildlife habitat improvement. The Georgia Department of Natural Resources and the Georgia NRCS is involved in improving wildlife habitat on landowners' property throughout the state. The bobwhite quail initiative designed to improve bobwhite quail habitat has received much national and local attention. This new special planting was installed to demonstrate to landowners and other cooperators the potential of plant materials for use in wildlife habitat improvement.

MATERIALS AND METHODS:

All material was selected to demonstrate use of plants for wildlife cover, nesting and food. This demonstration especially emphasizes wildlife habitat improvement for bobwhite quail in the Southeastern U.S. Plant cultivars, and accessions displayed included 20 big bluestem collected from the Southeastern U.S. and selected by NRCS biologists for bob white quail habitat improvement, Oklahoma Select little bluestem, 'Cave-in-Rock' switchgrass, Wabasso switchgrass, Stuart switchgrass , Martin eastern gamagrass, St. Lucie eastern gamagrass, Arkansas selection of big bluestem, Citrus maidencane, ragweed , Florida Paspalum, 'Kaw' big bluestem, 'Cheyenne' Indiangrass, 'Cimmaron' little bluestem, Union purpletop, Newberry Indiangrass, florida beggarweed, and partridge pea.

RESULTS AND DISCUSSION:

September **2006** landowners and cooperators observed the Bob white Quail habitat improvement study during the Jimmy Carter Plant Materials Center **Wildlife Field Day and Tour**. Participants included the following: Flint River Soil and Water Conservation District, Lower Chattahoochee River Soil & Water Conservation District, Georgia Soil and Water Conservation Commission, Georgia DNR, Fort Valley State University, NRCS, bobwhite quail enthusiasts, Quail Unlimited Company, Georgia Forestry Commission, USF&WS, wildlife plant nurserymen, Tuskegee University, and local landowners. In **November 2007** this demonstration was part of a **field day and tour** that emphasized land preparation for wildlife habitat improvement.

Bobwhite Quail Habitat Improvement Study

PROJECT GAPMC-T-0758-WL RESTORATION STUDY FOR ENHANCEMENT OF BOBWHITE HABITAT

INTRODUCTION:

Native warm season grasses and forbs constitute a major source of food, shelter and structure for bobwhite quail populations. However modern farming practices in the Southeastern U.S. have eliminated much of this habitat. Efforts such as this project at Jimmy Carter PMC and also at private sites in the entire region will demonstrate modification of conventional farming systems to enhance wildlife and upland bird habitat.

MATERIALS AND METHODS:

The site at the JCPMC for this restoration project and demonstration is on bahiagrass-bermudagrass pasture and hayland. The soil series is Orangeburg sandy loam. The first phase of the restoration will be the elimination of competitive vegetation by use of herbicides and disking. Later, native warm season grasses and forbs will be planted to the site. Motts may also be added at a later date. Once a stand of desirable vegetation has been established data will be collected on species composition and growth. This data will be analyzed by wildlife biologists to determine the level of habitat restoration and improvement. Data collection and analysis will be shared by DNR, NRCS and WMI biologists.

RESULTS AND DISCUSSION:

In October 2006 PMC personnel applied chopper, plateau, and BASF 693 to the restoration site to eliminate competitive vegetation. In June **2007** journey was applied to the remaining pasture vegetation. In summer/fall 2007 the pasture was 95% free of competitive vegetation. In January 2008 half of the treated pasture will be planted according to specifications of Alabama NRCS biologists.

In spring 2008 the other half of the treated pasture will be planted according to Georgia NRCS biologists specifications**.** These planting will reflect the special needs of both states regarding demonstration of wildlife habitat improvement for bobwhite quail in the southeast. In **November 2007 a Field Day** was held at the site to demonstrate the effectiveness of the chemical treatments on the pasture for wildlife habitat restoration. Participants includes BASF, Georgia DNR, NRCS, Georgia Forestry Commission, landowners, wildlife enthusiasts, seed vendors, Soil & Water Districts, and wildlife habitat consultants. Also implementation of the cp36 program was discussed at the field day.

PROJECT GAPMC-P-0759-OT OBSERVATIONAL PLANTINGS

INTRODUCTION:

The plant material program began a new study at each PMC to conduct adaptation planting of future releases. Releases and future releases are sent to various PMCs around the U.S. to determine the range of adaptation of the release material.

MATERIALS AND METHODS:

Each PMC will plant one or two small rows of selected material from other PMCs to determine their adaptation and range. They will be evaluated for stand, vigor, drought tolerance, insect problems, disease problems, seed production and plant height.

RESULTS AND DISCUSSION:

In 2007 plant material from the East Texas PMC was received and entered into the JCPMC observational planting garden. Florida paspalum (*Paspalum floridanum*), velvet rosettegrass (*Dichanthelium scoparium*), and herbaceous mimosa (*Mimosa strigillosa*) will be evaluated over the next three years.

