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✓ <http://plant-materials.nrcs.usda.gov/mdpmc/>

## What We Do



The National Plant Materials Center (NPMC), located in Beltsville, Maryland, is one of 27 Plant Materials Centers (PMCs) in the Plant Materials Program of USDA's Natural Resources Conservation Service. The mission and activities of the NPMC are twofold: (1) to provide assistance to and coordination for the National Plant Materials Program, and (2) to assist with high-priority conservation issues in the Mid-Atlantic region of the U.S.

High priority work conducted for the region includes assembling and selecting Mid-Atlantic native plant ecotypes for use in NRCS conservation programs, developing technology related to these plants, maintaining demonstration plantings for educational purposes, providing technical training to NRCS field staff and partners, and assisting field offices with conservation plantings.

## Forage Trials

Ongoing variety trials are being conducted by the NRCS and University of Maryland to provide the latest information on agronomic performance of publicly and privately developed cool-season grass, native warm-season grass, and Bermuda grass varieties. Data collected from these three trials will be of mutual benefit to the farmers of Maryland and surrounding states, the Maryland Cooperative Extension and NRCS.

Each trial will continue for a minimum of four years (stands permitting) as a simulated grazing system. Establishment of the cool-season variety trial was severely limited by drought in the fall of 2005 and spring of 2006. Supplemental irrigation was applied as needed to maintain good survival, but was not sufficient for optimal growth.



Dr. Les Vough (University of Maryland) harvests cool-season grasses with a Carter flail type forage harvester.

The varieties of native warm season grasses which were most productive and best adapted to drought conditions are:

Species/Variety	2007–2008 Total Forage Yield (Lbs./Acre)	Stand % 2007	Stand % 2008
<b>Eastern Gamagrass</b>			
'Highlander'	12120	73	91
'Meadowcrest'	11090	85	99
'Verl'	11015	60	86
'Pete'	9861	77	89
<b>Switchgrass</b>			
'Carthage'	9764	90	100
'Shawnee'	9523	71	96
'Blackwell'	9313	76	95
'Cave-in-Rock'	9019	75	86
<b>Florida Paspalum</b>			
MD unreleased 9078766	9053	86	93
<b>Coastal Panicgrass</b>			
'Atlantic'	8849	76	79
<b>Indiangrass</b>			
'Osage'	7108	90	93

'Highlander' was released from the Mississippi Plant Materials Center in 2003. While it has been the most productive variety in this study, more testing is necessary to determine the range of adaptation in Maryland.

The results of the cool-season grass forage trial can be found at: <http://www.plant-materials.nrcs.usda.gov/pubs/mdpmmcpr8101.pdf>

A Bermuda grass forage trial was established in 2007 to offer a solution to livestock farmers with high-use areas for which Bermuda grass has shown potential as plant cover and forage. These areas that have become

devoid of plant cover not only produce negligible forage but also can be significant sources of sediment and nutrients through water runoff as well as dust. There is, however, currently a lack of knowledge and experience in using commercial varieties of Bermuda grass in Maryland, which this forage trial aims to change.

## Native Grasses and Forbs Selections for Conservation Uses

The emphasis on native seed mixtures for Farm Bill Programs, wildlife habitat, and ecological restoration has highlighted the need to make additional native grasses and forbs available in the Northeast and Mid-Atlantic region for large-scale plantings. A combined collection effort by NRCS and partners was initiated to address these needs. Species currently under evaluation and scheduled for release include:

- *Paspalum floridanum* (Florida Paspalum) - 2009
- *Pityopsis graminifolia* (Narrowleaf Silkgrass) - 2010
- *Panicum anceps* (Beaked Panicgrass) - 2010
- *Sorghastrum nutans* (Indiangrass)
- *Elymus virginicus* (Virginia Wildrye)
- *Solidago nemoralis* (Gray Goldenrod)
- *Lespedeza virginica* (Slender Lespedeza)



*Sorghastrum nutans* (Indiangrass).

