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Jimmy Carter
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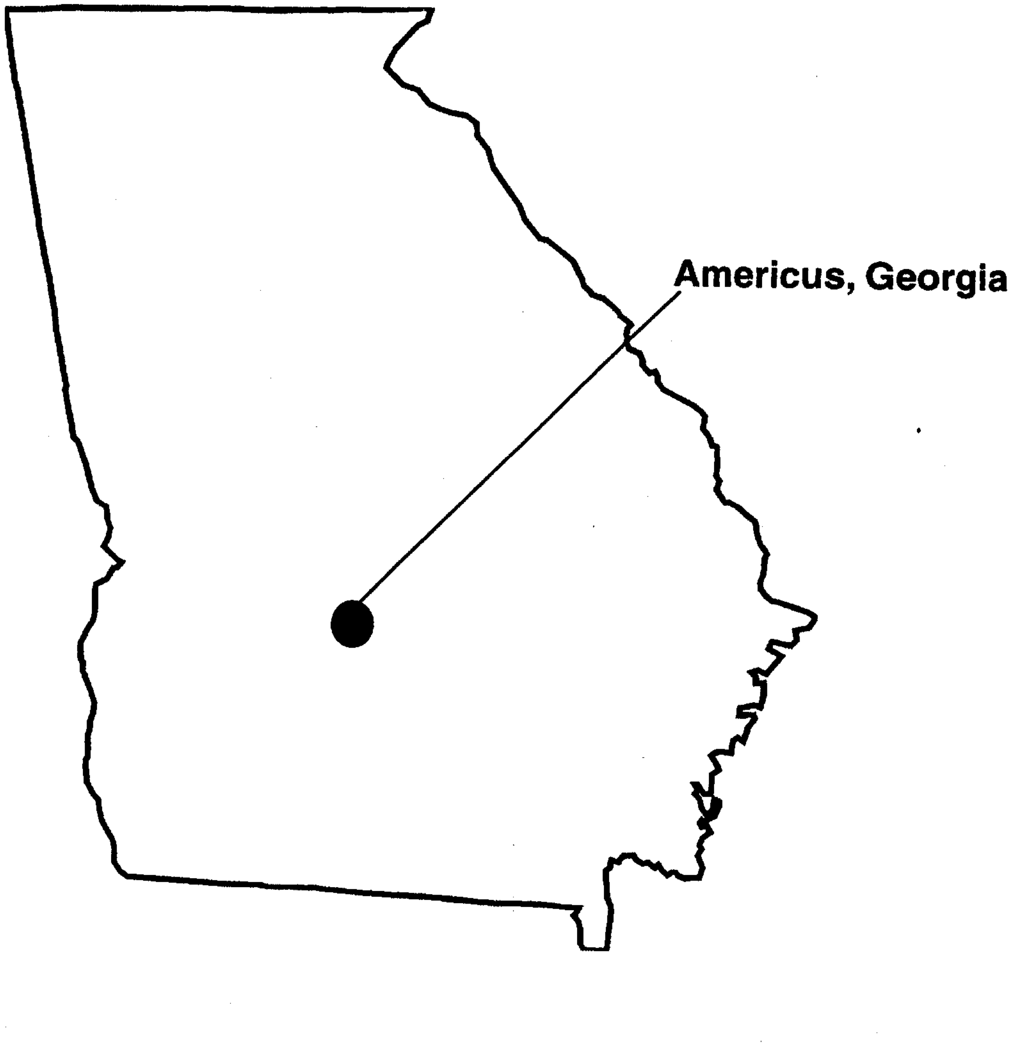

A Technical Summary of Plant Materials Projects
at the Jimmy Carter Plant Materials Center
Americus, Georgia

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JIMMY CARTER PLANT MATERIALS CENTER
AMERICUS, GEORGIA

ANNUAL TECHNICAL REPORT 1996

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JIMMY CARTER PLANT MATERIALS CENTER

INTRODUCTION

The Jimmy Carter PMC, formerly known as the Americus PMC was established in **1936** to produce planting materials, mainly pine seedlings, for use by the CCC Camps and the former Soil Conservation Service (SCS) demonstration projects. The center's land includes seven soil types, with Orangeburg predominating on its **327.39** acres. Approximately two-thirds of the land is open for cultivation, and Muckalee Creek runs through the southwest corner, furnishing water for irrigation. The center was operated on contract by the University of Georgia Experiment Station's from **1954** to 1975, and was SCS operated from **1976-1994.** In **1994** the PMC was transferred to the Natural Resources Conservation Service (NRCS).

The real property holdings at the facility consist of **327.39** acres of land with 19 buildings, an underground irrigation system that covers about ***85*** acres, a water supply system, and a sewage disposal system.

MISSION

The mission of the NRCS-PMC program is to assemble, test, and release plant materials for conservation use; determine techniques for their successful use; provide for their. commercial increase; and promote the use of plant materials needed to meet the objectives and priorities of the National Conservation Program.

COOPERATIVE AGREEMENTS

The PMC works cooperatively with the University of Georgia, Auburn University, and Fort Valley State College on several mutually beneficial projects. The plant materials program also works with the Environmental Protection Agency (EPA), Georgia Department of Natural Resources (DNR), Department of Defense (DOD), and other state and federal agencies.

The PMC works with the Georgia and Alabama Crop Improvement Associations regarding foundation seed fields and seed processsing facilities.

DESCRIPTION OF THE 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 - AMERICUS, GEORGIA - 1996
67 Years(1929 - 1996)

	Temperature(° F)		Precipitation(Inches)			
Month	1996 Max.	1996 Min.	Mo. Total	67 Year Average	67 Year High Mo.	67 Year Low Mo.
January	75	18	4.60	4.41	11.19	.64
February	80	8	4.05	4.68	12.28	.75
March	78	17	6.35	5.36	12.11	.48
April	88	34	2.74	3.80	12.26	.00
May	98	42	4.16	3.37	8.35	.14
June	98	59	3.40	4.27	11.43	.03
July	99	66	3.00	5.32	24.79	1.25
August	94	64	2.65	4.09	11.76	.99
September	92	54	2.90	3.33	11.54	.10
October	83	36	1.10	2.11	9.60	.00
November	80	28	2.67	2.99	10.63	.05
December	79	16	4.26	4.16	12.29	.42
TOTAL			41.88	47.89		

The coldest day of the year was February 9th. The last day of frost was April 7th. The hottest days of the year were July 2nd and 3rd. The first day of frost was October 20th. The first killing frost was November 9th.

PROJECT 13I128R - ASSEMBLY AND EVALUATION OF BIG BLUESTEM ANDROPOGON GERARDI

INTRODUCTION

Big Bluestem (*Andropogon gerardi*) 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 has been utilized for forage and hay production.

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.

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, maturity 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 Americus 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, and 6) morphological data.

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 helped to determine which ecotypes should be selected for crossing blocks in 1994. These blocks should produce germplasm for comparison testing against a standard big bluestem cultivar. The first three blocks consisted of early maturing ecotypes, late maturing ecotypes and medium maturing ecotypes (biomass selections):

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

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

Medium 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

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

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

In 1996, seed was again collected from the three crossing blocks. We hope to establish three crossing blocks of forage type big bluestem in 1997-1998.

PROJECT 13I131R - ASSEMBLY AND EVALUATION OF SWITCHGRASS PANICUM VIRGATUM

INTRODUCTION:

Switchgrass (*Panicum virgatum*) is a perennial, warm season grass. It is cross-pollinated and has several ploidy levels X = 18, 36, 54, 72, 90 and 108. Switchgrass 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 has been utilized for forage and hay production.

