

2011

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 52 acres of cultivated fields and 126 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

- New Plant Release 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 by commercial growers. We also provide technical assistance in plant production and management methodologies. Evaluation and use of native plant materials is emphasized.

Purple Haze Germplasm Hairawn Muhly



Hairawn muhly (*Muhlenbergia capillaris*) is a native, perennial grass that can be found 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, mainly pink to purplish flowers. This grass is 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 and have foliar disease issues late in the season that reduce their visual appeal.

FLPMC-P-0201-UR was a cooperative study with researchers at the University of Florida, North Florida Research and Education Center in Quincy to select one of the hairawn muhly accessions rated as having the best ornamental characteristics during previous testing at PMC to release for ornamental use. The superior accession at both sites was 9059929 (left, top). It has an upright habit and the foliage stayed green and unblemished throughout the growing season (right). The name that has been chosen for this tested-class germplasm release is **Purple Haze**. It will join the white-flowered Morning Mist Germplasm as superior selections of hairawn muhly released by the Brooksville PMC for ornamental use in Florida.



Germplasm Development

FLPMC-P-0904-UR Evaluation of powderpuff (*Mimosa strigillosa*): Powderpuff or herbaceous mimosa is a low-growing, spreading legume with clusters of tubular pink to purplish flowers (right). It is recommended for use as an ornamental ground cover in Florida. However, powderpuff is also being touted as a plant with excellent potential for understory restoration in pineland ecosystems and to prevent soil erosion on sensitive or critical areas. The East Texas PMC in Nacogdoches released [Crockett Germplasm](#) for restoration use; however, there has been no evaluation and selection of improved powderpuff germplasms for use in Florida.



The PMC, with assistance from some other Florida NRCS personnel, began assembling accessions of powderpuff in 2009. We were initially interested in making seed collections. However, because this species is most often found along roadsides and in other areas that are regularly

mowed, plants seldom have the opportunity to set seed pods. Therefore, we mainly collected vegetative plant material, which we held in pots in our shadehouse (above). We assembled 70 accessions from 26 counties in Florida. We also obtained a powderpuff plant from a local native seed nursery and seed of Crockett to use as standards of comparison.



Initial evaluation plots were planted in the summer of 2011. Survival of the plants was good in the shadehouse. However, three of the accessions did not have a sufficient number of plants for our planting scheme, so a total of 69 accessions were included in the

evaluation, 67 of our collections and the two standards.

Florida is a state that has a great deal of ecological diversity and we wanted to allow for this in our selection process. So, we are cooperating with University of Florida personnel to use two of their research centers as additional evaluation sites. The Brooksville PMC site is characteristic of the sandhills of central Florida. The northernmost site is at Quincy; this area is fairly representative of the coastal plain of the southeastern US. The southern site is at Ona (above, right), in pine flatwoods, with seasonally saturated soils. Initial survival of the plants has been good at all three sites, even with a drought at Quincy. Collection of plant evaluation data will begin in 2012.

Additional Germplasm Studies

FLPMC-P-9602-RA Evaluation of Lopsided Indiangrass (*Sorghastrum secundum*): Seed sources of lopsided Indiangrass, an important component of Florida rangelands, is limited. A 21 accession polycross has been made and seed is being increased.

FLPMC-P9605-RA Evaluation of Eastern Gamagrass (*Tripsacum dactyloides*): Florida ecotypes of eastern gamagrass are needed for pasture and rangeland restoration. Breeder seed of a superior accession is being increased at two locations in Florida.

FLPMC-P-0001-RA Evaluation of Native Switchgrass (*Panicum virgatum*): We are looking for better seed producing types of Florida-adapted switchgrass. Plant increase and ploidy level (number of chromosome pairs) determination continued in 2011.

FLPMC-P-0108-RA Advanced Evaluation of Hairawn Muhly (*Muhlenbergia capillaris*) Seeded Types: Seed sources of hairawn muhly for re-vegetation of Florida rangelands are needed. The top-rated accessions are being increased for planting in crossing block in 2012.

FLPMC-P-0501-PA Evaluation of Slender Woodoats (*Chasmanthium laxum*): Adapted native cool-season forages are largely unavailable in Florida. Evaluations of superior slender woodoats accessions are continuing.

