

# Year 2006 Progress Report of Activities

Cape May Plant Materials Center  
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Helping People Help the Land



# Plant Materials Program

## Mission and Objectives



**Aerial View of the Cape May Plant Materials Center**  
The Cape May Plant Materials Center (PMC) is located five miles due east of the Avalon beaches and adjacent to New Jersey's most expansive tidal marsh estuaries.

The **mission** of the Plant Materials Program is to provide timely and effective vegetative solutions for identified resource needs.

Through this program, plants that display superior characteristics are developed, tested and released to commercial growers. End-users of these products working with their NRCS District Conservationist can receive guidance from PMC specialists to advance production and improve management methodologies. The use of native plant materials is encouraged.

The major technical **objectives** of the Cape May Plant Materials Center (PMC) are:

- USDA Conservation Programs Needs
- Coastal Resource Systems
- Developing Lands (Community) Resources
- Sustainable Native Plant Communities

### **In This Issue:**

- **Leadership**
- **Technical Direction**
- **New Plant Release**
- **New Technology Product**
- **New Native Plant Sciences**
- **Interagency Agreement.**

**Cover Photos by Bill Skaradek**

## **Cape May PMC Leadership Management Strategic Planning Committee:**

The Cape May PMC welcomes new members to the PMC Strategic Planning Committee. This year's committee will include:

|                     |   |
|---------------------|---|
| Zane Helsel         | National and Regional Partnerships Director<br>Extension Specialists Chair, Rutgers Cook College  |
| Art Brown           | Rutgers Cooperative Extension, Former NJ Secretary Agriculture  |
| Joe Lomax           | National Association of Conservation Districts<br>Cape Atlantic Soil Conservation, District Supervisor<br>State Soil Conservation Committee   |
| Martha Maxwell      | Partnership for Delaware Bay Estuaries Inc, Deputy Director   |
| Tony Pratt          | Delaware Natural Resource Environmental Control, Administrator<br>American Shoreline Beach Preservation Association, Vice President of Policy |
| Florence Hendershot | NJ State Forests, Superintendent  |
| Don Hamer           | Cape Atlantic Soil Conservation, District Supervisor<br>Former PMC Manager  |
| Curtis Sharp        | Former USDA NRCS National Program Leader  |

The next Strategic Planning Committee is set for February 27th, 2007.

## **Technical Advisory Committee**

The Technical Advisory Committee met via tele-conference October 2006 to review the May 2005 issues. They also established the resource issues of concern for the coming year, listed here

- Current Resource Concerns as of 2006-2007
- Air Quality
- Coastal Systems
- Cover Crops
- Critical/Disturbed Areas
- Invasives
- Natural Plant Community Systems
- Program Processes
- Rare, Endangered, Threatened species
- Submerged Aquatic Vegetation
- Urban Resource Conservation

For a detailed list of Resource Issues of Concern, email William Skaradek at:  
[william.skaradek@nj.usda.gov](mailto:william.skaradek@nj.usda.gov).

## **New Plant Release:**

Almost 35 years after its arrival at the Cape May PMC, 'Carthage' switchgrass was formally released as a 'Cultivar.' This selection shows better than average spread, a higher forage nutrient value, and earlier spring recovery than current Midwest selections of switchgrass being used in the Northeast. In tests at the Cape May Plant Center, Carthage showed an average protein content of 8-10 percent and a digestibility averaging 50 percent. USDA, Agricultural Research Service (ARS) studies from University Park, PA, show 'Carthage' as having very good yields of high quality forage with excellent stand persistence. The good seedling vigor and outstanding leafiness are the most desirable traits of this release. Because it matures late compared to other varieties of switchgrass, it complements cool-season forages for mid to late summer use. Seed production is fair-good, but can be improved by good management. At maturity, it typically reaches a height of four to five feet.

## **New Technology Products:**

The interagency project between the NRCS Cape May PMC and the New York Corps of Engineers districts enabled the development of a new nursery propagation container that appears to be overwhelmingly successful. Because the number of plants needed by the Corps exceeded the capacity of NRCS greenhouses, a new nursery plug needed to be developed to increase the number of plants per square foot of greenhouse space. The new cells are roughly 1" x 1" x 7.25" tall. When planted, these deeper cells provide a more secure anchor, reducing plant losses from vertical tide buoyancy and waterfowl predation.