MATERIALS AND METHODS:

In 1990-1992, the PMC assembled 1,098 vegetative ecotypes of southeastern switchgrass. These ecotypes were placed into an initial evaluation block. Each entry was planted to 13-foot rows with three plants per row. All entries were separated by 3-foot middles. Each entry was replicated twice.

In 1993, the evaluation process began. The following are the evaluation criteria: 1) greenup date, 2) forage mass, 3) vigor, 4) stand, 5) leafiness, 6) disease/insect resistance, 7) foliage height, 8) stem size, 9) boot date, 10) leaf texture, 11) leaf size, 12) leaf/stem ratio (steminess), 13) bloom date, 14) foliage color, 15) maturity date, and 16) seed amount.

In 1994, we emphasized regrowth, height, blooming, maturity and seed collection. Also a greenhouse compatibility study was conducted to help determine crossing compatibility of lines with like and unlike morphological characteristics.

In 1995, seeds from the following lines were collected for future germplasm work: (Biomass type) 1079, 1080, 1083, 421901, 422001, 2091, and 2083; (forage type) 396, 407, 936, 619, 995, 1012, 1063, 810, 998, 2092, 915, 916, and 422003.

These procedures were repeated in 1996. All seed was cleaned and processed for future germplasm tests.

PROJECT 13A136M - DEVELOPMENT AND COMPARATIVE TESTING OF EARLY BLOOMING CRIMSON CLOVER CULTIVAR FOR CONSERVATION TILLAGE USE

INTRODUCTION

Crimson clover (Trifolium incarnatum L.) is a cool season annual legume. It is naturalized to the United States from Europe. It has been utilized extensively as a forage and cover crop. It is cross pollinated primarily by bees (non-ploidy).

MATERIALS AND METHODS:

This project will compare experimental lines Cycle 1, Cycle 2, and Cycle 3 (developed by Jimmy Carter PMC and Auburn University) to Robin, Tibbee, and other common southeastern crimson clovers. The project will evaluate dry matter production at various dates, including bloom date. It will also compare cultivar bloom dates. The tests will follow a RCB design with four replications. The tests were conducted at five Alabama Agricultural Experiment Station sites and the Jimmy Carter PMC.

RESULTS AND DISCUSSION:

In 1993, at the Jimmy Carter PMC site, D.M. production test during the first week of March indicates Cycle 3, Cycle 2, Dixie, and Cycle 1 were not significantly different for D.M. production. However, Cycle 3 did produce more D.M. than Robin. (Table 1)

In 1994, at the Jimmy Carter PMC site, D.M. production during flowering date indicates Dixie, Tibbee, and Chief were not significantly different. The early bloomers all produced less D.M. (Cycle 1, Cycle 2, Cycle 3, Robin). (Table 2)

In 1994, at the Americus site, all three experimental lines bloomed significantly earlier than other lines including Robin. (Table 3)

In 1994, at the Americus site, there were no significant differences among lines for D.M. harvest the first week of March. (Table 4)

In 1994, at the Americus site, D.M. producticn resulting from regrowth showed no significant differences due to cultivar at February 22 and April 21 clippings. The regrowth test shows no real trend for cultivar D.M. production. (Table 5)

Analysis of 1995 data at the Jimmy Carter PMC, for D.M. production during flowering, indicates no significant difference between Cycle 1, Cycle 2, Cycle 3, or AU Robin. (Table 6)

Analysis of 1995 data at the Jimmy Carter PMC, for bloom date, indicates all three experimental lines (Cycle 1, Cycle 2, and Cycle 3) bloomed significantly earlier than other lines including AU Robin. (Table 7)

Analysis of variance table, for Jimmy Carter PMC, yield data the first week of March, indicates no significant differences among the entries tested. (Table 8)

Analysis of 1995 data at Jimmy Carter PMC, for D.M. production April 3, following regrowth after March clipping, indicates AU Robin with significantly more yield than the three experimental lines by LSD comparison. However, Tukeys HSD test shows no difference between AU Robin, Cycle 1, Cycle 2, and Cycle 3. (Table 9)

Analysis of April 13 regrowth yield, after March and April 3 clippings, indicates no yield difference between the three experimental lines (Cycle 1, Cycle 2, and Cycle 3), and AU Robin. (Table 9)

Analysis of variance indicates no significant differences among the entries tested at Jimmy Carter PMC for yield data the first week of March 1996. (Table 10)

Conclusion: Starting in 1994, extensive testing for maturity, forage yield, canopy height, composition, and diseases of Cycle 2 (a good selection in Alabama and Georgia) was done throughout Alabama (Belle Mina, Marion Junction, Prattville, Brewton and Tallassee) and at Americus, Georgia. Results from two years of testing have shown that Cycle 2 is a cultivar that flowers 5 to 18 days earlier than AU Robin, the earliest crimson clover cultivar available in the market, and 12 to 28 days earlier than Tibbee (Tables 11-12). Cycle 2 would be an excellent cover crop because it has great reseeding capability in addition to an early growth. It is well adapted to Alabama and Georgia. Forage yield measured of Cycle 2 compared to AU Robin was 151%, 81% and about the same in 1994, 1995, and 1996, respectively (Tables 13-15). Crude protein content measured late March of 1996 was also the sane in the two cultivars (about 200 g kg^{-1}).

Data was compiled by Dr. Jorge Mosjidis of Auburn University and the staff of Jimmy Carter PMC, Americus, Georgia. In 1997 the Jimmy Carter PMC and Auburn University plan to cooperatively release Cycle 2 as a new early developing crimson clover cultivar.

TABLE 1 JIMMY CARTER PMC YIELD DATA (1993)

cultivar	Mean D.M. Yield (#/Ac) 1st Week of March
Dixie	230.4 abc
Tibbee	191.6 bcd
Chief	168.71cd
Cycle 2	321.08ab
Cycle 3	359.88a
KY C-1	62.99d
Robin	206.21bc
Cycle 1	289.04abc
Tukey's HSD (5%)	137.69

TABLE 2 JIMMY CARTER PMC YIELD DATA (1994)

cultivar	Mean D.M. Yield (#/Ac) at Flowering Date
Dixie	4959.5 a
Tibbee	3798.2 abc
Cycle 1	2529.2 1cd
Cycle 2	2761.2 bcd
Chief	3940.1 ab
Flame	3642.9 bcd
Cycle 3	2386.3 d
Robin	3641.9 bcd
Tukey's HSD(5%)	1279.4

TABLE 3 JIMMY CARTER PMC BLOOM DATE DATA (1994)

cultivar	Mean Davs to Bloom from March 1st
Dixie	33.75c
Tibbee	32.5 c
Cycle 1	13 a
Cycle 2	13 a
Chief	32.5 c
Flame	30 c
Cycle 3	13 a
Robin	22 b
Tukey's HSD(5%)	3.82

TABLE 4 JIMMY CARTER PMC YIELD DATA (1994)

Cultivar	Mean D.M. Yield (#/Ac) 1st Week of March
Dixie	727.6
Tibbee	669.4
Cycle 1	604.9
Cycle 2	673.4
Chief	649.2
Flame	746.5
Cycle 3	654.8
Robin	682.3
Tukey's HSD(5%)	N.S.

TABLE 5 JIMMY CARTER PMC YIELD DATA (1994) YIELDS RESULTING FROM REGROWTH CLIPS

Cultivar	Mean D.M. Yield (#/Ac) Feb 22
Dixie	416.3
Tibbee	528.1
Cycle 1	423.1
Cycle 2	501.7
Chief	422.6
Flame	245.8
Cycle 3	363.3
Robin	282.3
Tukey's HSD (5%)	N. S.