SPECIAL ACTIVITIES AND PUBLICATIONS

In 2007 the PMC manager, Georgia state grazing lands specialist, eastern tech center forester and eastern tech center grazing lands specialist conducted an **ecological site description** of vegetation in longleaf pine communities around Ridgeland South Carolina. Data collected included tree age, tree size, tree basal area and tree density. Also understory species were identified and dry matter production from the understory was determined. This data along with other Southeastern U.S. savannah communities will be published as NRCS ecological site descriptions. These will be the agencies first Eastern U.S. ecological sites descriptions.

In 2007 the PMC manager, Area 2 resource soil scientist, Assistant state conservationist for programs (Georgia) and PAS (Georgia) produced a plant identification document intended for field office use in evaluating CP 36 sites. This document was displayed and explained at Area 3 and Area 4 CP 36 meetings. The document (**Georgia Native Plant Material Guide for Longleaf Pine Understory**) contains photos and descriptions of plants naturally occurring or planted in CP36 sites. These are important wildlife plants that accompany longleaf pine plantings in this CRP program.

Partridge Pea and Hairy Lespedeza

In 2007 the Area 2 resource soil scientist and PMC manager produced a cd to assist field office personnel identify plants occurring in wetlands. The publication is entitled **Wetlands Plant Identification Guide** Version 1.0

Elderberry and Poor Mans Soap

RELEASES FROM JIMMY CARTER PMC

Common Name (Year of Release)	Scientific Name	Primary Use
'Pensacola' Bahiagrass ('44)	*Paspalum notatum*	Forage Production
'Amclo' Arrowleaf Clover ('63)	*Trifolium vesiculosum*	Forage Production
'Ambro' Virgata Lespedeza ('71)	*Lespedeza virgata*	Roadbank stabilization
'Dove' Proso Millet ('72)	*Panicum miliaceum*	Wildlife Food
'Ellagood' Autumn Olive ('86)	*Elaeagnus umbellata*	Wildlife Food
'Amquail' Thunberg Lespedeza ('87)	*Lespedeza thunbergii*	Wildlife Food and Cover
'Flageo' Marshhay Cordgrass* ('90)	*Spartina patens*	Beach Stabilization
(The 'Flageo' Marshhay Cordgrass release involved a cooperative effort with Fort Valley State Univ.)		
'GA-5' Tall Fescue ('92)	*Schedonorus phoenix*	Forage Production
(The 'GA-5' Tall Fescue release involved a cooperative effort with the University of Georgia)		
'Big O' Crabapple* ('92)	*Malus coronaria*	Wildlife Food
'Sumter Orange' Daylily ('93)	*Hemerocallis fulva*	Landscape Beautification
'Doncorae' Brunswickgrass ('93)	*Paspalum nicorae*	Waterways Stabilization
'Wetlander' Giant Cutgrass* ('93)	*Zizaniopsis miliacea*	Constructed Wetlands
'Restorer' Giant Bulrush* ('93)	*Scirpus californicus*	Constructed Wetlands
'Americus' Hairy Vetch ('93)	*Vicia villosa*	Winter Cover Crop and Conservation Tillage
(The 'Americus' Hairy Vetch release involved a cooperative effort with the University of Georgia)		
'AU Early Cover' Hairy Vetch ('94)	*Vicia villosa*	Winter Cover Crop and Conservation Tillage
(The 'AU Early Cover' Hairy Vetch release involved a cooperative effort with Auburn University)		
'AU Ground Cover' Caley Pea ('94)	*Lathyrus hirsutus*	Winter Cover Crop and Conservation Tillage
(The 'AU Ground Cover' Caley Pea release involved a cooperative effort with Auburn University)		
'Sharp' Marshhay Cordgrass* ('94)	*Spartina patens*	Beach Stabilization
(The 'Sharp' Marshhay Cordgrass release involved a cooperative effort with NRCS PMC in Brooksville, Florida)		
'AU Sunrise' Crimson Clover ('97)	*Trifolium incarnatum*	Winter Cover Crop and Conservation Tillage
(The 'AU Sunrise' Crimson Clover release involved a cooperative effort with Auburn University)		
'Americus' Indiangrass * (2002)	*Sorghastrum nutans*	Forage, landscape, restoration
(The 'Americus' Indiangrass release involved a cooperative effort with Alabama Crop Improvement)		
'Highlander' Eastern Gamagrass * (2003)	*Tripsacum dactyloides*	Forage, buffer, conservation
(The 'Highlander' release involved Coffeeville Miss PMC as primary with MAFES)		
' Kinchafoonee' Virginia Wildrye* (2004)	*Elymus virginicus*	Conservation, log roads, restoration
' Newberry' Indiangrass* (2005)	*Sorghastrum nutans*	Conservation buffers, wildlife habitat, urban landscape, restoration and critical areas
'Union' Purpletop* (2005)	*Tridens flavus*	Conservation buffers, wildlife habitat, urban landscape, restoration and critical areas
(Newberry and Union release involved cooperative effort with USDA-USFS and SC Native Plant Society)		

***Native plants**

For more information concerning the plant materials center and its conservation efforts, contact the center's manager at 295 Morris Drive, Americus, Georgia 31709. Phone: (229) 924-4499 or 924-7003.