2012 Progress Report of Activities

United States Department of Agriculture
Natural Resources Conservation Service

Golden Meadow Plant Materials Center

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This report highlights the major activities at the Golden Meadow Plant Materials Center during calendar year 2012. For more detailed information, contact the Golden Meadow PMC Manager at 985.475.5280 or the Louisiana Plant Materials Specialist at 318.473.7761.

New Release Cajun Sunrise Germplasm Ashy Sunflower

The collection, assembly, evaluation and release of new plant varieties are integral parts of the Louisiana Native Plant Initiative (LNPI). The Golden Meadow Plant Materials Center (PMC) has taken the lead in developing the protocols and procedures necessary for the collection, evaluation and seed increase of native species targeted through LNPI. Currently, initial seed increase procedures of Ashy Sunflower (*Helianthus mollis*) and several other native species are currently being developed that will guide cooperators at the production locations.

The PMC has taken the lead in developing the protocol and procedures necessary for the initial seed increase of Ashy Sunflower in addition to several other native species associated with LNPI. Procedures are currently being developed and are dependent upon the inventory that our cooperators possess. The Center will soon have the standards needed for initial seed increase of the respective species to keep all of our partners in cognition about the procedures needed to carry out this task.

Cajun Sunrise Germplasm is a selected plant material cooperatively released in 2012 with the Golden Meadow PMC, East Texas PMC and the Louisiana Native Plant Initiative (LNPI) partners. Cajun Sunrise Germplasm will provide a commercially available ecotype primarily for the use of gulf coast prairie, and other areas across the southern U.S. where it historically persists. Cajun Sunrise Germplasm is beneficial for vegetative restoration, wildlife food and cover and pollinator attraction.

As part of the Louisiana Native Plant Initiative (LNPI) effort to identify, collect and release species beneficial towards the restoration and conservation of critical habitats in Louisiana, Cajun Sunrise Germplasm has the potential to address the NRCS resource concerns of soil, water, plants, humans and animals. This species can be used for soil erosion, prairie wetland and wildlife habitat conservation and restoration plantings, and for cropland and riparian buffers. Ashy sunflower is a great pollinator species and attracts numerous species of butterflies and bees. Cajun Sunrise Germplasm has the potential for use on roadside plantings and the ornamental plant industry.

Cajun Sunrise Germplasm is a seed release for commercial nursery production. Eligible growers may obtain this Germplasm, depending upon availability, by contacting the USDA-NRCS Golden Meadow Plant Materials Center.

CURRENT STUDIES

Evaluation of Gulf Cordgrass (*Spartina spartinae)*

Gulf cordgrass *(Spartina spartinae*) is being evaluated for the potential release of a named cultivar. Seeds harvested from 32 accessions have been germinated and tested for plant performance relative to its range of adaptation, soils and other environmental factors. Seed has been collected and stored at room temperature for approximately 30 days.

One hundred twenty eight seed samples of 200 seeds each were subdivided into four replications of fifty seeds each and sown on moistened blotter paper inside standard sized petri dishes. The petri dishes were then placed in the germinator in a completely randomized design (CRD). Germinator was set at 27°C and germination counts were made every 7, 14, 21 and 28 days. After 28 days in the germinator, seed was moistened and placed in refrigerator temperature 38-41°C for 2 week stratification and then removed and placed back in germinator for 14 days. The germination test was repeated at 3, 6 and 12 month intervals following initial test. Data collection is being conducted for the 12 month interval and will continue through February 2013.

Preliminary results reveal that several of the same accessions have been repeating themselves at the 1, 3, 6 and 12 month test cycles. Other noticeable trends include that the peak of germination occurred the 14th day data was recorded. The final germination test began in late December 2012 and data collected will be analyzed using Statistix 8 software.

Louisiana Native Plant Initiative

The Louisiana Native Plant Initiative (LNPI) was established as a partnership effort to collect, preserve, increase and study native plants in the state. Seeds and plants of native species developed by the partnership will be released to commercial growers for production, and eventual sale to the public. Currently, LNPI is comprised of 22 federal, state and non-governmental organization partners. Over the past six years five evaluation and production locations including the USDA-NRCS Plant Materials Centers at Galliano, LA (GMPMC), Nacogdoches, TX (ETPMC), Nicholls State University Farm at Thibodaux, LA, McNeese State University Farm at Lake Charles, LA, and University of Louisiana at Lafayette - Center for Ecology and Environmental Technology (CEET) have been established and are working together to select and increase seeds and plants of Louisiana ecotypes. Since its inception, the LNPI partnership has collected over 60 individual species and over 400 individual collections of native plants from critical habitats within Louisiana.