Cultivar	Mean D.M. Yield (#/Ac) Mar 23
Dixie	1219. la
Tibbee	844. lab
Cycle 1	512.6b
Cycle 2	514.2b
Chief	966.6ab
Flame	918.6ab
Cycle 3	441.9b
Robin	887.5ab
Tukey's HSD(5%)	628.2

Cultivar	Mean D.M. Yield (#/Ac) Apr 21
Dixie	1127.2
Tibbee	1261.6
Cycle 1	1276.9
Cycle 2	1266.2
Chief	1273.3
Flame	1569.3
Cycle 3	1343.5
Robin	1057.2
Tukey's HSD (5%)	N.S.

TABLE 6 JIMMY CARTER PMC YIELD DATA (1995)

Cultivar	Mean D.M. Yield (#/Ac) at Flowering Data
Tibbee	6487
Chief	5970
Flame	5637
Dixie	5222
AU Robin	4355
Cycle 3	3575
Cycle 2	3354
Cycle 1	3240
LSD (.05)	1410

Tibbee	6487	a[1]
Chief	5970	a
Flame	5637	ab
Dixie	5222	abc
AU Robin	4355	abc
Cycle 3	3575	bc
Cycle 2	3354	bc
Cycle 1	3240	c

[1] Means followed by the same letter are not significantly different ($P \leq 0.05$) based on Tukey's honestly significant difference test. CV = 20.3%

TABLE 7 JIMMY CARTER PMC BLOOM DATE DATA (1995)

Cultivar	Mean Days to Bloom from March 1st
Chief	37
Tibbee	36
Dixie	36
Flame	34.25
AU Robin	26
Cycle 1	21.5
Cycle 3	21
Cycle 2	20.5
LSD (.05)	2.14

Chief	37	a[1]
Tibbee	36	a
Dixie	36	a
Flame	34.25	a
AU Robin	26	b
Cycle 1	21.5	c
Cycle 3	21	c
Cycle 2	20.5	c

Table 7 (Continued)

[1]Means followed by the same letter are not significantly different ($P \leq 0.05$) based on Tukey's honestly significant difference test. CV = 5.02%

TABLE 8 JIMMY CARTER PMC YIELD DATA (1995)

Cultivar	Mean D.M. Yield (#/Ac) 1st Week of March
Tibbee	2568
Cycle 2	2436
AU Robin	2407
Cycle 1	2350
Dixie	2782
Chief	2246
Flame	2119
Cycle 3	2542
LSD (.05)	NS

CV = 13.69%

TABLE 9 JIMMY CARTER PMC YIELD DATA (1995) RESULTING FROM REGROWTH AFTER MARCH CLIPPING

Cultivar	Mean D.M. Yield (#/Ac) April 3
Flame	286
AU Robin	219
Chief	208
Tibbee	198
Dixie	135
Cycle 1	0
Cycle 2	0
Cycle 3	0
LSD (.05)	160

Flame	286	a[1]
AU Robin	219	ab
Chief	208	ab
Tibbee	198	ab
Dixie	135	ab
Cycle 1	0	b
Cycle 2	0	b
Cycle 3	0	b

Table 9 (Continued)

Means followed by the same letter are not significantly different (P ≤ 0.05) based on Tukey's honestly significant difference test. CV = 83.41%

Cultivar	Mean D.M. Yield (#/Ac) April 13
Flame	141
Dixie	102
Chief	90
Tibbee	75
Cycle 1	0
Cycle 2	0
AU Robin	0
Cycle 3	0
LSD (.05)	97

Flame	141	a'
Dixie	102	a
Chief	90	a
Tibbee	75	a
Cycle 1	0	a
Cycle 2	0	a
AU Robin	0	a
Cycle 3	0	a

'Means followed by the same letter are not significantly different (P ≤ 0.05) based on Tukey's honestly significant difference test. CV = 129%

TABLE 10 JIMMY CARTER PMC YIELD DATA (1996)

Cultivar	Mean D.M. Yield (#/Ac) 1st Week of March
Cycle 2	2693
AU Robin	2792
Cycle 1	2779
Cycle 3	2718
Tibbee	2919
Flame	2380
Chief	2887
Dixie	2746
LSD (.05)	NS

CV = 12.53%

Table 11. Days to 50% flowering (counted from Feb. 1) of eight crimson clover entires in 1994.

Entries	Tall-assee	JC PMC Americus	Pratt-ville	Marion Junction	Belle Mina[1]	Brew-ton	Mean
	days						
Cycle 2	58.0	42.0	55.5	60.7		37.0	50.6
AU Robin	63.0	51.0	59.7	68.2		49.5	58.2
Cycle 1	58.0	42.0	56.7	63.0		42.0	52.3
Cycle 3	58.0	42.0	54.7	61.5		37.0	50.6
Tibbee	70.0	61.5	70.5	74.0		56.5	66.5
Flame	70.0	59.0	70.5	71.5		54.0	65.0
Chief	70.0	61.5	70.5	72.0		55.5	65.9
Dixie	70.0	62.7	70.2	72.5		55.7	66.2
MSD(0.05)	0.1	2.1	1.0	1.7		0.7	
Difference between Cycle 2 and AU Robin							
	5	9	4.2	7.5		12.5	7.6

[1]Lost data.

Table 12. Days to 50% flowering (counted from Feb. 1) of eight crimson clover entries in 1995.

Entries	Tall-assee	JC PMC Americus	Pratt-ville	Marion Junction	Belle Mina	Brew-ton	Mean
	days						
Cycle 2	51.0	49.5	55.0	45.0	55.0	33.7	48.2
AU Robin	58.0	55.0	66.0	53.5	64.0	52.0	58.0
Cycle 1	51.0	50.5	55.0	45.5	55.0	34.2	48.5
Cycle 3	51.0	50.0	55.0	43.0	55.0	31.0	47.5
Tibbee	76.0	65.0	69.0	65.5	69.0	61.7	67.7
Flame	76.0	63.2	68.5	66.2	69.0	62.0	67.5
Chief	76.0	66.0	69.0	64.5	69.0	64.0	68.0
Dixie	76.0	65.0	69.0	66.0	69.0	63.7	68.1
MSD(0.05)	0.1	1.9	0.3	2.6	0.1	0.8	
Difference between Cycle 2 and AU Robin							
	7	5.5	11	8.5	9	18.3	9.8

Table 13. Yield of first cut (early March to middle April depending on the location) of eight crimson clover entries in 1994.

Entries	Mean
	lb/acre
Cycle 2	725
AU Robin	480
Cycle 1	660
Cycle 3	698
Tibbee	677
Flame	524
Chief	681
Dixie	720
MSD (0.05)	117

Table 14. Yield of first cut (early March to middle April depending on the location) of eight crimson clover entries in 1995.

Entires	Mean
	lb/acre
Cycle 2	1805
AU Robin	2223
Cycle 1	1820
Cycle 3	1832
Tibbee	1919
Flame	1823
Chief	1988
Dixie	2135
MSD (0.05)	230

CRUDE PROTEIN CONTENT measured in 1995: CYCLE 2: 20.3%, AU ROBIN: 20.1%

Table 15. Yield of first cut (early March to middle April depending on the location) of eight crimson clover entries in 1996.

Entries	Tallassee	JC PMC Americus	Prattville	Marion Junction†	Belle Mina	Brewton	Mean
				lb/acre			
Cycle 2		2712	783		794	1595	1471
AU Robin		2811	1107		819	1610	1587
Cycle 1		2799	859		919	1627	1551
Cycle 3		2737	516		718	1834	1451
Tibbee		2940	2099		1181	1563	1946
Flame		2397	2002		1293	1054	1686
Chief		2907	2148		1199	1428	1921
Dixie		2765	1855		1361	1507	1872
MSD (0.05)		ns	572		273	251	

† Experiment lost.

