



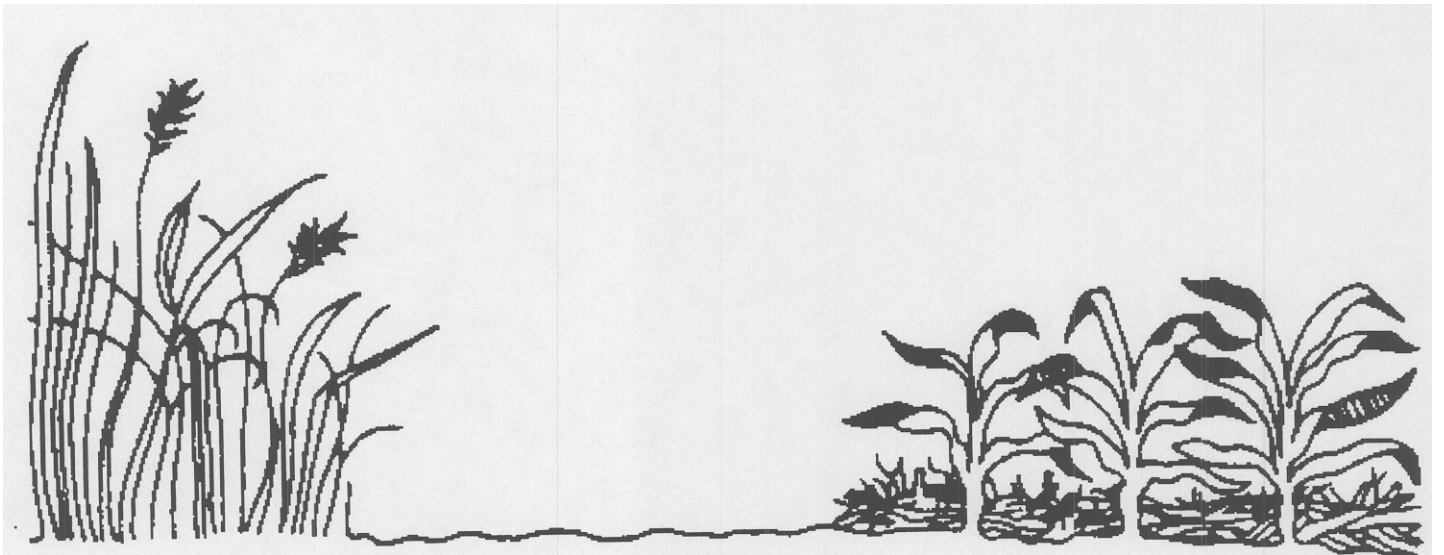
United States
Department of
Agriculture

Natural Resources
Conservation Service

Americus, Georgia

Jimmy Carter Plant Materials Center

1995 Annual Activity Report



JIMMY CARTER PLANT MATERIALS CENTER
AMERICUS, GEORGIA

INTRODUCTION:

The Jimmy Carter Plant Materials Center, formerly recognized as the Americus Plant Materials Center (PMC), located at Americus, Georgia, is operated by the United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS). The center consists of 327 acres and serves the states of Alabama, Georgia, South Carolina, North Carolina, and parts of Tennessee and Florida.

The purpose of the plant materials program is to assemble, evaluate, and release new plant materials for conservation use. This involves identifying plants for conservation use, releasing new plant materials, developing techniques for their successful use, providing for their commercial increase, and promoting their acceptance in resource conservation and other environmental programs.

PMC activities are guided by a five-year program which focuses on the development of the following high-priority projects:

1. Evaluation of plants for conservation tillage.
2. Evaluation of plants for water quality, including (a) constructed wetlands; (b) streambank stabilization; (c) riparian buffer areas; and (d) vegetative filter strips.
3. Evaluation of plants for marginal cropland and grazing lands that support sustainable agriculture.

PLANT MATERIALS TESTING PROCESS

The PMC has established a systematic testing process which provides plants to solve conservation problems. The process involves plant performance determination, plant adaptiveness evaluation, and release of plants for conservation use. The following is a description of each step involved in the testing process:

STEP 1 - ASSEMBLY

Once a conservation problem has been targeted and a plant species selected, the search for a superior plant is initiated. Plant collections are made from native or naturalized plant stands throughout the PMC service area.

Collections may also originate from foreign sources coordinated through the plant introduction stations. Seed and/or vegetative materials of grasses, forbs, legumes and woody species are collected in order to provide adequate numbers for initial evaluation plantings.

