

# 2013

## 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. 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

Switchgrass Evaluation P. 1

Soil Health Study P. 2

Other Active Studies P. 2

Publications and Presentations P. 3

## 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.

## Advanced Evaluation of Florida Switchgrass Lines

Initial evaluation of switchgrass (*Panicum virgatum*) accessions collected in Florida began in 2001. We collected data on vegetative growth and flowering, however, the breeding program could not proceed until we were able to determine ploidy levels of the accessions. In 2011, we received assistance from Dr. Denise Costich, at Cornell University to confirm that we had 26 tetraploid (4x) and 38 octoploid (8x) accessions remaining in our assembly. Since that time we have been increasing plants for advanced evaluation (right, top).



Switchgrass accessions growing in the shadehouse at the PMC

This August, with the cooperation of Dr. Ann Blount, forage breeder at the University of Florida, we planted separate 4x and 8x breeding blocks at the [North Florida Research and Education Center](#) (NFREC) in Marianna (right, bottom). We hope to plant an additional set of blocks at a research station in a different region of the state in 2014.



PMC and NFREC staff planting switchgrass blocks at Marianna

As we carry forward with our breeding program, we will be selecting for accessions with high seed production and germination percentages and early emergence.



United States  
Department of  
Agriculture

USDA-Natural Resources Conservation Service Brooksville Plant Materials Center  
14119 Broad Street, Brooksville, FL 34601, Tele : (352)796-9600, Fax : (352)799-7305

## Effect of Planting Mixed Cover Crop Species on Soil Health

In last year's edition, we reported that the Brooksville PMC was one of seven PMCs involved in a multi-center study looking at the effect of cover crop mixes on soil health quality parameters. The cover crops used at the PMCs varied based on local environmental restrictions, but those being used at this center are two small grains, cereal rye (*Secale cereale*) and oats (*Avena sativa*); two legumes, crimson clover (*Trifolium incarnatum*) and hairy vetch (*Vicia villosa*); and two cool-season forbs, tillage radish (*Raphanus sativus*), and rape (*Brassica napus*). These species were planted in three different mixtures at rates of 20, 40, and 60 seeds per square foot. The cover crops were planted the last week of November 2012 (below, right) and terminated the first week April 2013.

Planting small grains in the plots using a Truax no-till drill



Cover crop growth 120 days after planting

The plot pictured above was planted with the 40 seeds per square foot rate of cereal rye, crimson clover, hairy vetch, and tillage radish. The PMC irrigation system was not functioning during this period, so germination and subsequent nodulation and growth of the legumes was poor. However, growth of the cereal rye and tillage radish was not adversely affected.

Comprehensive soil testing was conducted on each plot prior to and after cropping to determine the effect of the cover crops on soil



Taking soil samples to determine bulk density

health. Bulk density testing (left) and penetrometer (<http://www.dickey-john.com/product/soil-compaction-tester/>) readings of soil resistance were taken to detect the presence of restrictive layers that might limit the growth of crop roots. Soil samples were analyzed for soil fertility and biological activity by Dr. Rick Haney with the USDA, Agricultural Research Service at Temple, TX to provide an estimation of the functional status of the microorganisms in the soil. And, the NRCS, Soil Survey Center in Lincoln, NE conducted testing to measure the physical and chemical components of the soil that affect crop growth. PMC staff took monthly

ratings of stands of both the cover crops and naturally occurring weeds and the biomass of each type of plant was determined prior to termination.

In late April, a commodity crop of field corn (*Zea mays*) was planted in all plots. The corn was allowed to grow to maturity and then the ears were harvested from each cover crop treatment plot. The kernels were shelled to determine yield (right). Yields in all plots were poor due to low nitrogen levels in the soil.



Shelling ears of corn to determine grain yield

If you would like to learn more about this study, a webinar was given by representatives from the various PMCs that presented preliminary first year results and observations from this study. It can be accessed at <http://www.conservationwebinars.net/webinars/pmc-soil-health-study-year1/?searchterm=None>.

## Germplasm Development Studies

**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. Florida ecotypes are readily available as potted plants, but seed is very limited. Accessions were planted at three locations in the state and rated for survival and spread in 2012 and flowering and seed production in 2013. Data will be analyzed and selections made for planting in breeder blocks in 2014.

**FLPMC-P-9605-RA Evaluation of Eastern Gamagrass (*Tripsacum dactyloides*):** Currently available cultivars of eastern gamagrass are poorly suited for use in Florida. Accession 9059266 has been selected for joint release by the PMC and the University of Florida; seed increase fields of this accession are established in Brooksville and Marianna. Further yield and forage quality data from at least two locations in Florida is needed to support this release, so a study to gather this information is planned for 2014.