PROJECT 13A139R - GRAZING TEST OF INDIANGRASS CULTIVAR FOR PLANT SURVIVAL

INTRODUCTION:

Yellow indiangrass, (Soruhastrum nutans), is a native perennial warm season grass. It has been utilized for forage and hay production. This test attempts to determine the survivability of PI-514673 indiangrass, 'Lometa' indiangrass, and 'Pensacola' bahiagrass in a controlled grazing test.

MATERIALS AND METHODS:

This test is a split-plot design with main-plots called grazed and ungrazed. Within the main-plots are 12 replications each of the three grasses. These plots, called sub-plots are 10' x 10' in size. Survivability is determined by taking stem counts during the life of the test. The grazed main-plot is grazed when indiangrass reaches 18" in height. Cattle are allowed to graze the indiangrass to an 8" stubble.

RESULTS AND DISCUSSION:

In 1995, the grazed main-plot was grazed only once (July). An analysis of covariance was run using early July stem count (initial stem count), as a covariant, and September stem count (final stem count), as the response. This should reflect the effect of the July grazing on the grasses' survivability. However, the analysis of covariance indicated there was no grazing effect, there was no interaction between grazing and the grasses. There was a significant difference between grasses and a significant covariate.

The analysis indicates Pensacola bahiagrass produced significantly more final stem counts than PI-514673 or 'Lometa'. Also, 'Lometa' produced significantly more final stem counts than PI-514673. (Table 1)

It is not surprising that there was no grazing effect, since only one grazing event occurred in 1995. It is also not surprising that Pensacola bahia, which produces many stolons along the ground surface, produced more final stem counts than either indiangrass.

In 1996, the grazed main-plot was grazed twice (June and August). An analysis of covariance was run using the initial stem count of 1995 as the covariant and the final stem count (October) of 1996 as the response. There was a significant difference between grazed and ungrazed. We had a difference between grases, and a significant interaction of grazing and grasses. The analysis of covariance also indicated a significant covariate. Since an interaction was indicated, the data was analyzed for grazed and ungrazed separately, The analysis for covariance grazed indicated a grass difference and a significant covariate. Using pair comparisons 'Pensacola' bahia produced a higher final stem count than PI-514673 and 'Lometa'. Also 'Lometa' barely produced a higher final stem count than PI-514673. (Table 2)

The analysis for covariance ungrazed indicated no significant covariant. Therefore, an analysis of variance was run. This indicated a signficant grass difference under ungrazed. 'Pensacola' bahia produced a higher final stem count than PI-514673 and 'Lometa'. However, PI-514673 produced a higher final stem count than 'Lometa'. (Table 3)

We also analyzed the data utilizing stem ratio =

$$\frac{\text{final stem count 1996}}{\text{initial stem count 1995}} \times 100$$

as the response. Analysis of variance indicated an interaction between grazing and the grasses. Therefore, we analyzed grazed and ungrazed separately. Analysis of grazed indicated **'Pensacola'** bahia had a higher ratio than 'Lometa' or PI-514673. However, there was no significant difference between 'Lometa' and PI-514673. (Table 4)

Analysis of ungrazed indicated PI-514673 produced a higher stem ratio than 'Lometa' and a higher ratio than 'Pensacola' bahia. (Table 5)

Using Saithewaite method to determine degree of freedom of error, we calculated an LSD for stem ratio of PI-514673 at grazed and ungrazed and 'Lometa' at grazed and ungrazed. The ratio was higher for the ungrazed PI-514673 than for the grazed PI-514673. However, there was no significant difference between the 'Lometa' grazed and 'Lometa' ungrazed. (Table 6)

TABLE 1 JIMMY CARTER PMC STEM COUNT (1995)

Cultivar	Adjusted Final Stem Count Means
PI-514673	212.2
'Pensacola' bahiagrass	568.4
LSD (.05)	97.63
PI-514673	212.2
'Lometa'	278.1
LSD (.05)	39.8
'Lometa'	278.1
'Pensacola' bahiagrass	568.4
LSD (.05)	86.4

CV = 18.4%

TABLE 2 JIMMY CARTER PMC STEM COUNT (1996) GRAZED

Cultivar	Adjusted Final Stem Count Means
PI-514673	125.01
'Pensacola' bahia	489.153
LSD (.05)	82.91
PI-514673	125.01
'Lometa'	156.671
LSD (.05)	31.566
'Lometa'	156.671
'Pensacola' bahia	489.153
LSD (.05)	73.05

CV = 13.62%

TABLE 3 JIMMY CARTER PMC STEM COUNT (1996) UNGRAZED

Cultivar	Final Stem Count Means
PI-514673	208.9
'Lometa'	130.9
'Pensacola' bahia	495.4
LSD (.05)	56.02

CV - 23.76%

TABLE 4 JIMMY CARTER PMC STEM COUNT (1996) GRAZED

Cultivar	Stem Ratio $\frac{\text{Final Stem Count 1996}}{\text{Initial Stem Count 1995}}$ X 100
PI-514673	37.83
'Lometa'	51.58
'Pensacola' bahia	86.83
LSD (.05)	13.83

CV = 27.8%

TABLE 5 JIMMY CARTER PMC STEM COUNT (1996) UNGRAZED

Cultivar	Stem Ratio $\frac{\text{Final Stem Count 1996}}{\text{Initial Stem Count 1995}}$ X 100
PI-514673	124.8
'Lometa'	66.75
'Pensacola' bahia	90.58
LSD (.05)	31.42

CV = 39.45%

TABLE 6 JIMMY CARTER PMC STEM COUNT (1996)

	Stem Ratio $\frac{\text{Final Stem Count 1996}}{\text{Initial Stem count 1995}}$ X 100
Grazed PI-514673	37.833
Ungrazed PI-514673	124.83
LSD (.05)	22.78
Grazed 'Lometa'	51.58
Ungrazed 'Lometa'	66.75
LSD (.05)	22.78

PROJECT 13A140S - EVALUATION AND SELECTION OF PLANT MATERIALS FOR FOREST BUFFERS IN THE SOUTHEASTERN UNITED STATES

INTRODUCTION:

This test will consist of the following species: ogeechee lime, red maple, blackgum, green ash, cheery bark oak, loblolly pine, yellow poplar, bald cypress, water oak, sweetgum, white oak, and sycamore.

MATERIALS AND METHODS:

Plantings were established by use of dibbles in the winter of 1993/1994. One 54 foot x 100 foot block per species was planted on 6 foot spacings. Each block runs perpendicular to the slope, and was planted with 160 trees.

RESULTS AND DISCUSSION:

Information contained in Tables 1-9 will provide base line vegetative data to accompany any future surface or water well data. All growth means represent means of surviving material.