STEP 2 - INITIAL EVALUATIONS

Individual collections are either direct seeded into initial evaluation plots or established in the greenhouse and later transplanted to initial evaluation plots. Visual comparisons of plant characteristics such as vigor, seed production, percent stand, disease and insect resistance are recorded. Plants are then measured and dates of flowering and maturity recorded. At the end of this phase, superior accessions are selected for increase and advanced testing. The following projects for priority #3 are currently under initial evaluation:

Big Bluestem - Andropogon aerardi

Big bluestem is a tall native perennial warm season grass. Collections of vegetative material of 750 different ecotypes were assembled from southeastern states in the winter of 1988 and 1989, and transplanted in the spring of 1989 and 1990. Preliminary data was collected in 1990 and 1991.

In 1992, Dr. Edzard van Santen, of Auburn University, began a cooperative effort with the PMC to develop a new big bluestem cultivar.

In June 1993, cow/calf units were allowed to graze plots to determine cattle's preference for specific ecotypes. This data was processed to determine which ecotypes would be selected for crossing blocks in 1994.

In May 1994, three crossing blocks of selected materials were planted. In 1994 and 1995 seed was collected for use in future advanced studies.

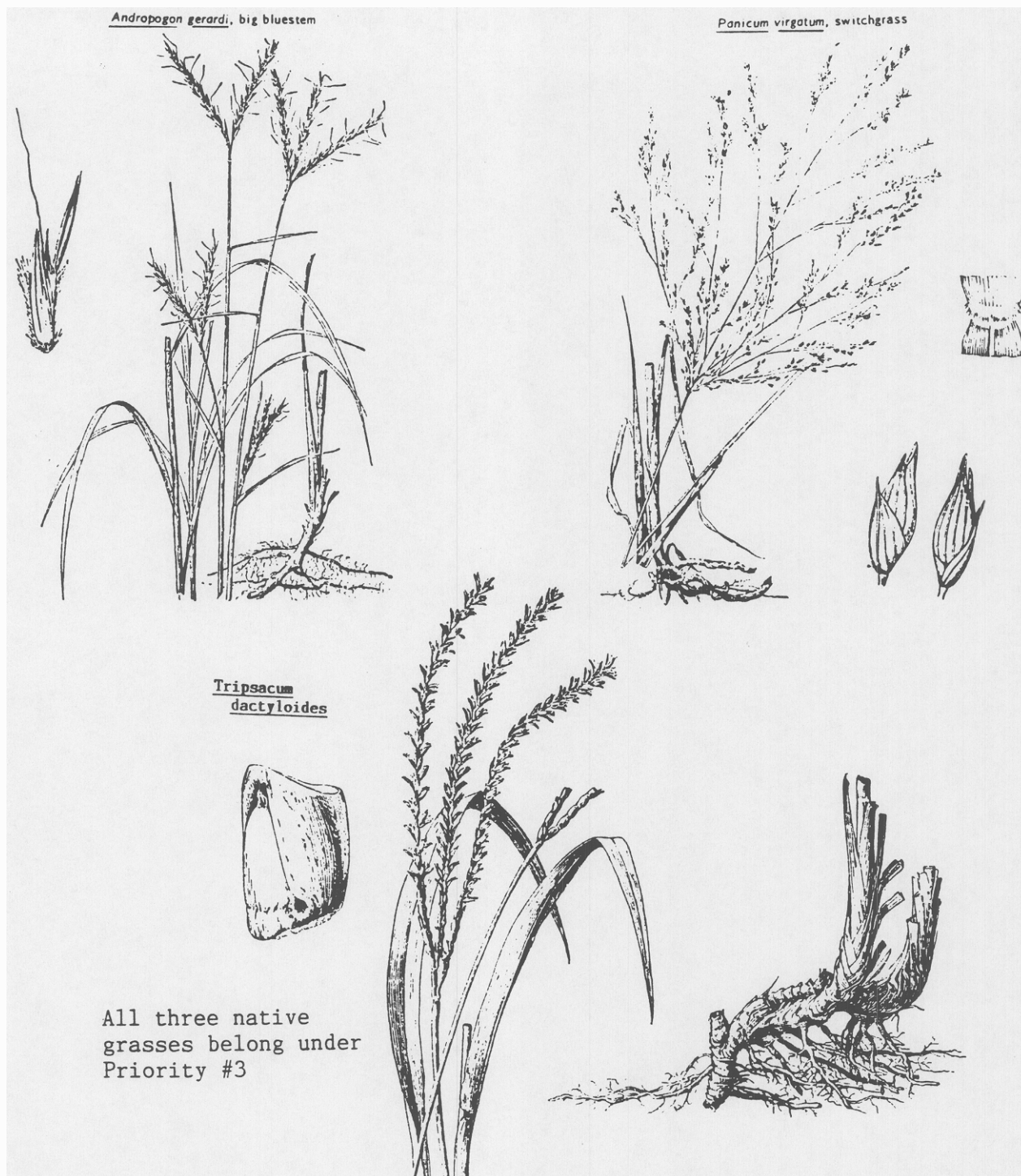
Switchgrass - Panicum virgatum

Switchgrass is a common, native perennial warm season grass. Collections of vegetative material of 1098 different ecotypes were assembled from the Southeastern United States and transplanted in the spring of 1991 and 1992.

