

2010
December

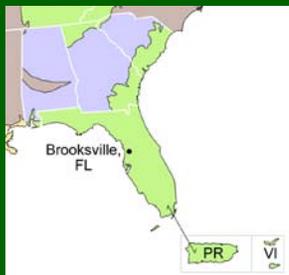
Brooksville Plant Materials Center Progress Report of Activities

Conservation Concerns:

- Improve and Maintain Water Quality
- Control Erosion on Cropland and Stabilize Critical Areas
- Improve Forage on Pasture and Rangeland
- Improve Wildlife Habitat

About the PMC:

The PMC consists of 39 acres of cultivated fields and 139 acres of native woodland and planted pine. It is located 7 miles north of Brooksville on US 41, 15 miles inland from the Gulf of Mexico. Our service area, indicated in green on the map below, includes all of Florida, Puerto Rico, and the US Virgin Islands; and the coastal areas of Georgia, South Carolina, and Alabama.



In this issue

- Pollinator Habitat Improvement P. 1
- Germplasm Development P. 2
- Technology Development P. 3
- Publications and Presentations P. 4

Mission of the Brooksville Plant Materials Center

The *Brooksville Plant Materials Center* (PMC) is operated by the USDA, Natural Resources Conservation Service (NRCS). The mission of the Plant Materials Program is to deliver state-of-the-art plant science technology to meet the nation's natural resource conservation needs. To this end, we identify superior accessions of adapted plants which are tested and released for production to commercial growers. We also provide technical assistance in plant production and management methodologies. Evaluation and use of native plant materials is emphasized.

Native Pollinator Habitat Improvement

In 2010, the PMC was involved with several activities to improve habitat for native pollinators.

The PMC planted 36 patio pots with native wildflowers (right) for distribution to NRCS offices throughout

the state as part of the NRCS People's Garden initiative. These flowers provided pollen and nectar sources for various pollinators.



the state as part of the NRCS People's Garden initiative. These flowers provided pollen and nectar sources for various pollinators. The PMC hosted a celebration on April 20 to commemorate Earth Day and the 75th Anniversary of the agency. One of the activities was the planting of a pollinator demonstration garden (above). Local school children, Master Gardeners and EarthTeam

The PMC hosted a celebration on April 20 to commemorate Earth Day and the 75th Anniversary of the agency. One of the activities was the planting of a pollinator demonstration garden (above). Local school children, Master Gardeners and EarthTeam

volunteers assisted with the planting. This garden included ten species of wildflowers, planted in blocks on weed control fabric to reduce maintenance needs. Two larger blocks of 'Flora Sun' beach sunflower were planted on either end of the fabric to both provide flowers for pollinators and serve as our release increase production field.

The PMC is working with the Xerces Society for Invertebrate Conservation to document flowering periods of native woody, species that can be planted in hedgerows to provide pollinator habitat. This study was planted July 2010 using six tree and shrub species (below). Since the woody species will take time to mature, seven species of herbaceous flowering plants were planted between the blocks of woody plants. Flowering data collection will begin in 2011.



Germplasm Development

Hairawn muhly (*Muhlenbergia capillaris*) is a native, perennial grass that can be found growing in open woodlands and pine savannahs in Florida and surrounding states. It is a bunch grass with stiff, narrow, leaves that are rolled inwards. Plants can reach 1.5 to 4 feet in height. In the fall, it produces flowering stalks with loose, open panicles of small, pink to purplish flowers. This attractive flower display has attracted the attention of the nursery industry and plants are widely marketed for use in commercial, municipal, and home landscapes in the state. However, most of the plants that are available commercially have undergone little or no selection for improved growth and appearance traits.



The PMC released a white-flowered form of hairawn muhly, named Morning Mist Germplasm in 2006. The PMC is continuing to evaluate germplasm of this species to

meet various needs. **FLPMC-P-0201-UR** was a cooperative study with the University of Florida, North Florida Research and Education Center in Quincy to evaluate hairawn muhly accessions selected during early tests at the PMC as potential releases for ornamental use. The results of this testing identified accession 9059929 (above) as a superior purple-flowered plant. The PMC is increasing plants in preparation for release to commercial producers in 2011. The PMC also identified nine superior seed producing accessions of hairawn muhly. Plant numbers were increased at the PMC during 2010 for advanced evaluations at the PMC and other locations throughout the state in 2011. This research study, **FLPMC-P-0108-RA**, will attempt to develop sources of hairawn muhly that can be used to seed native range lands and natural areas.