TABLE 1 % SURVIVAL OF FOREST BUFFER TREES TAKEN AUGUST 1994

Tree Species	Mean % Survival
Loblolly pine	21
Yellow poplar	14
Sycamore	18
Blackgum	84
Cherrybark oak	91
Sweetgum	77
White oak	66
Bald cypress	81
Green ash	81
Red maple	88
Ogeechee lime	38
Water oak	75

TABLE 2 **TRUNK** DIAMETER AND CROWN WIDTH OF FOREST **BUFFER** TREES - AUGUST 1994

Tree Species	Mean Dia. Main Trunk (mm) (at Ground Level)
Blackgum	7.232
Cherrybark oak	5.61
Sweetgum	10.54
White oak	6.73
Bald cypress	8.06
Green ash	25.49
Red maple	8.19
Ogeechee lime	16.57
Water oak	9.23

Tree Species	Mean Crown Width (cm)
Blackgum	22.13
Cherrybark oak	25.59
Sweetgum	27.3
White oak	24.78
Bald cypress	17.99
Green ash	65.83
Red maple	20.72
Ogeechee lime	40.10
Water oak	33.2

TABLE 3 HEIGHT OF FOREST BUFFER TREES - AUGUST 1994

Tree Species	Mean Height in (cm)
Blackgum	56.7
Cherrybark oak	56.73
Sweetgum	61.54
White oak	38.94
Bald cypress	57.36
Green ash	169.98
Red maple	56.18
Ogeechee lime	84.15
Water oak	60.26

TABLE 4 % SURVIVAL OF FOREST BUFFER TREES TAKEN AUGUST 1995

Tree Species	Mean % Survival
Loblolly pine	16 -
Yellow poplar	14 -
Sycamore	27 -
Blackgum	68
Cherrybark oak	89
Sweetgum	77
White oak	49
Bald cypress	71
Green ash	81
Red maple	76
Ogeechee lime	35
Water oak	73

TABLE 5 TRUNK DIAMETER AND CROWN WIDTH OF FOREST BUFFER TREES - AUGUST 1995

Tree Species	Mean Diameter Main Trunk Ground Level(mm)
Blackgum	14.4
Cherrybark oak	12.1
Sweetgum	24.5
White oak	11.0
Bald cypress	18.0
Green ash	46.4
Red maple	20.7
Ogeechee lime	35.6
Water oak	21.7

Tree Species	Mean Crown Width (cm)
Blackgum	54
Cherrybark oak	58
Sweetgum	52
White oak	41
Bald cypress	33
Green ash	94
Red maple	48
Ogeechee lime	78
Water oak	63

TABLE 6 HEIGHT OF FOREST BUFFER TREES - AUGUST 1995

Tree Species	Mean Heisht (cm)
Blackgum	79
Cherrybark oak	96
Sweetgum	129
White oak	78
Bald cypress	87
Green ash	263
Red maple	108
Ogeechee lime	170
Water oak	100

TABLE 7 % SURVIVAL OF FOREST BUFFER TREES - AUGUST 1996

Tree Species	Mean % Survival
Loblolly pine	13
Sycamore	20
Yellow poplar	8
Blackgum	66
Cherrybark oak	89
Sweetgum	73
White oak	46
Bald cypress	70
Green ash	82
Red maple	71
Ogeechee lime	35
Water oak	70

TABLE 8 TRUNK DIAMETER OF FOREST BUFFER TREES
JULY 1996

Tree Species	Mean Diameter Main Trunk Ground Level(mm)
Blackgum	26.6
Cherrybark oak	28.0
Sweetgum	42.3
White oak	19.4
Bald cypress	31.0
Green ash	69.7
Red maple	43.0
Ogeechee lime	64.3
Water oak	30.9

TABLE 9 HEIGHT OF FOREST BUFFER TREES - AUGUST 1996

Tree Species	Mean Height(cm)
Blackgum	155
Cherrybark oak	207
Sweetgum	261
White oak	105
Bald cypress	146
Green ash	399
Red maple	219
Ogeechee lime	281
Water oak	197

PROJECT 13A142R - HAY AND GRAZING MANAGEMENT OF EASTERN GAMAGRASS

INTRODUCTION:

Eastern gamagrass (Tripsacum dactyloides) is a native perennial warm season bunch-grass. It is widely distributed in the United States. It occurs in most states east of the Mississippi River. It can be utilized for forage and hay production. It is a monoecious grass with morphology similar to maize. The diploid plants reproduce sexually. However, the tetraploids are faculative apomicts and the hexaploid plants are obligate apomicts. The mechanism for apomixis is displospory followed by pseudogamy. A gynomonoecious sex form with the potential of increased seed production has been identified. Gamagrass root stalk is a proliteration of tillers.

This project attempts to define management criteria for the production of Eastern gamagrass forage.

MATERIALS AND METHODS:

In April, 1993, cold stratified 'Pete' Eastern gamagrass seed was planted to five acres on the southern end of the Jimmy Carter PMC. A two row corn planter set on 36 inch rows was used to plant approximately four seed per linear foot of row. Seed was planted 1 1/2 inches deep. Six hundred pounds of 0-14-14 fertilizer was applied at planting and 75 pounds of N per acre was applied in June. Weeds were primarily controlled by cultivation.

The center suffered a severe drought in the summer of 1993, however, the field produced an excellent stand of Eastern gamagrass.

In 1994 and 1995, the gamagrass grew and covered the pasture area with lush growth.

In 1996 the gamagrass field was split into grazing plots for rotational grazing. Also, electric fence, loafing areas and watering areas were established. The PMC and grazing lands partners plan to begin rotational grazing demonstrations in 1997.

PROJECT 13I143R - ASSEMBLY AND EVALUATION OF EASTERN GAMAGRASS (TRIPSACUM DACTYLOIDES)

INTRODUCTION:

Eastern gamagrass is a native perennial warm season bunch-grass. It is widely distributed in the United States. It occurs in most states east of the Mississippi river. It can be utilized for forage and hay production. It is a monoecious grass with morphology similar to maize. The diploid plants reproduce sexually. However, the tetraploids are faculative apomicts and the hexaploid plants are obligate apomicts. The mechanism for apomixis is diplospory followed by pseudogamy. A gynomonoecious sex form with the potential of increased seed production has been identified. Gamagrass rootstalk is a proliteration of tillers.

This project will assemble local ecotypes of gamagrass for possible development into new germplasm releases.

MATERIALS AND METHODS:

In the spring of **1994**, **91** South Georgia ecotypes were planted to an initial evaluation area. In **1995**, each accession, (Rep I and Rep 11) was clipped and samples sent to the Coffeeville, Mississippi laboratory, for analysis. In **1996** seed was collected from each line. These seed were sent to the seed lab in Tifton, Georgia for analysis.

RESULTS AND DISCUSSION:

Clipping data from August 2, **1995** was assembled on dry matter production, DM #/Ac, percent protein content, and percent TDN content. Based on these criteria, the following accessions were selected for possible future germplasm development: **31**, 63, **75**, **89**, and **39**. (Table **1)**

Data from the seed analysis of **1996** indicates that the following lines have seed propagation potential: Rep I - 26, **39**, **40**, **44**, and **67**. Rep II - **46**, **48**, **66**, and **84**. All of these lines displayed fair to good ratings for seed germination, seed shatter and amount of seed produced. (Table **2)**

CONCLUSION:

Available data indicates Line 39 could be used in future germplasm development. It was selected for dry matter production, percent protein content, percent TDN content, seed germination, seed shatter, and seed production.

TABLE 1

REP I

ACC.	DM #/AC	% PROTEIN	% TDN
1	4,851.9	10.6	52
2	9,479.0	6.8	46
3	3,148.9	10.7	56
4	2,192.8	8.2	46
5	14,629.0	9.7	49
6	12,868.3	11.7	56
7	14,702.2	6.7	46
8	7,470.4	10.7	52
9	18,181.8	6.3	46
10	19,767.4	7.0	46
12	16,509.9	10.8	55
13	10,643.6	12.7	58
14	20,684.2	9.5	55
16	7,002.9	9.1	49
17	13,740.8	9.2	52
18	7,460.8	10.0	49
19	1,793.7	13.9	58
20	15,553.6	8.3	38
21	7,849.3	9.8	52
22	5,882.4	11.2	56
23	8,492.5	11.5	56
24	7,299.8	10.4	55
26	8,231.4	10.0	56
27	9,128.6	7.3	49
28	6,503.7	8.5	52
29	3,023.3	6.7	49
30	8,904.1	11.4	56
31	17,211.1	9.0	52
32	5,705.3	13.2	58
33	2,842.8	12.9	58
35	1,569.9	9.8	55
36	4,828.0	8.4	52
37	23,816.4	7.0	49
38	10,781.9	10.8	56
39	13,941.1	12.7	56
40	2,230.7	10.2	52
41	10,576.6	11.5	56
43	22,928.3	7.9	55
44	9,832.6	10.2	55
45	6,177.4	9.2	52
46	10,860.0	9.0	52
47	15,982.4	10.2	55
48	17,812.2	8.1	52
49	9,500.0	6.4	49
50	13,949.8	6.4	49
52	6,129.7	8.9	56

