Effect of Container Size and Fertilization on Field Establishment of Sweetgrass Plants

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Sweetgrass (*Muhlenbergia sericea*) is a clump-forming grass native to the southern Atlantic and Gulf coasts. Its leaves are the main component of African-coiled basketry produced by the Gullah/Geechee community. The U.S. Army Corps of Engineers is including sweetgrass in their coastal restoration projects in South Carolina to reestablish populations depleted by development and damage from hurricanes. However, plant survival has been disappointing, possibly due to small size of commercial transplants. In 2010, the USDA, NRCS Brooksville PMC began a 6-mo greenhouse production study of the effect of container size (shallow cone tray – 2.375" x 2.375"; deep cone tray – 1.94" x 4.5"; and 4.5" x 3.25" round pot) and fertilization (complete slow release at 100 lb N per acre based on area vs. no fertilizer) on plant growth. After the greenhouse phase, the plants were planted on Daufuskie Island, SC, with and without hydrated polymer gel and/or slow release fertilizer (50 lb N per acre based on area). Plants from the round pots were larger at 6 months compared to the other containers, but root and shoot growth of all treatments declined at around 4 months in the greenhouse. Greenhouse fertilization increased plant weight, but reduced subsequent field survival and is not recommended. Larger size of the plants in the round pot treatment did result in improved field survival. Neither fertilization at transplanting nor polymer gel improved field survival. Using larger transplants or increasing the planting rate will be necessary to improve survival in coastal restoration plantings.

Presentation Type: Oral
Session: Ecological Restoration

Online Summary:
The U.S. Army Corps of Engineers, Charleston (South Carolina) District experienced poor survival of sweetgrass plants in recent coastal restoration plantings. The USDA, NRCS Brooksville (Florida) Plant Materials Center conduced this research to determine if greenhouse propagation factors (container size, fertilizer) could be altered to improve field survival. Field planting treatments (fertilizer, hydrated polymer gel) were also evaluated to determine the effect of these treatments on survival and growth of the sweetgrass plants from the various greenhouse treatments when transplanted to sites on Daufuskie Island, SC.