FLPMC-P-0601-PA Rhizoma Perennial Peanut (*Arachis glabrata*) Cultivar Development: Rhizoma perennial peanut adapted to wetter sites are needed. New germplasm was increased in 2010 and distributed to our University of Florida cooperator.

FLPMC-P-0901-BF Development of Elephantgrass (*Pennisetum purpureum*) Germplasm for Bioenergy Production: Higher producing elephantgrass cultivars are needed for biofuel production. Crossing blocks were established and pollen collected in 2010.

FLPMC-P-0905-WQ Evaluation of Pine Barren Goldenrod (*Solidago fistulosa*): Pine barren goldenrod is a native forb that could be used for wetland restoration. Seed collections assembled in 2009 will be planted for initial evaluation at three locations in Florida in 2013.

FLPMC-P-0906-WO Evaluation of Coastal Plain Chaffhead (*Carphephorus corymbosus*): Coastal plain chaffhead is a forb that could be used for restoration of pine and scrublands. Seed collections assembled in 2009 and 2010 will be planted in initial evaluation blocks at three locations in Florida in 2012.

FLPMC-P-0907-WO Evaluation of Narrowleaf Silkgrass (*Pityopsis graminifolia*): Narrowleaf silkgrass is another forb that could be used for restoration of pine and scrub lands. Seed collections assembled in 2009 and 2010 will be planted in initial evaluation blocks at three locations in Florida in 2012.

FLPMC-P-0907-BF Diploid Lines of Eastern Gamagrass to Produce Perennial Corn Lines: The PMC is providing plant materials to a plant breeder at Cornell University to use in this project seeking to produce perennial corn germplasms.

Technology Development

FLPMC-T-1004-UR Survey of Sustainable Seed Harvesting Conditioning and Storage Methods for Florida *Liatris*: Seed of *Liatris* spp. (a.k.a, blazing star), like many members of the Aster family, have a modified calyx or pappus that aids with dispersal. This pappus consists of a ring of stiff, hair-like bristles (below) that can cause the seeds to clump together and make mechanical sowing operations difficult.

[The Florida Native Plant Society](#) provided funding to the PMC to test methods to effectively remove or decrease the length of the pappus bristles to make it easier to plant and improve marketability of *Liatris* seed produced in the state.



We started with more or less intact seed stalks of 16 accessions of six species of *Liatris*. Three accessions were donated by Ernst Conservation Seeds, Meadville, PA, and the rest were collected by PMC personnel from 11 Florida counties in the fall of 2010. The seed conditioning treatments that we used were: 1) hand stripping seed from the stalks with no further processing, which acted as our control treatment; 2) hammer milling the whole stalks at a slow



speed with a large hole screen to gently remove the seed from the stalks to simulate harvesting with a flail-vac (Left); 3) cleaning simulated flail-vac seeds with an air screen cleaner; and 4) further treating air-screened seed by simulated de-bearding (removing the pappus bristles) with the hammer mill run at a faster speed and using a screen with smaller openings than that used for treatment 2 and further air screening (below).

Initial germination tests were conducted on each of the seed lots and eight lots were eliminated due to insufficient quantities or other concerns. Samples of the treatments for each of the remaining eight accessions were placed in three different storage



conditions: 1) room temperature; 2) in a seed cooler with controlled temperatures and humidity levels; and 3) in a freezer. Germination tests (bottom, right) are being conducted on each sample at 3, 6, 9, and 12 months of storage to determine if the seed treatments and storage conditions interact to effect germination.

Additional Technology Studies

FLPMC-T-0903-WL Native Seeding Rate for Hillsborough County: The PMC, working with land management personnel from Hillsborough County, planted three seeding rates of six grasses in February 2010 to find appropriate rates for wildlife habitat plantings. Establishment was poor and this was attributed to issues with the seed drill. Another set of plots will be planted in 2012.

FLPMC-T-1001-TE Effect of Greenhouse Propagation Method and Plant Out Treatments on the Establishment of Sweetgrass (*Muhlenbergia sericea*): Three container sizes with varying depths and volumes were used to propagate [Sea Islands germplasm sweetgrass](#) plants in the greenhouse. These were out planted at three sites, two coastal and one interior, on Daufuskie Island, South Carolina. Evaluations were conducted quarterly during 2011.