Germplasm Collections

Coastal Plain Chaffhead
Carphephorus corymbosus



Powderpuff Mimosa
Mimosa strigillosa



Narrowleaf Silkgrass
Pityopsis graminifolia



Pine Barren Goldenrod
Solidago fistulosa

Additional Germplasm Studies

FLPMC-P-9602-RA Evaluation of Lopsided Indiangrass: Tested germplasm of this important range species is needed for restoration planting. A polycross of the top 21 accessions has been made and seed is being increased for release.

FLPMC-P9605-RA Evaluation of Eastern Gamagrass: Adapted Florida ecotypes of eastern gamagrass are needed for pasture planting and rangeland restoration. A superior accession has been identified and breeder seed is being increased at two locations in Florida.

FLPMC-P-0001-RA Evaluation of Native Switchgrass: Better seed producing types of Florida-adapted material is needed. Plant increase and ploidy level (number of chromosome pairs) determination continued in 2010.

FLPMC-P-0501-PA Evaluation of Slender Woodoats: Adapted native cool-season forages are needed in Florida. The third year of initial field evaluation was completed and protocols will be made in 2011 to carry out crossing and required advanced evaluations.

FLPMC-P-0601-PA Rhizoma Perennial Peanut Cultivar Development: Rhizoma perennial peanut adapted to wetter sites is needed. Newly available germplasm was increased in the greenhouse for field planting in 2010.

FLPMC-P-0901-BF Development of Elephantgrass Germplasm for Bioenergy Production: Higher producing elephantgrass cultivars are needed for biofuel production. Crossing blocks were established and pollen collected.

FLPMC-P-0904-UR Evaluation of Powderpuff: Native species to be used as ornamental groundcover are needed in Florida. Plants for testing were collected in 2009 and 2010 and initial evaluation blocks will be planted at three locations in Florida in 2011.

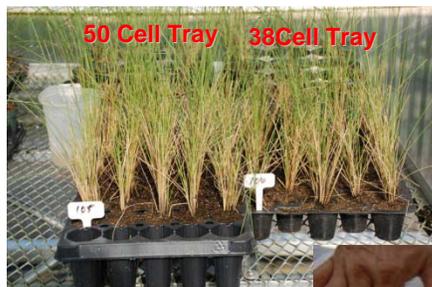
FLPMC-P-0905-WQ Evaluation of Pine Barren Goldenrod: Sources of native forb seed for wetland restoration and to provide pollinator habitat are needed. Seed collections were assembled in 2009 and initial evaluation blocks will be planted at three locations in Florida in 2012.

FLPMC-P-0906-WO Evaluation of Coastal Plain Chaffhead: Sources of native forb seed for restoration of pine and scrub lands are needed. Seed collections were assembled in 2009 and 2010. Initial evaluation blocks will be planted at three locations in Florida in 2013.

FLPMC-P-0907-WO Evaluation of Narrowleaf Silkgrass: Sources of native forb seed for restoration of pine and scrub lands are needed. Seed collections were assembled in 2009 and 2010 and initial evaluation blocks will be planted at three locations in Florida in 2012.

Technology Development

FLPMC-T-TE Interaction of Fertility and Container Size on the Development of Sea Islands Germplasm Sweetgrass and Field Survival: Sweetgrass (*Muhlenbergia sericea*) leaves are the core material that the Gullah basketmakers in the area around Mount Pleasant, South Carolina, historically used when constructing their African-coiled basketry. However, local populations have been largely decimated by development pressure and natural disasters, forcing them to import materials to use for this purpose. Tommy Socha, with the U.S. Army Corps of Engineers (USACE), Charleston District, has recently been incorporating Sea Islands Germplasm sweetgrass in coastal restoration plantings in order to potentially increase availability of harvestable material. However, survival of plants obtained from commercial growers over the last few years was poor. He suspected the cause may be largely due to the methods used to propagate the planting material, although field planting methods may also have been a factor. In 2010, the USACE provided funding for the PMC to conduct research on the effects of container size and fertility regimes on survival of sweetgrass plants following transplanting.