In 2012, many different species of native forbs and grasses including Indiangrass and Eastern gammagrass are being evaluated for potential future releases through LNPI. Seed from the Indiangrass (*Sorghastrum nutans*)

breeders block at the Nicholls State University farm was collected in 2011 and germinated at the PMC in 2012. Germination ranged from 60 to 80 percent, and then plants were propagated in the greenhouses here at the Center. The plants were then transplanted back to the Nicholls farm where 23 different accessions were planted as a seed increase block consisting of approximately 5,500 Indiangrass plugs and planted on raised beds at the farm.

The same process (seed increase block) was repeated using Eastern gammagrass (*Tripsacum dactyloides)* for the same purposes of seed production. Over 2,000 plugs of Eastern gammagrass were planted on raised beds using a mechanical vegetable planter nearby the Indiangrass plot.

PARTNERSHIPS WITH NRCS AND OTHER AGENCIES

Screening for Tolerance to Periodic Flooding for Cane Grown for Sucrose and Bioenergy

The PMC currently is assisting the USDA Sugarcane Research Unit, Houma, LA with new and improved cultural practices for sustainable sugarcane production and environmental protection. To prevent negative impacts on food production, energy crops in LA will have to be grown on marginal lands that in some cases may be prone to flooding. Due to the PMC's capability to flood and drain plots mechanically, a study was initiated to compare the flood tolerance of energycane and sugarcane. During a three year crop cycle, field plots of two high fiber/low sugar energycane clones, L 79-1002 and Ho 01-12, and two low fiber/high sugar sugarcane clones, HoCP 96-540 and L 99-226, were flooded monthly for seven days and were compared to plots that were adequately drained. Energycane tolerated the flooded conditions better than sugarcane when biomass and sucrose yields were compared between treatments. To sustainably produce sugar under periodic flooding, an extensive screening of the collection of parental material being used in the Louisiana sugarcane varietal development program is needed to determine if genes for flood tolerance exists locally or if other sources of these genes are needed. Otherwise exotic sugarcane clones or wild relatives may need to be utilized to develop flood tolerant sugarcanes for sugar production. In Louisiana were sugar production is not economically sustainable with existing clones, an alternative to development of flood tolerant sugarcane would be to utilize energycanes for production of cellulosic biomass in areas prone to flooded conditions because existing energycane clones are tolerant to periodic flooding.

NRCS Water Resources Vegetative Planting Trials

The PMC with the cooperation of NRCS Water Resources staff and the Louisiana Department of Wildlife and Fisheries conducted a planting trial on Marsh Island located approximately 10 miles south of Iberia Parish, LA. The trial consisted of Pelican Germplasm black mangrove (*Avicennia germinans)* planted randomly across the island to test for adaptability and how herbivory has an effect on establishment for future plantings. Black mangrove serves as sediment stabilizer, contributes leaf biomass to the marine food chain and detridal cycle, and provides habitat for numerous biological organisms. It is also an important vegetative component for pelican nesting habitat along Louisiana barrier islands. This demonstration will aid in coastal re-vegetation efforts put forth by the The Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) in years to come.

2012 ACTIVITIES

Assistance to State Universities

Garret Thomassie and Curt J. Riche' at the PMC assisted Yi Wang, graduate student at Louisiana State University (LSU) by collecting Smooth cordgrass (*Spartina alterniflora)* and Gulf cordgrass (*Spartina spartinae)* for graduate research germination studies. Assistance for the coastal research studies needed by these graduate students and professors will continuously increase and be provided by the Golden Meadow Plant Materials Center.

Two other scientists from LSU came out to the PMC and volunteered their time to collect Bitter Panicum (*Panicum amarum*) stems to be used by the LSU Coastal Roots Program. Azure Bevington, a research associate with Coastal Roots and Carey Gelpi, a post-doctoral researcher in the School of the Coast and Environment collected a total of 400 stems. The stems will be divided up and delivered to participating schools where they will be cut and propagated by the students. Each Coastal Roots school has a nursery on site where they grow their own seedlings for planting at a designated restoration site. There are currently 41 schools in the program and 8 of these schools are growing bitter panicum collected from the PMC. The other schools are growing a variety of native swamp and bottomland hardwood trees, as well as coastal prairie plants. The cuttings will be tended by the students in the nurseries for about 1 year, and thereafter, the school groups will take them to their restoration partner site where they will be planted. The bitter panicum grown by these schools will be planted on restored dune habitat at Grand Isle State Park, in Jefferson Parish and Holly Beach, in Cameron Parish.

Golden Meadow PMC Technical Advisory Committee Meeting

Thursday, March 29, 2012, a diverse group of individuals were invited to make recommendations on where the center needs to focus its attention in the future with regards to plant research and technology. There were many different suggestions from the groups and some included plant species that would benefit wildlife, increased coastal plant species with emphasis on saline tolerance, native plant species for coastal prairies and submersed aquatic vegetation research and development. In general, all attendees agreed that more information on plant research and technology should be made electronically available through internet websites and videos in order to share plant information of successes and/or failures.