A study comparing the survival and rate of spread for this and traditional plugs will be conducted in 2007 and 2008. Studies pertaining to direct seeding techniques will also be undertaken.

To learn more about this project, visit the project fact sheet on the world wide web at:

<http://www.nan.usace.army.mil/project/newyork/factsh/pdf/elders.pdf>

# New Native Plant Sciences:

The PMC - Corps of Engineers Jamaica Bay project has led to the development of several new technologies associated with seed collection, seed cleaning, seed storage and plant production. Posters detailing these technologies were developed and at various national conferences.



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**Cape May Plant Materials Center**



**US Army Corps of Engineers**  
New York District

## Equipment Settings for Cleaning Seed of Spike grass *Distichlis spicata* (L.) Greene.

**William Skaradek, and Noel Murray USDA-NRCS Cape May Plant Materials Center      Melissa Alvarez US Army Corp of Engineers NY District**

**Abstract**

The purpose of this project was to determine the most efficient and yet affordable process by which to clean seed of spike grass.

Due to the inherently low seed yields and difficulty in harvesting seed of this species, mechanization of cleaning seed has received limited attention. In this study we compared the processes of hand cleaning to the use of commercially available seed cleaning equipment.

Yields associated with hand cleaning were equivalent to 60 grams per 24 hours or about 2.5 grams/hour. Seed cleaning equipment yields were about 600 grams in 24 hours or 25 grams/hour.

**Materials and Methods:**  
Hand Cleaning:  
Hand labor, Hance Corporation Scalper Model 36-A No. 10 screen, trashcans and work bench. (see below)



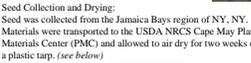
Machine Cleaning:  
Westrup Lab Brush Seed Cleaner Model LA-H, using a mantle with #5 square mesh screen. (see below)



A Clipper Seed Separator Model Office Tester using cardboard, 1/14 by 1/4 slotted screen, and a 1/4 round screen.



Seed Collection and Drying:  
Seed was collected from the Jamaica Bays region of NY, NY. Materials were transported to the USDA NRCS Cape May Plant Materials Center (PMC) and allowed to air dry for two weeks on a plastic tarp. (see below)





Photos above showing first run materials with high percentage of glumes still intact.



Photo's above showing second run materials with less glumes intact.



**Results and Discussion:**

There was a significant difference between processing seed by hand as compared to the use of seed cleaning equipment.

The hand process yielded 60 grams of seed in a 24 hour period whereas the machinery yielded 600 grams of seed in the same time. These results equal 2.5 grams per hour and 25 grams per hour respectively.

**Summary:**

Cost effective seed cleaning of the coastal halophyte spike grass can be accomplished. Due to the purchase costs associated with the machinery mentioned, a propagator will need to carefully examine available labor rates, the quantity of seed that will be processed and the cost of the machinery on a gram/ hour basis.

For small scale nursery operations with limited anticipated seed cleaning and/or production of this species, hand cleaning may be the most cost effective technique requiring the least capitol investment.

However, because of the versatility of the equipment and the availability of many different screen sizes, the purchase costs associated with this equipment can be amortized across multiple species and many years of service.

**Equipment Manufacturer Disclaimer:**

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**NRCS**  
NATURAL RESOURCES CONSERVATION SERVICE

**Cape May Plant Materials Center**



**US Army Corps of Engineers**  
New York District

## Equipment Settings for Cleaning Seed of Smooth Cordgrass (*Spartina alterniflora*. L)

**William Skaradek, and Noel Murray USDA-NRCS Cape May Plant Materials Center      Melissa Alvarez US Army Corp of Engineers NY District**

**Abstract**

The purpose of this project was to determine the most efficient and yet affordable process by which to clean seed of smooth cordgrass.

Smooth cordgrass is a dominant warm season grass occupying the inter-tidal zone of estuarine plant communities. Large scale harvesting, processing and cleaning of *Spartina* seed has been limited to hand processes to ensure high levels of viable seed harvested.

\*The USDA NRCS Cape May Plant Materials Center is the first known facility to utilize an agricultural combine for cleaning smooth cordgrass. These efforts resulted in hundreds of pounds of viable seed. This information will serve to advance the cost effectiveness of large scale estuary conservation.