FLPMC-T-1002-RA Forage Quality Sampling: Two types of samples, leaves only and the entire stem, of two eastern gamagrass accessions were harvested every other month starting in April 2011. These will be submitted to Dairy One for forage quality testing when sampling is completed in 2012.

FLPMC-T-1003-WL Value of Native Perennial Plants for Pollinator Habitat: The PMC is working with the [Xerces Society for Invertebrate Conservation](#) to document flowering periods of six native trees and shrubs and seven native wildflowers that have good potential for use by pollinators of agricultural crops. The PMC planted the plants in the summer of 2010 and flowering evaluations began in the spring of 2011.

FLPMC-T-1101-IN Evaluation of Native Species for Revegetation of Cogongrass-infested Sites Treated with Imazapyr Herbicide: The PMC is providing technical assistance to researchers at Florida A&M University in this research looking at a combination of herbicides and native grasses to control the spread of cogongrass (*Imperata cylindrica*). In 2011, the PMC grew 3600 plugs each of three of the grasses being used in this study.

FLPMC-T-1103-WL Seed Increase of Native Milkweed (*Asclepias*) Species to Provide Habitat for Monarch Butterflies in their Spring and Summer Breeding Sites: The PMC is again working with the [Xerces Society](#) to increase seed of two milkweed species to provide habitat for Monarch larvae. Seed was collected by a local contractor in 2011; plants will be planted in the field in 2012 for seed increase after greenhouse testing to determine appropriate germination media is completed.



Major Infrastructure Changes



Longleaf pine restoration (rear) and new production field (foreground) with cereal rye cover crop



Installation of gravity separator

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

PMC information is available online at:
<http://www.fl.nrcs.usda.gov> 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:

Grabowski, J.M., Gonter, M.A., and Williams, M.J. 2010. [Native Grass Selections for Landscape Use in Florida](#). Proceedings of the Seventh Eastern Native Grass Symposium, 5-8 Oct. 2010. Knoxville, TN, 1 p.

Williams, M.J., C.M. Sheahan, and J.M. Grabowski. 2010. [Winter 2010 PMC Impact](#). Brooksville Plant Materials Center. Brooksville, FL. 2 p.

Grabowski, J.M., M.J. Williams, and C.M. Sheahan. 2011. [2010 Brooksville Plant Materials Center Progress Report of Activities](#). Brooksville Plant Materials Center. Brooksville, FL. 4 p.

Sheahan, C.M., J. Grabowski, and M.J. Williams. 2011. [Plant Guide for Muhlenberg Maidencane \(*Amphicarpum muehlenbergianum*\)](#). Brooksville Plant Materials Center. Brooksville, FL. 3 p.

Sheahan, C.M. and J.M. Grabowski. 2011. [Summer 2011 PMC Impact](#). Brooksville Plant Materials Center. Brooksville, FL. 2 p.

Williams, M.J. and J.L. Douglas. 2011. PM [Technical Note No. 4 - Planting and Managing Giant Miscanthus as a Biomass Crop](#). 30 p.

Presentations:

Grabowski, J.M. 2010 Native Grass Selections for Landscape Use in Florida (Poster). The Seventh Eastern Native Grass Symposium. 5-8 Oct. 2010. Knoxville, TN.

Gonter, M.A., and J.M. Grabowski. 2011 Tampa Bay Wholesale Growers Spring Expo. Setup and staff FL PMC Booth. 25-26 Feb. 2011. Tampa, FL.

Williams, M.J. 2011. How to Use the Florida Pollinator Seed Mixture Calculator (Video Conference Training). 7 April 2011.

PMC Staff and M.J. Williams. 2011. Earth Day Celebration. 20 April 2011. Brooksville, FL. (see story below)

Williams, M.J. and J.M. Grabowski. 2011. Wildlife Management Workshop Plant ID Walk, 15 Sept. 2011. Walton Co, FL and Covington Co., AL.

Gonter, M.A., and J.M. Grabowski. 2011 Landscape Show Florida Nursery and Landscape Growers Association. Setup and staff FL PMC Booth. 29 Sept.-1 Oct. 2011, Orlando, FL.

Earth Day 2011



Carlos Suarez welcoming the Earth Day attendees

Greg Hendricks (left) with two former PMC Managers, the late Clarence Maura, Jr. (center) and Bob Glennon (right)



Harvesting the People's Garden