South Lafourche Levee District Erosion Control Matting Demonstration

Earlier this summer the South Lafourche Levee District called upon the PMC for assistance in stabilizing grass seed recently sown along the hurricane levee system. The PMC was able to provide erosion control matting to demonstrate its use protecting approximately 1200 feet of the crown of the levee system. The matting was highly effective allowing seed to stay in place for improved seed germination. The before and after pictures on the right depict the benefits the matting provided to the crowns of the levee system, where seed would have otherwise been displaced by wind and/or water. Further field trials will be conducted in the future to continue the studies initial multi conservation objectives.

OUTREACH

Arbor Day at Local Elementary Schools and Libraries

The PMC became actively involved with local students and teachers by providing native tree species to nearby schools. Curt J. Riche' and Alexis Luke visited schools and distributed native trees to members of the classes in observance of Arbor Day 2012. The students were provided essential information in order to successfully plant their trees. Presentations were administered and consisted of ample information with regards to plants including the history of Arbor Day, why plants are important to our planet, fun plant facts, plant identification and finally, careers with plants. Curt J. Riche' of the PMC was invited as a spokesperson for career day at nearby schools. We were able to share much information about NRCS with hundreds of students and teachers to inform them on how NRCS "Helps People Help The Land", by combating issues inevitably constraining our precious and numerous natural resources. This effort served not only as an educational tool to adolescents about plants, but also as an astounding outreach effort to aware the public what the NRCS Plant Materials Program is about.

Additionally, the South Lafourche Branch Library and the PMC hosted an Arbor Day 2012 tree give away. Over 100 native Louisiana tree seedlings consisting of American elm and Live Oak were grown and maintained at the center and donated to local libraries. The libraries distributed the trees to area children who participated in story time on the morning of April 17, 2012.

Grand Isle Tree Demonstration

PMC staff set up a demonstration for fourth graders at Grand Isle School and provided hands on propagation techniques for successful tree establishment. The 4th grade students collected native persimmon, honey locust and live oak seed the previous fall. The seed was propagated at the PMC and used for the tree propagation training held at the end of the school year. Teachers and students were given a tree of choice and a fact sheet on how to care for each respective species.

Voice of the Wetlands

The annual Voice of the Wetlands Festival held in Houma, LA celebrated and promoted the culture, music and people of Southern Louisiana. The festival serves as an educational forum about the resource concerns and values of Louisiana's wetlands. Garret Thomassie and Curt Riche' served as representatives for NRCS's Plant Materials Center to answer questions and distribute information to the public regarding a variety of effective materials and methods the center uses to protect and restore the coast of Louisiana vegetatively. A booth consisting of the PMC's vegetative releases and publications were on display. The NRCS booth received approximately 1300 visitors over the entire weekend.

La Fête D'Ecologie Festival

The PMC set up a plant release display at this year's La Fête D'Ecologie Festival. Hundreds of visitors stopped by the display and received informational brochures about NRCS programs and detailed information about the PMC's release plants. Children visiting the booth enjoyed participating in several conservation friendly games and learned how to preserve the Earth's natural resources.

La Fête D'Ecologie is an annual, one-day festival with distinct Louisiana flair. This festival is a celebration of the amazing environment, rich history, and the unique blend of cultures found in the Barataria-Terrebonne National Estuary. This national estuary is the 4.2 million acres between the Atchafalaya and Mississippi Rivers (including the City of Morgan City) and, much like its people, is truly unique. It is also the most rapidly disappearing area on earth and is one of the world's richest natural resources providing fisheries, rich farmland and oil and gas resources to the nation.

Coastal Native American Workshop

NRCS and other agencies of USDA gathered together at the PMC to present educational and outreach information to local Native American Tribes. Approximately 45 attendees were present and Natural Resources Conservation Service, Farm Service Agency, Rural Development, National Agricultural Statistics Service and Bayouland Resource Conservation and Development representatives present to present information and answer questions regarding how each agency can provide the tribes respectful assistance.

Chitimacha Tribal Assistance

Conservation of an ancient cultural tradition motivated the Chitimacha Tribe of Louisiana in their request for PMC assistance. They are the oldest recognized and indigenous tribe in Louisiana. They have used river cane (*Arundinaria gigantea*) to construct woven baskets and mats since the era of the Mississippi mound-building culture, a tradition dating back to the Middle Ages.

Since 2001, the PMC has been working with tribal representatives on propagation, establishment, culture and harvest of river cane (also known as wild cane, giant cane and giant bamboo). The conservation problem in this case is that the Chitimacha's craft is threatened by a shortage of river cane populations. Additionally, there were no river cane populations actually growing on the reservation, which has diminished to ¼ of its established area in the mid-1800s.