## Native Plants for National Parks – Great Smoky Mountains National Park (GRSM)

A cooperative agreement between Great Smoky Mountains National Park (GRSM) and the National Plant Materials Center (NPMC) was signed for the 2006 - 2010.

In 2007 over 500 lbs. and in 2008 over 400 lbs. of seed was harvested from the Cades Cove increase fields and transported to the NPMC for processing, cleaning, viability and purity testing and storage. Current GRSM re-vegetation projects include Cades Cove conversion of fescue pastures into native forbs and grass meadows, and the Foothills Parkway construction project in which this seed helps to stabilize cut slopes.



A mixture of native grasses, forbs, shrub, and tree seed is hydro-seeded in order to stabilize this cut site on the Foothills Parkway in the GRSM.

For the 2007 – 2008 period, over 1100 lbs. of seed were distributed to the park for re-vegetation projects. Currently, a total of over 26 different species of seed and 1400 pounds of seed are being stored. By working with the GRSM on this cooperative agreement, the NPMC has gained information on the biology, production and establishment of many different native plant species.

## Smooth Cordgrass Production for the Jamaica Bay Marsh Islands Ecosystem Restoration

The NPMC grew plugs and containers of smooth cordgrass (*Spartina alterniflora*) for an agreement to supply the U.S. Army Corps of Engineers in their effort to restore 180 acres of Elders East Island. Elders East Island is an intertidal salt marsh in Jamaica Bay, Gateway National Recreation Area, New York. This project was very important in that the island protects vital shipping lanes and the New York City harbor. Although they are a very important wildlife resource, these islands are a highly degraded, urbanized part of the Jamaica Bay ecosystem and are plagued by insufficient buffers, previous dredging and filling activities, floating debris, new construction and extensive water quality problems.



A worker for Native Terrain, who installed the smooth cordgrass plants for the US Army Corps of Engineers, maintains a goose exclusion barrier.

The elevations of the islands were restored by pumping large quantities of dredged sand. Then the area was stabilized with the planting of smooth cordgrass. The smooth cordgrass plants were grown from seed collected from remnant local populations.

The staff of the National Plant Materials Center worked closely with three other plant materials centers, NJ, WV and MI, on this enormous project.

In 2006 and 2007, the NPMC grew a total of over 218,000 plugs and 13,000 quarts of smooth cordgrass.

## Submerged Aquatic Vegetation (SAV) Activities



Microcosms were made from 5 gallon plastic water bottles and then studied to see in which medium redhead grass (*Potamogeton perfoliatus*) had optimal growth.

In 2007, an agreement, under the Cooperative Ecosystem Studies Unit (CESU), between the University of Maryland Department of Environmental Sciences and NRCS, NPMC was initiated. The project investigates the optimal substrate for redhead grass (*Potamogeton perfoliatus*). Redhead grass is one of the species typically used for SAV restoration projects in the Chesapeake Bay, but these efforts have yielded minimal success. The experiment was to determine whether there is a significant difference between shoot and root lengths and weights of plants grown in sand, a sand and soil mix, oyster shell, or oyster shell with peat moss. Plants were grown in 5 gallon containers in the various substrates and then the resulting

growth was compared. The results of the experiment indicate that, in experimental conditions, redhead grass may show a preference for growing in oyster shell and peat instead of sand or a sand and soil mix. These research results were presented at a poster session at the Estuarine Federation Conference at Providence, Rhode Island on November 4, 2007. Additional experiments and field work in 2008 will look more closely at the mechanisms that may be affecting this differential growth between substrates and redhead grass beds. An online abstract can be found at: <http://www.plant-materials.nrcs.usda.gov/pubs/mdpmcab8104.pdf>

A pilot study was also started to test a new biodegradable plastic tape to aid in the seed propagation of various species of SAVs. Additional experimentation with biodegradable seed tapes and Chesapeake Bay grass restoration is planned for 2008 when more plastic material will be available.