Three container sizes were used, a tall, 50-count cell tray, a shorter, wider 38-count cell tray, which both hold approximately the same volume of potting soil



(above), and a round 4-inch azalea pot, which holds about 5 times the volume of the other two. Each pot also had greenhouse fertility treatment, which consisted of the recommended rate of Osmocote, slow-release fertilizer for the surface area of the container, or no fertilizer. Plants were grown for six months in the greenhouse under this regime and destructive samples to determine root and shoot length and dry weight were taken monthly (above).

In early November, the plants were planted on Daufuskie Island, SC with assistance provided by Tommy, the local homeowners association, and South Carolina NRCS personnel. There were three planting sites on the island, two near the water and one further inland, at their cooperative community farm site. Planting methods used included with and without a hydrophilic-polymer gel and with and without adding fertilizer to the planting hole in all possible combinations for each pot size/fertilizer treatment from the



greenhouse. This resulted in 24 field planting treatments. For the two coastal sites, there were three planting locations for each treatment, moving progressively up the beach from the water. The plants will be evaluated quarterly for growth and survival.

Additional Technology Studies

FLPMC-T-0801-PA Effect of Flooding Duration and Nitrogen Level on the Survival and Phosphorous Uptake of Three Forage Species in Florida: Proposed surface water storage on South Florida cattle ranches may impact production and survival of pasture grasses. The second year of greenhouse testing was completed in 2009. Forage, soil, and water samples are being analyzed by the USDA-ARS cooperator.

FLPMC-T-0802-WL Interaction of Time of Year and Landscape Position on Survival of Selected Florida Tree and Shrub Species Planted as Whips: Direct planting of woody whips may be useful for increasing species diversity on pond margins in restored phosphate mineland. Greenhouse testing and two years of field planting were completed in 2009. Final evaluations were completed in summer 2010.

FLPMC-T-0803-BF Evaluation of Switchgrass Lines for Biofuel: Cooperative study with Rutgers University to determine biomass yields and biofuel quality characteristics of seven switchgrass lines on muck soils at the University of Florida, Research and Education Center at Belle Glade. Data collection and analysis was completed by the cooperator in 2010.

FLPMC-T-0901-WL Interaction of Seeding Rate and Soil Type on Establishment of Native Seed Mix on Recontoured Mineland: Recontoured phosphate mineland often consists of large patches of sand tailings and overburden. To determine optimum the seeding rate, three different seeding rates of a native seed mix were planted in March 2009. Final stand counts were made in 2010.

FLPMC-T-0903-WL Native Seeding Rate for Hillsborough County: Optimum seeding rates to use for wildlife habitat enhancement are not fully known for many Florida native grasses. The PMC is working with land management personnel from Hillsborough County to test three seeding rates of six grasses. Establishment of most species was poor during 2010. It appeared the planting depth too deep for optimum emergence, so the planting will be repeated in 2011, with the drill set at a shallower depth.

PM-T-0901 ICST Adaptability of 'Tropic Sun' Sunn Hemp: An inter-center strain trial with 18 other PMCs to determine areas of the country where 'Tropic Sun' sunn hemp (*Crotalaria juncea*) can be used a cover crop or green manure crop and to evaluate biomass production using reduced seeding rates. Plots were planted at the PMC in late summer of 2010, but were lost to deer grazing

PM-T-1002-RA Forage Quality Sampling: The seasonal nutritive quality of many Florida native grasses has not been fully documented. Bi-monthly sampling of the leaves only and the entire stem of six species of native grasses and two standard introduced forage grasses were taken starting in February 2010. Quality analyses are being conducted by Dairy One.