ACC	DM #/AC	% PROTEIN	% TDN
53	3,125	8.9	56
54	7,931.0	12.2	58
56	10,452.9	9.6	52
57	13,810.4	9.3	55
58	8,913.6	8.2	56
59	11,046.0	11.5	56
60	10,130.7	10.1	56
61	14,183.3	11.4	55
63	18,975.9	8.3	52
64	10,643.6	10.5	56
65	10,967.7	12.3	58
66	10,396.0	7.3	49
67	12,462.3	11.4	58
68	29,263.6	11.9	58
69	8,495.1	11.4	58
70	9,109.9	10.7	56
71	11,572.0	10.4	56
72	21,858.6	9.0	52
75	19,484.2	7.6	56
76	13,101.9	10.7	56
77	5,857.7	10.2	56
78	7,976.9	12.4	58
79	23,642.9	9.2	56
80	8,640.8	10.1	56
81	10,000.0	9.7	55
82	8,630.9	10.7	58
83	9,498.4	9.9	56
84	6,776.1	10.0	56
85	8,362.4	10.5	56
86	12,357.1	10.8	58
88	8,132.5	10.4	58
89	32,751.9	9.0	58
91	15,223.9	7.8	55

REP II

ACC.	DM #/AC	% PROTEIN	% TDN
2	9,402.9	7.5	46
3	7,709.4	9.5	55
4	8,683.5	10.6	55
5	5,400.7	9.1	55
7	12,852.7	8.4	52
8	13,430.2	7.3	49
9	6,480.8	6.1	49
10	9,780.0	10.4	56
12	6,153.8	9.2	55
13	10,431.6	6.6	49
15	5,815.3	10.9	58
16	11,963.7	7.3	49
17	8,986.4	8.3	52
18	7,777.8	10.2	56
19	5,749.1	10.9	56
20	15,987.5	9.0	55
21	8,777.4	8.4	52
22	7,977.2	11.2	55
23	11,830.6	11.7	58
24	9,304.3	9.2	52
26	12,071.4	8.9	52
27	5,328.5	7.5	49
28	12,951.8	8.3	52
30	12,010.1	9.1	52
31	19,642.8	7.7	49
32	7,151.9	11.1	58
33	10,480.3	11.3	56
35	4,853.6	11.0	56
36	23,433.0	8.7	52
38	12,511.4	8.5	49
39	22,283.5	10.4	56
40	3,703.7	7.1	52
41	15,728.6	7.6	52
42	24,400.9	9.9	58
44	25,000.0	7.4	52
45	11,742.2	7.8	52
46	4,895.1	11.2	55
47	7,355.4	9.8	52
48	8,690.5	8.9	52
49	10,819.7	8.5	52
51	6,904.8	9.0	55
52	9,570.9	9.0	55

ACC	DM #/AC	% PROTEIN	% TDN
53	9,500.0	9.5	49
54	7,009.3	9.9	55
55	14,432.9	7.4	49
56	24,205.4	6.6	55
57	7,423.6	7.9	52
58	19,484.9	7.6	56
59	6,230.4	10.2	55
60	15,056.5	8.6	58
63	25,783.9	8.7	56
66	20,219.4	8.6	52
67	10,120.5	11.9	58
68	5,488.4	12.7	58
69	6,370.8	11.9	56
70	17,952.8	9.6	56
71	4,015.7	8.3	56
72	10,251.6	8.9	52
75	17,944.3	9.4	55
76	12,571.4	9.5	52
77	8,071.9	12.0	58
78	10,151.0	11.0	52
79	9,651.7	12.1	56
80	5,744.1	11.1	49
81	6,788.5	10.6	49
82	6,112.6	9.9	52
83	8,308.8	11.7	52
84	5,240.2	10.5	56
85	3,722.1	11.6	59
86	3,916.1	11.5	59
87	20,604.7	12.2	56
88	12,284.9	11.3	52
89	13,771.4	9.9	52
90	8,805.9	10.0	52

TABLE 2 LISTING **OF** THE TOP **1996** EASTERN GAMAGRASS **SEED** GERMINATION RESULTS

Rep I	% Germ	Rep II	% Germ
26	54	46	55
39	64	48	56
40	Germ & Viable Firm 100	66	58
44	66	84	62
67	56		

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

INTRODUCTION:

Yellow indiangrass (Sorshastrum 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.

MATERIALS AND METHODS:

In the fall of 1993, a three acre bahia grass pasture was sprayed with Roundup. In February, 1994, the pasture was disced. In March, 1994, 450#/Ac of 0-14-14 fertilizer was applied. On May 5, 1994, the pasture area was disced and cultipacked to firm the seedbed. Then the 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 1994 and 1995. In 1996, this field was utilized for indiangrass seed production.

Rotational grazing techniques are planned for implementation in future years.

PROJECT 13I145S - DEVELOPMENT AND COMPARATIVE TESTING OF SHRUBS AND TREES FOR STREAMBANK STABILIZATION

INTRODUCTION:

Shrubs and trees line most undisturbed streambanks in the Southeastern United States. Along with other overstory trees and ground level vegetation they help protect the streambank from erosion during high water periods. However, due to human development above and along streambanks, many watercourses in the southeast (especially in urban areas) are experiencing accelerated erosion and deposition.

This project attempts to identify species of shrubs and trees which root well in a streambank environment. These species could be used in future streambank erosion control projects.

MATERIALS AND **METHODS:**

The following list of material was analyzed in this test:

Entry Nr.	Species	Sta. Location
1	Cornus foemina	# 3
2	Cephalanthus occidentalis	10
3	Leucothoe axillaris	15
4	Alnus serrulata	10
5	Cornus foemina	12
6	Itea virainica	2
7	Populus deltoides	15
8	Alnus serrulata	1
9	Leucothoe axillaris	10
10	Leucothoe racemosa	13
11	Liqustrum chinensis	5
12	Clethra alnifolia	9
13	Aronia arbutifolia	2
14	Cephalanthus occidentalis	4
15	Salix niara	5
16	Ilex glabra	11
17	Sambucus canadensis	1
18	Clethra alnifolia	14
19	Itea virainica	4
20	Itea virainica	1
21	Acer barbaturn	12
22	Salix nigra	4
23	Itea virainica	12
24	Acer saccharrum	15

25	Salix nisra	10
26	Bankers Willow (standard)	
27	Clethra alnifolia	11
28	Cephalanthus occidentalis	1
29	Cephalanthus occidentalis	7
30	Salix niara	6
31	Itea virginica	10
32	Sambucus canadensis	5
33	Sambucus canadensis	12

In addition to these, the following list contains species tested which expressed little or no root weight production. These were not included in the analysis:

Acer rubrum, Magnolia virginiana, Myrica cerifera, Lvonia lucida, Quercus michauxii, Persea borbonia, Cyrilla racemiflora, Crateaaus phenopyrum, Betula nigra, Viburnum nudum, Ilex myrtifolia, Lyonia ligustrina, Cliftonia monophylla, Sebastania fruticosa, Carprinus caroliniana, Baccharis halimifolia, Liquidambar stvraciflua, Ilex coriacea, Fraxinus caroliniana, Taxodium districhum, Ludwigia alternifolia, Vaccinium elliottii, Ludwigia decurrens, Boehmeria cylindrica, and Sympocus tinctoria.