## Technology Development Studies

**FLPMC-T-1004-UR Survey of Sustainable Seed Harvesting Conditioning and Storage Methods for Florida *Liatris*:** [The Florida Native Plant Society](http://www.floridaplanet.org/) provided funding to the PMC to test methods to remove the pappus bristles to improve marketability of *Liatris* seed produced in the state. The effect of four levels of pappus removal along with three storage temperatures on the viability of seed at 3, 6, 9, and 12 months storage was determined in 2012. Results were presentation at the 2013 FNPS annual conference and a technical publication is to be developed in 2014.

**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 working with the [Xerces Society for Invertebrate Conservation](http://www.xerces.org/) to increase seed of two milkweed species to provide habitat for Monarch larvae. Seedlings were planted in the field in 2012, but minimal seed was produced in 2013.



United States  
Department of  
Agriculture

USDA-Natural Resources Conservation Service Brooksville Plant Materials Center  
14119 Broad Street, Brooksville, FL 34601, Tele : (352)796-9600, Fax : (352)799-7305

## Major Infrastructure Changes



Approximately 30 trees were removed from the PMC office compound in 2013. These trees were mainly laurel oaks, *Quercus laurifolia*, which is a fairly short-lived tree in Florida. All the trees that were cut were suffering from heart rot, as shown in the bottom photograph and were in danger of falling on structures and power lines.

## Brooksville PMC Staff

Janet Grabowski, Manager  
Mary Anne Gonter, Biological Science Technician (Plants)  
Jonathan Connolly, Gardner  
Benjamin Sperry, Biological Aid, WAE

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

**Russell Morgan**  
Florida State Conservationist

**Henry Burkwhat**  
Florida State Resource Conservationist

**M.J. (Mimi) Williams**  
Plant Materials Specialist

## Publications:

Grabowski, J.M., M.J. Williams, T. Socha, D. Findlay, and M.A. Gonter. 2012. [Effect of Container Size and Fertilization on Field Establishment of Sweetgrass Plants](#). 8<sup>th</sup> Eastern Native Grass Symposium, Virginia Tech. Univ. Publisher, Charlottesville, VA, 1-4 Oct. 2012. 6 p.

Williams, M.J.. 2012. [2012 Brooksville PMC Progress Report of Activities](#). Brooksville PMC, Brooksville, FL. December 2012.3 p.

Grabowski, J., and M.J. Williams. 2013. [Effect of Processing and Storage Treatments on Germination of Florida \*Liatris\* Seed](#). Florida Native Plant Society, 2013 Annual Conference, Jacksonville, FL , 17-19 May 2012. 1 p.

## Presentations:

Grabowski, J.M. 2012. Effect of Container Size on Field Establishment of Sweetgrass Plants. 8<sup>th</sup> Eastern Native Grass Symposium, 4 Oct. 2012, Charlottesville, VA.

Grabowski, J.M. 2012. Farm Equipment Safety and Demonstration, NRCS Conservation Planning Course, 27 Nov. 2012, Brooksville , FL.

Gonter, M.A. 2013. PMC Information Booth, Challenger K8 School Earth Day Event. 22 Mar. 2013, Spring Hill, FL.

Grabowski, J.M. 2013. PMC Information Booth, 2013 Nature Coast Birding and Wildlife Festival, 23 Mar. 2013. Chinsegut Wildlife and Educ. Area, Brooksville, FL

Gonter, M.A.. 2013. ATV Training (2 sessions). 9 and 10 Apr. 2013. Brooksville, FL.

Grabowski, J.M. 2013. Effect of Process and Storage Treatments on germination of Florida *Liatris* Seed. 2013. Annual Conference, Florida Native Plant Society, 17 May 2013, Jacksonville, FL

Williams, M.J. 2012. Florida Forage Options: Challenges and Opportunities. 5<sup>th</sup> National GLCI Conference, 9-12 Dec. 2012, Orlando, FL

## Earth Day 2013



The 2013 NRCS Earth Day Celebration at the PMC was held on May 10<sup>th</sup>. Although the traditional date to celebrate Earth Day is April 22, a later date was chosen to avoid the dates scheduled for state-mandated testing in the schools. It was probably the most successful event to date because we had a larger number of students that were able to attend. The photos show several activities that went on throughout the day.



United States  
Department of  
Agriculture

**USDA-Natural Resources Conservation Service Brooksville Plant Materials Center**  
14119 Broad Street, Brooksville, FL 34601, Tele : (352)796-9600, Fax : (352)799-7305

USDA is an equal opportunity provider and employer.