Major Infrastructure Changes Timber Harvest



Dragging Harvested Trees



Create 13 acres of production area and
39 acres of restored longleaf pine

Brooksville PMC Staff

Janet Grabowski, Manager
Mary Anne Gonter, Biological Science
Technician (Plants)
Edmond (Ed) Black, Biological Science
Technician
Chris Sheahan, Plant Materials Intern
Jonathan Connolly, Gardner
Pamela Page-Fiske, Secretary

PMC information is available online at:
<http://www.fl.nrcs.usda.gov/program/flplantmaterials.html> or
<http://plant-materials.nrcs.usda.gov>

Carlos Suarez
Florida State Conservationist

Greg Hendricks
Florida State Resource Conservationist

M.J. (Mimi) Williams
Plant Materials Specialist

Publications:

Williams, M.J., and J.M. Grabowski. 2009. 2009 Brooksville Plant Materials Center Progress Report of Activities. Brooksville PMC, Brooksville, FL. 4 p.

Grabowski, J.M. 2009. *Muhlenbergia capillaris* Morning Mist Germplasm. Amer. Nurseryman, 209:12 American Nurseryman Publishing Co., Chicago, IL. 1 p.

Grabowski, J.M. 2009. [Online] *Muhlenbergia sericea* Sea Islands Germplasm Morning Mist Germplasm. Amer. Nurseryman, 209:12 American Nurseryman Publishing Co., Chicago, IL. 1 p.

Grabowski, J.M. 2009. *Sorghastrum secundum* Osceola Blue Germplasm. Amer. Nurseryman, 209:12 American Nurseryman Publishing Co., Chicago, IL. 1 p.

Williams, M.J., M.A. Gonter, C.M. Sheahan. 2009. Winter 2009 PMC Impact. Brooksville PMC, Brooksville, FL. 2 p.

Grabowski, J.M. 2009 Utilizing Bioengineering Techniques to Restore Woody Vegetation on Florida Phosphate Minelands. 24th Annual Regional Phosphate Conference. 14-15 Oct. 2009. Lakeland, FL. Society for Mining, Metallurgy & Exploration, Florida Section. 1 p.

Grabowski, J.M. 2010. Native Seed Production in the Southeastern U.S. Proceedings of the National Native Seed Conference, 17-21 May 2010. Snowbird, UT. Institute for Applied Ecology, Corvallis, OR. 1 p.

Williams, M.J. 2010. Plant Materials Fact Sheet No. 4. Developing Planting Mixtures for Pollinator Habitats. USDA, NRCS, FL FOTG. 15 p.

Williams, M.J. 2010. Pollinator Mixture Work Sheet. USDA, NRCS FL FOTG. 5 p.

Presentations:

Grabowski, J.M. 2009 Utilizing Bioengineering Techniques to Restore Woody Vegetation on Florida Phosphate Minelands. 24th Annual Regional Phosphate Conference. 14 Oct. 2009. Lakeland, FL.

Grabowski, J.M. 2010 2010 Annual Meeting of the Florida Exotic Pest Plant Council. Setup and staff FL PMC Booth. 5-8 Apr. 2010, Crystal River, FL.

PMC Staff and PMS. 2010. Earth Day/NRCS 75th Anniversary Celebration, 20 Apr. 2010, Brooksville, FL.

Grabowski, J.M. 2010. Native Seed Production in the Southeastern U.S. National Native Seed Conference, 20 May 2010. Snowbird, UT.

Grabowski, J.M. 2010. Brooksville Plant Materials Center Overview – Sumter County Master Gardeners. 11 Aug. 2010, Brooksville, FL.

Grabowski, J.M. 2010. Brooksville Plant Materials Center Activities – Florida All Personnel Meeting, 17 Aug. 2010, Cocoa Beach, FL.

Grabowski, J.M. 2010. Invasive Plants, Invasive Species Breakout Session – Florida All Personnel Meeting, 18 Aug. 2010, Cocoa Beach, FL.

Gonter, M.A., and J.M. Grabowski. 2010 Florida Nursery and Allied Trades Show. Setup and staff FL PMC Booth. 22-25 Sept, 2010, Orlando, FL.

Williams, M.J., 2010. Invasive Animals, Invasive Species Breakout Session – Florida All Personnel Meeting, 18 Aug. 2010, Cocoa Beach, FL.

Williams, M.J. 2010. Overview of native and introduced plant species. Livestock-Forage and Natural Resources In-Service Training. 16-17 Sep. 2010. Univ. Florida, NFREC, Marianna, FL.