Each entry consisted of three sticks of material 6-8" long, placed into conetainers under mist irrigation. Each stick of material received a treatment of Hormodin #3 prior to testing for rooting characteristics. The test ran from March 13, 1996 - June 24, 1996. All entries were replicated four times in a randomized complete block design. Bankers willow was used as a standard of comparison. Vigor, rooting ability, and root weight production were evaluated. Root weight production was statistically analyzed to determine the best entries for future streambank revegetation work.

RESULTS AND DISCUSSION:

Analysis of variance indicated a significant difference among the entries.

Root weight production was analyzed utilizing Tukey's honestly significant difference test. (Table 1)

CONCLUSION:

Data indicates one Salix niara produced as much root weight as the standard 'Bankers' willow. Other Salix niara, Sambucus canadensis, and Cornus foemina produced excellent root weight yields. This test indicates the above species should be emphasized in future streambank revegation projects.

TABLE 1. JIMMY CARTER PMC - STREAMBANK PLANT ROOT PRODUCTION (1996)

Entry Nr.	Mean Root Weight (mg)	[1]
26	857.5	A
22	682.5	AB
15	510.0	BC
17	407.5	C
1	395.0	C
11	352.5	CD
30	347.5	CDE
4	120.0	DEF
7	105.0	DEF
28	102.5	DEF
19	95.00	DEF
20	95.00	DEF
6	92.50	DEF
14	85.00	DEF
33	82.50	DEF
5	77.50	EF
25	77.50	EF
23	67.50	F
31	65.00	F
2	55.00	F
32	42.50	F
8	37.50	F
24	22.50	F
10	22.50	F
13	17.50	F
12	17.50	F
29	12.50	F
27	12.50	F
18	12.50	F
21	5.000	F
9	5.000	F
16	2.500	F
3	2.500	F

[1] Means followed by the same letter are not significantly different (P 0.05) based on Tukey's honestly significant difference test. CV = 64.31%

PROJECT 13A147R - EASTERN GAMAGRASS INTERCENTER STRAIN TRIAL

INTRODUCTION:

Eastern Gamagrass is a native perennial warm season bunch-grass. It is widely distributed in the United States. It occurs in most states east of the Mississippi river. It can be utilized for forage and hay production. It is a monoecious grass with morphology similar to maize. The diploid plants reproduce sexually. However, the tetraploids are faculative apomicts and the hexaploid plants are obligate apomicts. The mechanism for apomixis is diplospory followed by pseudogamy. A gynomonoecious sex form with the potential of increased seed production has been identified. Gamagrass rootstalk is a proliteration of tillers.

This is a regional test to evaluate NRCS plant materials. Thirteen accessions and one standard ('Pete') of Eastern gamagrass will be tested for yield and quality of forage. This should result in one or more new Eastern gamagrass forage releases for the Southeastern United States.

MATERIALS AND METHODS:

Table 1 lists the accessions selected for the trial comparisons. Knox City, Texas, Booneville, Arkansas, Coffeeville, Mississippi, Americus, Georgia, Brooksville, Florida, and Nacogdoches, Texas are the locations for the trial. Plots were established with vegetative material. Each PMC will clip the test on a 45 day cycle. Dry matter production and forage quality will be determined for each entry and each location. All entries are replicated four times in a randomized complete block design.

RESULTS AND DISCUSSION:

The Jimmy Carter PMC data indicates the New Mexico and Montgomery County, Tennessee entries produced very good total dry matter yields in 1996. They were significantly above all other accessions with the exception of Jackson County, Texas, Williamsburg County, South Carolina and Hays County, Texas. 'Pete' produced very good yields during the first cut but yielded more poorly in later cuts. (Table 2)

The Florida accessions seem to perform well only at the Florida location. Generally the entries from New Mexico and Montgomery County, Tennessee produced good total dry matter yields in 1996. (Table 3)

TABLE 1 - EASTERN GAMAGRASS ENTRIES

accession	State	County	PMC Origin
434493	TX	Hays	James E. "Bud" Smith, Knox city, TX
9066165	TX		Los Lunas, NM
9043762	TX	Medina	East Texas, Nacogdoches, TX
9043629	TX	Nacogdoches	"
9043740	TX	Jackson	"
9062680	TN	Montgomery	Jamie L. Whitten, Coffeeville, MS
9062708	SC	Williamsburg	"
9055975	FL1		Brooksville, FL
9059213	FL2		"
9059215	FL3		It
9058465	AR1		Booneville, AR
9058495	AR2		"
9058569	AR3		"
'Pete'			Commercial

TABLE 2 DRY MATTER YIELD OF EASTERN GAMAGRASS ENTRIES BY HARVEST DATE AND TOTAL AT JIMMY CARTER PMC 1996

DM Yield
Harvest Dates
#/AC

Entry	5/22	7/9	8/27	Total Yield
Montgomery	8974.625	6275.85	4386.85	19,637.3
Williams-burg	5576.65	6764.28	5017.03	17,358.0
Nacogdoches	-------	-------	-------	--------
Jackson	3695.4	7376.2	6319.8	17,391.4
Medina	3422.83	6096.8	5091.08	14,610.7
Hays	5600.95	6627.47	4844.18	17,072.6
New Mexico	6827.08	7377.03	5062.88	19,267.0
Ark 1	5259.08	5535.08	4505.9	15,300.1
Ark 2	4224.75	6151.45	5786.3	16,162.5
Ark 3	3216.2	4352.73	3148.05	10,717.0
Flr 1	856.6	3153.15	2525.6	6,535.4
Flr 2	2557.88	6429.1	4554.03	13,541.0
Flr 3	3141.35	7414.73	4762.3	15,318.4
Pete	7851.4	5031.2	3578.2	16,460.8
LSD(0.05)	1551	1076	768.7	2657

TABLE 3

Season Total dry matter yield of 13 eastern gamagrass accessions by location, 1996.

		DM yield					
		Location					
Accession	Origin	Knox City	Booneville	Coffeeville	Americus	Brooksville	Nacogdoches
		--lb/acre--					
434493	KCPMC	14 033	15 554	12 528	17 073	5883	12 594
9043629	ETPMC	6551	12 03:	9442	-----	2318	14 880
9043740	ETPMC	12 119	91a5	8754	17 392	1149	16 354
9043762	ETPMC	15 563	13 581	11 311	14 611	4543	14 446
9055975	FLPMC	2121	4051	2032	6535	9728	3114
9059213	FLPMC	3548	4999	4971	13 541	8399	8171
9059215	FLPMC	5078	4168	5950	15 319	10 790	6654
9058465	ARPMC	8876	13 033	14 535	15 300	5670	13 522
9058495	ARPMC	10 868	14 000	12 877	16 162	2475	13 064
9058569	ARPMC	6457	12 332	6859	10 717	2248	5169
9062708	MSPMC	7773	13 566	12 017	17 358	5007	12 996
9062680	MSPMC	10 820	12 043	12 747	19 637	3368	15 276
9066165	LLPMC	13873	16 087	14 149	19 267	4252	14 044
Mean		9052	12 229	9859	15 243	5141	11 560
LSD(0.05)		4286	4206	3724	2144	2788	7702
Location x Accession **							

** Significant at P<0.001.

PROJECT 13A148R - GRAZING MANAGEMENT OF SWITCHGRASS (PANICUM VIRGATUM)

INTRODUCTION:

Switchgrass is a native perennial warm season grass. It can be utilized for forage and hay production. This test attempts to demonstrate the use of 'Alamo' switchgrass. Emphasis will be placed upon establishment and management techniques for forage production.