Preliminary data was collected in 1993, 1994, and 1995. Also in 1994, a greenhouse compatibility test was conducted with cooperation from Dr. Jorge Mosjidis of Auburn University. With Auburn University cooperation, plant breeding and evaluation techniques are planned for 1996.

Eastern Gamagrass - Tripsacum dactyloides

Eastern gamagrass is a native perennial warm season bunchgrass. Collections of vegetative material of 91 different ecotypes were assembled from sites in Georgia and transplanted during the spring of 1994. Preliminary data was collected in 1994 and 1995. Also in 1995, vegetative clippings were conducted on each ecotype and dry matter samples collected for forage quality analysis.

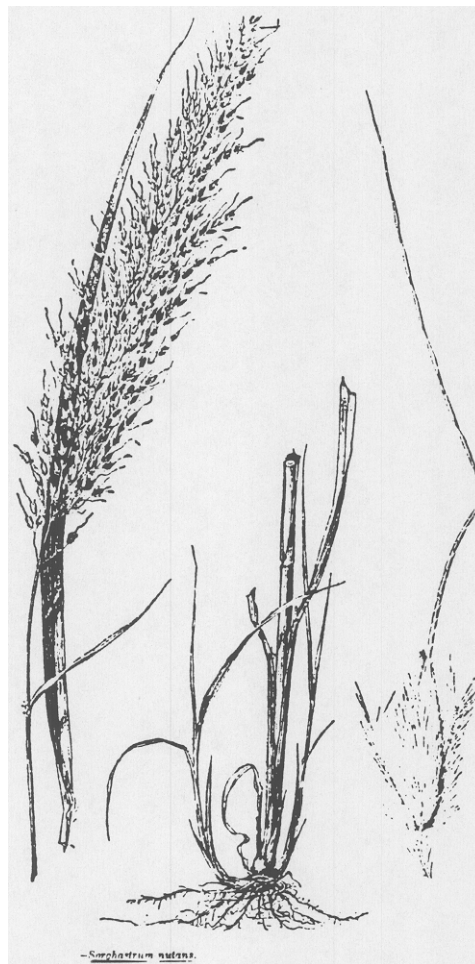


STEP 3: INITIAL SEED/PLANT INCREASE

Before advanced evaluations are conducted and/or large scale increase fields established, initial seed increase blocks of superior accessions are established. After a sufficient amount of seed or vegetative material is available, advance evaluation plantings are made. The following plant is being increased for future study:

Indiangrass = Sorghastrum nutans

Another native perennial warm season grass called indiangrass has been increased for grazing lands that support sustainable agriculture.



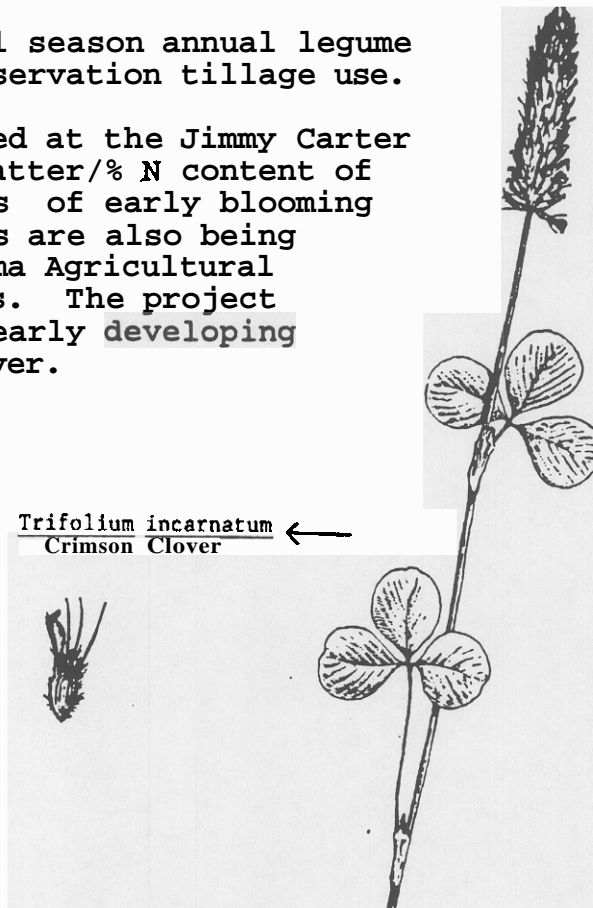
STEP 4: ADVANCED EVALUATIONS

Selected superior accessions undergo more intense testing. These accessions are compared to commercial materials, when available. Advanced evaluations may include comparative clipping trials to evaluate yield and quality of grasses and legumes. Usually in advanced evaluation, plants are placed in replicated blocks and tested for forage production, ground covering ability, nitrogen fixing potential, etc. This data provides a basis for further selection of superior plants. The following plantings are under advanced evaluation:

Crimson Clover - Trifolium incarnatum

Crimson clover is a cool season annual legume being evaluated for conservation tillage use.

