

# TECHNICAL NOTES

UNITED STATES DEPARTMENT OF AGRICULTURE  
JUNE 2010

NATURAL RESOURCES CONSERVATION SERVICE  
ALEXANDRIA, LOUISIANA

## PLANT MATERIALS TECHNICAL NOTE NO. 17 RECOMMENDED PLANT SPECIFICATIONS FOR VEGETATIVE TRANSPLANT MATERIALS FOR SPECIFIC COASTAL SPECIES

Using vegetative transplant materials is considered one of the most economical appropriate ways to obtain planting stock for restoration projects. Vegetative transplant materials are described as the production and establishment of new plants by means other than seeds. Vegetatively transplant materials commonly used for coastal restoration include bare-root slips and plugs, rooted and unrooted stems, rhizomes, and stolens.

When considering the use of vegetative materials for restoration projects, following the information below should be considered.

### **Plant Materials**

Determining the type of materials needed is directly related to the plant species and the targeted restoration site. In general the following materials commonly used include;

**Bare-root slips or plugs** - Includes a single or multi-stem plant pulled from a donor stand. Materials are usually bare-root with little or no soil remaining around the roots. Bare-root plugs should have a root mass of not less than 2 inches in diameter at the root crown with a minimum of 4 roots per plug.

**Rhizomes, and stolens (runners)** - Rhizomes are horizontal underground stems which can send out both shoots and roots at nodes and buds. Stolens are stems that grow horizontally above the ground and may produce roots and shoots at the nodes or buds. Rhizomes and stolens should have a minimum of two nodes or buds to be considered planting material. Sprigging is a commonly used term when referring to the planting of rhizomes and stolens to establish a site.



*Helping People Help the Land*

An Equal Opportunity Provider and Employer



Rooted and unrooted stems - Includes above ground aerial stems that when placed in contact with the soil have the ability to root at stem nodes. Rooted and unrooted stems should have a minimum of two healthy nodes or buds to be considered planting material.

Vegetative materials for restoration are usually obtained from two types of sites. The first being an existing donor native site (wetland, dunes, etc.), the second being from an established commercial nursery pond or field. Removing vegetative plant materials from a donor native site (wetland, dune, etc.) are not recommended but may be an option if commercial supplies are limited. Removing plants from natural sites regardless of the care taken in frequency, spacing, and location of plant removal will eventually affect the health and vigor of the donor stand. In addition, the removal without applicable permits may be in violation of state and federal regulations.

Harvesting vegetative materials from a commercial nursery site (ponds and fields) is recommended due to multiple benefits including:

- donor plants are usually an improved variety with proven traits
- sites are more easily accessible
- they have increased health and vigor
- less chance of insect or disease problems
- harvest numbers are more easily obtained
- will not damage or impact natural communities

In order to establish a commercial nursery site, propagation material is needed in the form of starter transplants. Starter transplants may be in any of the vegetative forms described above. Starter transplants may also be obtained from a donor native site (wetland, dune, etc.) or from an existing established commercial wetland pond or field. It is recommended that started transplants needed for the establishment of a commercial nursery site also be obtained from an existing commercial nursery site.

To supply adequate quantities and quality of materials, donor sites need to be established for a period of time for the parental donor plants to develop adequate top growth and below ground root mass. Most vegetatively harvested materials are harvested from the new growth from the original transplants. Plants must be viable and actively growing when removed from the donor site. In addition, plants need to be free of defects, disfiguring, sun scalding, disease, insects, insect eggs, and insect larval, or other forms of infections or infestations.

Refer to Table 1 for recommended specification for commonly produced vegetative transplant materials use in coastal restoration.

### **Salt Hardening**

If planting in an area with high salinity, it is recommended that plants be salt hardened. Salinity hardening levels will vary according to planting site conditions. However, hardening plants to 12 parts per thousand (ppt.) is a general rule when working in brackish to lower saline conditions. Plants should be salt hardened to a minimum level of

12 ppt for at least 14 consecutive days under ponding conditions. Plants need to stay salt hardened at the minimum salt level and the minimum hardening duration to within three 3 weeks prior to delivery and planting.

### **Shipping and Handling**

Vegetative material should not be dug or harvested earlier than 48 hours prior to time of delivery. Plant should be packed for delivery in such a manner as to ensure protection against climatic, seasonal, or other injuries during transit. A variety of methods for packing including wrapping with 1) burlap, 2) sphagnum moss, 3) paper, 4) dipping in water absorbing gels (polymers), or 5) a combination of materials. Special care should be taken for prompt delivery and careful handling in loading and unloading. Plants need to be transported in an enclosed truck or trailer, or they may be moved in an open trailer if sufficient wind protection (netting) is provided to prevent damage to sensitive leaves.

Plants may be cut to facilitate transportation; however, stems should not be cut shorter than ½ the normal mature plant height. Stems should not be broken, nor physically damaged during transport. In addition, plants should not show signs of being water stressed by displaying dry wilted leaves and/or stems. Plants need to maintain their stem and leaf rigidity at all times indicating adequate moisture and low stress. Vegetative materials should be planted within 24 hours following delivery unless proper storage conditions (wet, cool) are available.

Morris J Houck  
Plant Materials Specialist

Table 1 Recommended Plant Specifications for Commonly Used Vegetative Transplants

Plant Species	Recommended Starter Material	Slips or Plugs	Rhizomes or Stolens	Rooted-Unrooted Stems
Marshhay Cordgrass, <i>Spartina patens</i>	bareroot plant	3-4 actively growing stems, 10 inch minimum height	12 inch minimum length	
Smooth Cordgrass, <i>Spartina alterniflora</i>	bareroot plant	3-4 actively growing stems, 10 inch minimum height	N/A	N/A
California Bulrush, <i>Schoenoplectus californicus</i>	bareroot plant	2-4 actively growing stems, 24 inch minimum height	N/A	N/A
Seashore Paspalum, <i>Paspalum vaginatum</i>	Rooted, unrooted stems	2-4 actively growing stems, 12 inch minimum length	8-12 inch minimum length, min. of 2 nodes	8-12 inch minimum length, min. of 2 nodes
Sea Oats, <i>Uniola paniculata</i>	bareroot plant	3-4 actively growing stems, 10 inch minimum height		
Bitter Panicum, <i>Panicum amarum</i>	bareroot plants, rooted, unrooted stems	2-4 actively growing stems, 12 inch minimum length	6-8 inch minimum length, min. of 2 nodes	8-12 inch minimum length, min. of 2 nodes
Gulf Bluestem, <i>Schizachyrium maritimum</i>	bareroot plants, rooted, unrooted stems	2-4 actively growing stems, 6-10 inch minimum length	6-8 inch minimum length, min. of 2 nodes	6-8 inch minimum length, min. of 2 nodes
Black Mangrove, <i>Avicennia germinans</i>	seed	N/A	N/A	N/A