MATERIALS AND METHODS:

In May, 1995, a six acre field was bottom plowed and disked. In June, 1995, the field was leveled with a field cultivator. The field was fertilized with 30#/Ac of phosphorus and potassium. Switchgrass seed was applied to a cultipacked field, using a fertilizer spreader. Seeding rate was approximately 10 pounds pls/Ac. After seeding, the field was cultipacked perpendicular to the first cultipacking. Depth of seed was approximately 1/4 inch. A dry period delayed germination, however, a good stand was observed by the fall of 1995. Pigweed was controlled with one qt/Ac of 2-4-D.

In June and July 1996, 40 cows with calves, flash grazed this field for four days.

In future years, we hope to demonstrate rotational grazing utilizing electric fencing and GLA techniques.

RELEASE OF NEW CULTIVARS IN 1993

NAME	USE
'Doncorae' brunswickgrass Paspalum nicorae	Grassed waterways & filter strips
'Sumter Orange' daylily Hemerocallis fulva	Beautification
'Wetlander' giant cutgrass Zizaniopsis miliacea	Constructed wetlands
'Restorer' giant bulrush Scirpus californicus	Constructed wetlands
'Americus' hairy vetch Vicia villosa (cooperative with UGA)	Conservation tillage

RELEASE OF NEW CULTIVARS IN 1994

NAME	USE
'AU Early Cover' hairy vetch Vicia villosa (cooperative with Auburn Univ)	Conservation tillage
'AU Ground Cover' caley pea Lathvrus hirsutus (cooperative with Auburn Univ)	Conservation tillage
'Sharp' marshhay cordgrass Spartina patens (cooperative with Brooksville PMC)	Coastal stabilization

SEED AND PLANT PRODUCTION IN 1996

SEED

NAME	POUNDS
'Dove' proso millet	2,000
'Americus' hairy vetch	266

PLANTS

NAME	EACH
Ogeche lime	200
'Flageo' marshhay cordgrass	2,000
'Sharp' marshhay cordgrass	110
Giant reed	1,000
'Big O' crabapple	60
'Sumter Orange' daylily	3,048
'Wetlander' giant cutgrass	1,525
'Restorer' giant bulrush	1,550
'Ellagood' autumnolive	200
'Bankers' willow	750

SEED AND VEGETATIVE STOCK PRODUCERS

CROP	PRODUCER
Trifolium vesiculosum 'Amclo' Arrowleaf Clover	Georgia Crop Improvement Assoc 2425 S Milledge Ave. Athens, GA 30605
Lespedeza virgata 'Ambro' Virgata Lespedeza	Georgia Crop Improvement Assoc 2425 S Milledge Ave. Athens, GA 30605
Paspalum notatum 'Pensacola' Bahiagrass	Georgia Crop Improvement Assoc 2425 S Milledge Ave. Athens, GA 30605
	Conlee Seed Company Star Route, Box 8A Plainview, TX 79073
	Douglas W. King Co., Inc. 4627 Emil Rd, PO Box 200320 San Antonio, TX 78220
	Texas Seed Company, Inc. PO Drawer 599 Kenedy, TX 78119
Panicum miliaceum 'Dove' Proso Millet	Georgia Crop Improvement Assoc 2425 S Milledge Ave. Athens, GA 30605
	Adams Briscoe Seed Company P O BOX 18 Jackson, GA 31634
	Turner Seed Company Route 1, Box 292 Breckenridge, TX 76024
Elaeasnus umbellata 'Ellagood' Autumn Olive	McCorkle Nursery Rt. 1 Dearing, GA 30808
	Hamilton Nursery P O Box 871 Thomson, GA 30824

Hemerocallis fulva 'Sumter Orange' Daylily	Hamilton Nursery Othello Hamilton P.O. Box 871 Thomson, GA 30824
Lespedeza thunbergii 'Amquail' Thunberg Lesp.	Julian Brown 126 Court St. P.O. Box 8 Monrow, GA 30655
	Alabama Crop Improv. Assoc. S. Donahue Dr. Auburn Univ, AL 36849
	Adams-Briscoe Seed Co. P. O. Box 18 Jackson, GA 30733
	Lambert Seed & Supply Hwy 28 W. P. O. Box 128 Camden, AL 36726
	Morgan Dunn Rt. 5 Box 105 Troy, AL
	Edwin Hammond Rt. 2 Box 270 Reform, AL 35481
	Ronnie Forbis Rt. 1 Box 666 Mt Crogham, SC 29727
	P.K. & Allen Newton Rt. 4 Box 198 Sylvania, GA 30467
Spartina aatens 'Flageo' Marshhay Cordgrass	Jimmy Carter Plant Materials Center, 295 Morris Dr. Americus, GA 31709
	Dr. Mark Latimore School of Agriculture Fort Valley State College Fort Valley, GA 31030
	William Smith Rt. 2 Box 94A Wigham, GA 31719

'Flageo' Continued	Okefenokee Growers Maybluff Road Folkston, GA 31537
<u>Spartina patens</u> 'Sharp' Marshhay Cordgrass	Jimmy Carter Plant Materials Center, 295 Morris Dr Americus, GA 31709
	Brooksville Plant Materials Ctr 14119 Broad St. Brooksville, FL 34601
	Okefenokee Growers Maybluff Road Folkston, GA 31537
<u>Scirpus californicus</u> 'Restorer' Giant Bulrush	Varn Companies P. O. Box 4488 Jacksonville, FL 32201
	Flowerwood Nursery Inc. 6470 Dauphin Island Parkway Mobile, AL 36605
<u>Zizaniopsis miliacea</u> 'Wetlander' Giant Cutgrass	Varn Companies P. O. Box 4488 Jacksonville, FL 32201
	Flowerwood Nursery Inc. 6470 Dauphin Island Parkway Mobile, AL 36605
<u>Festuca arundinacea</u> 'GA-5' Tall Fescue	Pennington Seed Company Madison, GA

LIST OF PUBLICATIONS IN 1993-1996 - JIMMY CARTER PLANT MATERIALS CENTER AND COOPERATORS

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Research on Special Purpose Legumes. J.A. Mosjidis, 1994.

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"AU GroundCover: New Caley Pea, A Boon for Producers". Highlights of Agricultural Research, Vol. 41, No. 4, Winter 1994. J.A. Mosjidis, C.M. Owsley, M.S. Kirkland, D.M. Ball, and K.M. Rogers.

"AU EarlyCover: A Full Benefit Cover Crop". Highlights of Agricultural Research, Vol. 41, No. 4, Winter 1994. Jorge Modjidis, Charles Owsley, Malcome Kirkland, Don Ball, and Kenneth Rogers.

New Releases - 'Sharp' Marshhay Cordgrass, American Nurseryman, December 1994. p. 82.

Article on Joe Bouton and 'AU GroundCover' Caley Pea. Progressive Farmer, Feb. 1995 p. 29 and p. 112.

Registration of 'AU EarlyCover' Hairy Vetch. Crop Science 35:1509 (1995). J.A. Mosjidis, C.M. Owsley, M.S. Kirkland, and K.M. Rogers.

Registration of 'Americus' Hairy Vetch. Crop Science 35:1222 (1995). Surrency, Owsley, Kirkland, McCracken, Raymer, Hargrove, Day, and Mosjidis.

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Registration of 'AU GroundCover' Caley Pea. Crop Science 36:207 (1996). J.A. Mosjidis, C.M. Owsley, M.S. Kirkland, and K.M. Rogers.

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'AU EarlyCover' and 'AU GroundCover': New Forage Legume Cultivars. Proceedings of the Fourteenth Trifolium Conference, Lexington, Kentucky. May 21-23, 1996. J.A. Mosjidis, C.M. Owsley, M.S. Kirkland, and K.M. Rogers.

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