Tests are being conducted at the Jimmy Carter PMC, to determine dry matter/% N content of three experimental lines of early blooming populations. These tests are also being conducted at five Alabama Agricultural Experiment Station sites. The project hopes to produce a new early developing cultivar of crimson clover.



Indiangrass - Sorghastrum nutans

Indiangrass is being evaluated for Priority #3. A survivability study of indiangrass cultivars under grazing conditions was established in 1994. Evaluations were begun in the summer of 1995. Also in 1994 a three acre field of indiangrass was established as a cultural management and demonstration area. A study of rotational grazing techniques on this field are planned for 1996.

Eastern Gamagrass - Tripsacum dactyloides

This highly productive grass is being evaluated to determine management criteria for production of forage. In April 1993, a five acre field was established as a cultural management tool and demonstration area. In 1995, rotational grazing techniques were implemented on the gammagrass to evaluate cattle utilization.

Woody Species - loblolly pine, yellow poplar, sycamore, blackgum, cherrybark oak, sweetgum, white oak, bald cypress, green ash, red maple, ogeechee lime and water oak.

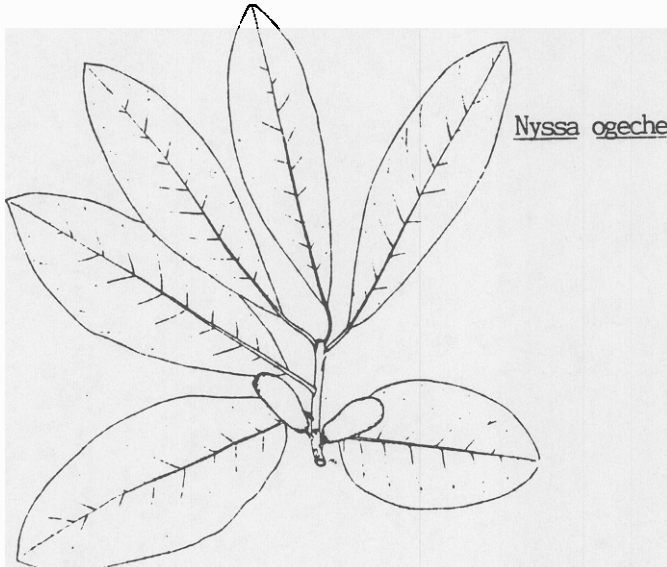
In the winters of 1993 and 1994, 160 trees of each species listed above were planted in a forest buffer environment. This test should determine the ability of each species to function as a forest buffer component in southeastern forest systems. Preliminary growth and survival data was collected in 1994 and 1995.

STEP 5: LARGE SCALE INCREASE

During or following advanced evaluation, an accession with potential is established in a production field at the center. Seed or vegetative materials are harvested for field planting use. The following is an example of this procedure:

Ogeechee lime - Nyssa ogeche

Ogeechee lime is a native small tree that grows along certain drains and creeks of the Southeastern United States. It is being grown at the center for Priority #2.



STEP 6: FIELD PLANTINGS

Field plantings are the final step in the testing process. Various sites are selected by the plant materials specialist to test the potential new cultivar under actual field conditions.

STEP 7: NAME AND RELEASE

Plants that prove themselves are then cooperatively named and released for commercial production and use. The PMC does not supply seed directly to the general public. We maintain a small "foundation" block to provide genetically pure stock to qualified growers who supply the public.

No formal releases were made in 1995. However, since 1987, 12 plants have been released from the center for conservation use.

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: (912) 924-4499 or 924-7003.

The United States Department of Agriculture (USDA) prohibits discrimination in its programs on the basis of race, color, national origin, sex, religion, age, disability, political beliefs and marital or familial status. (Not all prohibited bases apply to all programs). Persons with disabilities who require alternative means for communication of program information (braille, large print, audiotape, etc.) should contact the USDA, Office of Communications at (202) 720-2791.

To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington, D.C., 20250, or call (202) 720-7327 (voice) or (202) 720-1127 (TDD). USDA is an equal employment opportunity employer.