**Materials and Methods:**

Building: for after ripening of seed, combine, 62-D three screen separator, germplasm storage; at 1-2 degrees Celsius, and 25 ppt salt water.



Photo to the left illustrates hand rickles harvest of seed heads from the wild. The entire seed harvesting process can be repeated by requesting a copy of:

Interagency Publication: MP-NRPS-CRHS Planning Considerations for Collecting Seed of Smooth Cordgrass *Spartina alterniflora* (L.) in the Mid-Atlantic.



Photo to the right showing harvested seed in bags allowing to after ripen in equipment building.



Photo to the left shows a seed head with a screen mesh which requires after ripening until the stem tubes can like the rest on the right.



Photo above shows PAC combine that was used



From left to right: Seed flowing from combine into bins in case; 62D three screen separator; staff bagging clean seed.



Photo above shows clean healthy seed extracted from 25 ppt salt water and kept in cold storage at 1-2 degrees C.

**Results and Discussion:**

Though many settings combine settings were experimented with the following settings yielded the cleanest and least damaged seed.

|                             |           |
|-----------------------------|-----------|
| Fan Speed:                  | 9         |
| Cylinder Speed:             | 7         |
| Concave:                    | 12        |
| Air Inlet:                  | Full-Open |
| Adjustable Sieves:          | 15 mm     |
| Head raised off the ground: | 1 foot    |
| Reel Speed:                 | Slowest   |
| Reel Position:              | Highest   |

The 62-D three screen separator performed best at the best.

|                        |                            |
|------------------------|----------------------------|
| Hopper Roller Opening: | 2/3rd Open                 |
| Air Deflector Board:   | 1/4" Open                  |
| Fan Speed:             | 900 RPM                    |
| Top Screen:            | #24                        |
| Middle Screen:         | Slotted 6/64th by 3/4"     |
| Bottom Screen:         | 1/25th covered with paper. |
| Adjustable Speed:      | 1/2 Turn open              |
| Back Flap:             | Closed                     |
| Top Reach Crank:       | Air Flow Ribbon Balanced   |

**Summary:**

Cost effective seed cleaning of the coastal halophyte smooth cordgrass can be accomplished. Due to the purchase costs associated with the machinery mentioned, a propagator will need to carefully examine available labor rates, the quantity of seed that will be processed and the cost of equipping their operation with similar machinery.

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## Inter-Agency Agreement Nearing End!

The Cape May PMC is now entering the last deliveries of plant materials to Acadia National Park. Several new native plants sciences were developed and will be transmitted via new Plant Fact Sheets and Planting Guides.

During 2006 we were very fortunate to have the help of NRCS Employees detailed from the great state of Massachusetts to help with the cleaning, caring and loading of plants.



*We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect.*

—Aldo Leopold

## **USDA-NRCS National Plant Material Program**

The purpose of the Plant Materials Program is identify plants that can help solve natural resource problems. Plants that show promise for meeting identified conservation needs are tested and proven before they are released to the private sector for commercial production. This work is carried out at twenty-seven USDA-NRCS Plant Material Centers located strategically throughout the United States and done cooperatively with state and Federal agencies, commercial businesses, seed and nursery associations. Many plants being used for carbon sequestration, erosion reduction, wetland restoration, water quality improvement, streambank and riparian area protection, coastal dune stabilization, alternatives to foreign energy sources, and other special conservation treatment needs have been identified through the Plant Materials Program.

The Cape May Plant Material Center serves a nine-state service area extending from Massachusetts to the North Carolina-South Carolina border and has been a leader in developing new native plants and technologies for coastal, marine and estuarine habitat.

### **Opportunities for Field Offices, District Employees, Partners and Volunteers**

The work of the Cape May PMC relies heavily on the cooperation of conservation partners to locate native plant stands; collect materials and ship them to Cape May; locate suitable plant testing sites; record plant performance data; and publish new scientific findings. If you or anyone you know would like to become a partner and volunteer your talents contact us. We can provide training in plant identification, seed collection processes, how to handle and ship plants and more!

Phone (609) 465-5901

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More information about Cape May PMC accomplishments is available at:

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

Through this link you can also access our national network of 26 PMCs strategically located throughout the United States.

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