Collaboration with the Chesapeake Bay Foundation – Virginia continued as they have collected wild celery (*Vallisneria americana*) seed for their February Grasses in Classes in previous years for their restoration projects.

## Windbreaks for Poultry Houses

Due to its proximity to large cities, Sussex county Delaware and the Eastern Shore of Maryland are producing more poultry than any other area of the country. At the same time, Mid-Atlantic States have been losing farmland to development at rates almost four times higher than the national average.

In order to help alleviate this pressure of development occurring near poultry houses, the NPMC is working with researchers at the University of Delaware and Penn State University to test which plants can absorb gaseous ammonia, and mitigate odors expelled by poultry house tunnel fans.

NRCS is promoting the use of poultry windbreaks to foster good neighbor relations

by reducing particulates, odors and noise, and improving the visual perception of the poultry houses.

Windbreaks planted with 'Manhattan' Euonymus, 'Austree' Willow and 'Green Giant' Arborvitae have proven to be effective at precipitating out dust by slowing the air speed from exhaust fans. Test farms have been planted with Osage orange, Siberian pea shrub, switchgrass, giant miscanthus, and coastal panic grass to evaluate plant survival and growth.



At this test farm in Caroline county Maryland five different cultivars of warm-season grasses are being tested. All of the plants survived the first season, however, three seasons of evaluation are necessary to determine long-term survival.

## Plant Materials Education

Technology transfer is a critical part of the National Plant Materials Center's work. It enables NRCS field staff, partners and others to use the plant science technology we develop. This is primarily accomplished in three different ways: training, field days, and technical documents.

## Training

2007 and 2008 were very busy years for training sessions for the staff of the NPMC. By using its demonstration plots and facility as well as giving presentations in Maryland, Delaware and Virginia, the NPMC staff delivered a total of 15 presentations in 2007. In 2008, that number jumped to 26 presentations, some of which are listed below.

- Identification and Management of Native Warm Season Grasses – May 2007
- Windbreaks for Poultry Houses - July 2007
- Warm-Season Grasses and Weeds: Identification and Management - August 2007
- Forests and Forest Buffers: Identification, Establishment, and Management - September 2007
- Warm Season Grasses and Grazing Training – November 2007
- No Till Pasture Seeding Demonstration – March 2008
- Invasive Plants and their Control Measures in Riparian Zones – June 2008
- Plant Materials for Critical Area Plantings and Erosion – July 2008
- Plant Materials for Erosion and Sediment Control – October 2008

## Field Days

The Conservation Showcase, NPMC Field Day and Tour took place in October 2007. It included a farm tour educating NRCS staff and partners on the various research projects.

## Technical Documents

The following list is some of the most relevant technical documents produced by the NPMC in 2007 – 2008. Links to all NPMC publications can be found at <http://plant-materials.nrcs.usda.gov/mdpmc/publications.html>

- Maryland Native Warm-Season grass Forage Trial Report
- Maryland 2007 Cool-Season Forage Trial Report
- Recommended Windbreak Plant Species for Odor Management around Poultry Houses
- Wildflowers for Wildlife Diversity in Conservation Plantings
- Wildflowers for Wildlife Diversity in Conservation Plantings
- Improved Conservation Plant Materials Released by NRCS and Cooperators Through December 2007
- Pasture and Hay Species Recommended for Maryland
- A Simplified Guide to Understanding Seed Labels
- Plant Fact Sheets for Golden Ragwort (*Packera aurea*), Wild Senna (*Senna marilandica*) and Golden Alexanders (*Zizia aurea*)



Elmer Dengler (NRCS, Maryland State Grazing Land Specialist, shown at the far left) speaks with partners and researchers sharing his findings from the forage trials at the Conservation Showcase.

The Pollinator Day took place in June 2008. It was focused on demonstrating the NPMC research projects involving wildflowers and how this research benefits pollinators.



(From left) John Englert, Doug Holy, and Gary Mast unveil the new Pollinators Poster at the Pollinators Field Day.

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