The PMC has continued to work with the Chitimacha tribe to increase river cane populations; notable especially as these are now on tribal land. Continuing efforts in order to take the guesswork out of the "where, when and how" will be put forth by the PMC in years to come to insure the tribe will have adequate supplies of river cane for future generations to come.

United Houma Nation Assists in Caminada Seaoat Propagation

United Houma Nation Youth Council Members and youth of the United Houma Nation visited the PMC to assist in the propagation of Caminada Germplasm seaoats *(Uniola paniculata)*. The Center appreciates the help it receives from numerous volunteer groups that assist with plant propagation. These plants will be available for eligible nursery growers in the summer of 2013.

The United Houma Nation (UHN) is a state recognized tribe of approximately 17,000 tribal citizens residing within a six-parish (county) service area encompassing 4,570 square miles. The six parishes, Terrebonne, Lafourche, Jefferson, St. Mary, St. Bernard and Plaquemines parishes are located along the southeastern coast of Louisiana.

PUBLICATIONS 2012

- 2011 Annual Technical Report
- Marsh Notes Spring Issue 2012
- Marsh Notes Summer Issue 2012
- Marsh Notes Fall Issue 2012
- Marsh Notes Winter Issue 2012
- Plant Guide for Cajun Sunrise Germplasm ashy sunflower
- Release Brochure for Cajun Sunrise Germplasm ashy sunflower
- Release Notice for Cajun Sunrise Germplasm ashy sunflower
- Plant Collection Information Sheet Black Needle Rush
- Plant collection Sheet Illinois bundleflower
- LAPMC Tech Note 15 Coastal Wetland Plant Vendors Revised
- LAPMC Tech Note 8 Conservation Seed Vendors For Louisiana Revised
- Submersed Aquatic Vegetation Propagation and Planting Techniques for Restoration in Coastal Louisiana

TOURS AND PRESENTATIONS 2012

- Voice of the Wetlands Festival
- LaFete D'Ecologie
- Louisiana Native Plant Initiative and Pollinator Presentation
- New York Sea Grant Group Presentation
- Florida State University Group Presentation and Tour
- University of North Carolina Group Presentation and Tour
- The University YMCA Ohio Group Presentation and Tour
- Bayou Grace Illinois and Iowa Group Tour
- American Indian Workshop Presentation and Tour
- Bayou Grace Michigan Group Tour
- Plant Materials Technical Committee Meeting Presentation and Tour
- Leadership of Lafourche Tour
- Grand Isle School Plant Propagation Training
- Bayou Grace Duke University Tour
- New York Sea Grant Group Presentation
- Bayou Group Presentation and Tour
- State of the Coast Conference
- Bayou Grace Seattle Academy Training and Tour
- Ocean Commotion Display
- United Houma Nation Tour, Presentation and Training
- Mississippi SWCD Member Group Tour
- The Earth Partners Group Tour
- South Lafourche High School Group Tour

PLANT DISTRIBUTION 2012

'Vermilion' Smooth cordgrass	15,800 plants
'Gulf Coast' Marshhay cordgrass	2,750 plants
Brazoria Seashore paspalum	3,175 plants
Timbalier Gulf Bluestem	2,350 plants
Fourchon Bitter Panicum	5,000 plants
Various native plants	1,500 plants
Bayou Lafourche California bulrush	680 containers
Caminada Seaoats	120 containers
Pelican black mangrove	80 lbs seed

THE GOLDEN MEADOW PMC: WHO WE ARE

The PMC selects conservation plants and develops innovative planting technology to solve the nation's most important resource concerns. Our mission is to develop, test, and transfer effective state-of-the art plant science technology to meet customer and resource needs.

The USDA, Natural Resource Conservation Service Golden Meadow PMC was founded in the early 90's on 90 acres of land, which was established to provide a solution to aid in the incessant battle of coastal restoration. The PMC conducts numerous technical research strategies to better understand how different plant species are able to thrive and reproduce in the coastal marshes. The PMC also provides pertinent information on coastal marsh plants to the community in the promotion of taking a stand towards coastal restoration.

…AND WHAT WE DO

The activities of the PMC are guided by a long-range plan. The priority work areas are:

- Plant Materials for Marsh Revegetation
- Plant Establishment Techniques
- Seed Technology for Selected Wetland Species
- Technology Development and Transfer

Electronic Documentation and Information

All PMC publications can be downloaded from the following web-sites:

http://plant-materials.nrcs.usda.gov/lapmc/publications.html
http://www.la.nrcs.usda.gov/technical/PM/index.html
http://plant-materials.nrcs.usda.gov/lapmc/

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