Saltmeadow Cordgrass
*Spartina patens*

**Scientific Name**
*Spartina patens* (Aiton) Muhl.

**Common Name**
Saltmeadow Cordgrass

**Group**
Monocotyledon

**Family**
Poaceae (Gramineae)

**Wetland Indicator Category**
FAC, OBL

**Growth Form**
Wiry grass with slender rhizomes that form dense stands

**Habitat**
Salt marshes, upper salt marshes, low dunes

**Propagation Guide**

![Image of Saltmeadow Cordgrass]
1 Seed Collection

Observe inflorescence development of *Spartina patens* in the field. In coastal Mississippi and along the northern Gulf of Mexico this generally occurs between June and September (Eleuterius and Caldwell 1984); however, this may vary from year to year depending on weather conditions.

The inflorescence of *Spartina patens* is an open panicle (a branched cluster of flowers), which is made up of several spikes. Each spike is composed of many (20-50) smaller spikelets. The mature spikelets are light brown in color. Inside some of the spikelets there is a brownish dry fruit (caryopsis) that contains a single seed.

The seeds can be harvested in the field by cutting the stem below the inflorescences and placing them into plastic bags. In Mississippi, large dense stands of *Spartina patens* do not appear to flower, and in the few inflorescences present there are not many viable seeds. Not all inflorescences may mature at the same time. Repeated site visits may be necessary to collect inflorescence that ripen at different times.

2 Seed Preparation

The *Spartina patens* spikelets (which contain the seeds) should be processed as quickly as possible after collection, preferably within a couple of days. The spikelets are hard to remove from the spike, but can be removed by hand.

The collected spikelets are cleaned of debris (insects, plant material, fungal-infected seeds) by sieving the seeds through a U.S.A. Standard Test Sieve No.10 (2 mm mesh size) to remove the larger pieces of undesirable material. Then small amounts of the sieved spikelets are spread out on white paper and the remaining undesirable material is removed with forceps (tweezers). This is a very time-consuming process, but essential to the successful storage conditions of the seeds.

Garbisch and McIninch (1992) have reported there are approximately 770,000 seeds per pound dry weight.

3 Seed Storage

The cleaned spikelets should be stored dry in sealed plastic bags in a refrigerator at 39°F (4°C). The seeds require at least three months after-ripening in cold, dry storage to break dormancy (McIninch and Garbisch 2003). Seeds remain viable for up to four years (Garbisch and McIninch 1992).

Before attempting germination, place the cold, dry spikelets (seeds) in tap water and return to the refrigerator for approximately one month of cold, wet stratification (McIninch and Garbisch 2003). At this time a tetrazolium red (TZ) dye test can be performed to determine seed viability (see Appendix A).

4 Seed Germination

The cold and wet stratified spikelets are emptied into a U.S.A. Standard Test Sieve No.18 (1 mm mesh size) and rinsed several times under tap water. This step is best performed in a fume hood or outdoors to reduce odors.

The rinsed seeds are placed in 4.5” (11.5 cm) diameter 250 mL glass culture dishes (Carolina Biological Supply Company -741004) and filled with tap water. The water level in the bowl should be checked periodically to make sure seeds do not dry out. At least 0.5” (1.3 cm) of water is recommended.

These dishes are placed under a bank of four to six fluorescent grow lights (60-100 W, <100 µmol irradiance) until germination occurs. Germination occurs over a range of temperatures from 77-95°F (25-35°C).

Some of the seeds will germinate in 10 to 14 days. Seedlings should be transplanted at this stage. Stalter and Batson (1973) report that rates of seed germination vary from year to year, but are generally very low (<10%).
5 **Seedling Propagation**

When the young seedlings are about 0.5" (1.3 cm) in height they can be removed from the glass culture dishes and transplanted into hydrated peat pellets (Jiffy Products -Jiffy 7) using forceps. Planted seedlings are then placed in 20 x 10" (51 x 25 cm) plastic bedding trays (Landmark Plastic -L1020NCR(N) no holes). These hold 50 peat pellets and should be sub-irrigated with tap water on a daily basis.

Trays with seedlings are best kept indoors in a temperature controlled room at 81-86°F (27-30°C) under fluorescent grow lights (60-100 W, 60-100 µmol irradiance) on a 18:6 hour (light:dark) photoperiod. It is important to keep the young seedlings in a humid environment for one to two weeks after planting. To reduce desiccation use clear plastic propagation domes (Curtis Wagner Plastics -CW221) over the trays. Caution, heat can build up under these domes and kill the seedlings. Temperature should be kept below 95°F (35°C).

The trays with seedlings are then placed in a greenhouse and grown for one to three months until they reach a size of at least 6" (15 cm) tall. These larger plants can then be planted into 4 or 6" (10 or 15 cm) diameter containers with an organic soil mixture (2:1 topsoil:sand ratio), and kept sub-irrigated for a minimum of six months to form a well developed root mass (Appendix B). Plants are fertilized with a full strength (per manufacturer directions) water-soluble 20-20-20 general purpose fertilizer monthly, poured directly onto the soil. When root mass is well developed these plants are ready to be transplanted to a restoration site or transplanted into larger containers for further growth (Appendix C).

Alternatively, seedlings can be planted directly into standard 72 well inserts (Dillen Products -D1206), which fit into the plastic bedding trays, in an organic soil mixture (2:1 topsoil:sand ratio). The advantage is that plants grown in these 1.5" (4 cm) plugs will have a quick turnaround time to become root-bound in the nursery and can be easily transported to the restoration site. However, a disadvantage to these plugs is the plants and the root ball are smaller.

If the restoration site is at a high salinity location that exceeds 15 parts per thousand (ppt), the plants can be salt hardened by gradually adding salt to the water over a period of about one month to result in a final concentration of 10 ppt.

6 **Vegetative Propagation**

*Spartina patens* can also be propagated vegetatively by cutting 12" (30 cm) square clumps that have been collected from the marsh into smaller units. These are transplanted into 6" (15 cm) diameter containers with an organic soil mixture (2:1 topsoil:sand ratio), and kept sub-irrigated with tap water. These plants should be ready to transplant in two to three months. However, this method is not encouraged as it damages existing marsh habitat.
# Spartina patens Propagation Guide

## Seedling and Plant Propagation Charts

<table>
<thead>
<tr>
<th>Condition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seed Germination</td>
<td>10-14 Days</td>
</tr>
<tr>
<td>Seedlings 1-2 Weeks</td>
<td>77-95°F (25-35°C)</td>
</tr>
<tr>
<td>Seedlings 1-3 Months</td>
<td>81-86°F (27-30°C)</td>
</tr>
<tr>
<td>Container Plants 6+ Months</td>
<td>&lt; 95°F (35°C)</td>
</tr>
<tr>
<td>Submerge 0.5&quot; Water</td>
<td>Sub-irrigated Peat Pellets</td>
</tr>
<tr>
<td>Greenhouse Full Sun</td>
<td>18:6 Light:Dark</td>
</tr>
</tbody>
</table>

## Citations


## CPR Propagation Guide Team

Dr. Patrick Biber  J.D. Caldwell  Scott R. Caldwell  Matthew Marenberg

## Further Information

**USDA PLANTS profile:**
http://plants.usda.gov/java/profile?symbol=SPPA

Center for Plant Restoration and Coastal Plant Research:
http://sites.google.com/site/coastalplantrestoration/home

Field guide and images of Coastal Mississippi Wetland plant species:
http://jcho.masgc.org/

NRCS Jamie L. Whitten Plant Materials Center:
Plant Guide for Establishing Coastal Vegetation on the Mississippi Gulf Coast

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