

EVALUATION OF LOUISIANA ECOTYPES OF SALTGRASS FOR SELECTION AND USE IN SALT MARSHES OF THE COASTAL ZONE OF LOUISIANA

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Introduction

Inland saltgrass (*Distichlis spicata*) is a highly desired plant for coastal and saline wetland restoration projects. It is a species frequently desired for re-vegetation contracts by conservation partners, including those representing governmental agencies and private consultants in Louisiana. However, there is a lack of quality tested plants of this species, especially in sufficient numbers for growers to obtain for commercial production. The Golden Meadow Plant Materials Center, Galliano, LA, is evaluating 25 accessions of Inland saltgrass collected across coastal Louisiana.

Description

Saltgrass is a mat-forming, strongly rhizomatous perennial grass that prefers moist, saline soils, and is often found in sandy, alkaline locations. It is significant in the salt marshes, which provide nesting grounds for birds, fish and larvae of many species of marine invertebrate animals. Saltgrass persists in saline inundated ecosystems including marshes along the coasts of the Atlantic and Pacific Oceans, and the Gulf of Mexico. It is also one of the more drought-tolerant marsh grasses.

Objective

To identify a superior accession of this species and make it a coastal vegetative release for commercial production. This adds to the diversity of species available for nursery growers to provide plants for coastal restoration projects.

Materials and Methods

Evaluations in the study include overall vigor, drought and flood tolerance, seed production and viability, plant density and cover, and rhizomatous spread. The accessions are planted in 5X5 foot plots using a randomized complete block design consisting of 3 replications in a field where water levels can be managed to simulate the marsh's tidal flux. Pond is flooded as needed to avoid the plants from becoming drought stressed. Chemical herbicides such as 2,4-Dichlorophenoxyacetic acid dimethylamine salt 46.8% @ 2% V/V and Glyphosate N phosphonomethylglycine (isopropylamine salt) 41% @ 2% V/V are used as needed to control weed species and to prevent individual plots from encroaching each other. Crop oils are used in the chemical mixes @ 1% V/V to prevent herbicide drift. A 5X5 foot double walled polycarbonate box is also used to protect plots from herbicide drift (Photo 2). Data is collected as needed and usually occurs two to three times a year.

Results and Discussion

Significant differences (LSD = P<0.05) for mean plant height, percent canopy cover and plant vigor were detected among accessions as displayed in tables 1, 2 and 3 below. In summary, 4 of the 25 accessions out performed the rest when these 3 factors were analyzed. For overall mean plant height, percent canopy cover and plant vigor, accessions 9068011 and 9089487 both performed either equal to or greater than average when data was collected across all 5 time intervals. Also, accessions 9068306 and 9089474 performed equal to or slightly less than average when data was analyzed at this time. Finally, accessions 9067624 and 9068003 performed less than average for these 3 traits when data was analyzed across all 5 time intervals. The study is in its 3rd year and additional data collected will be analyzed using statistical procedures.



Photo 1

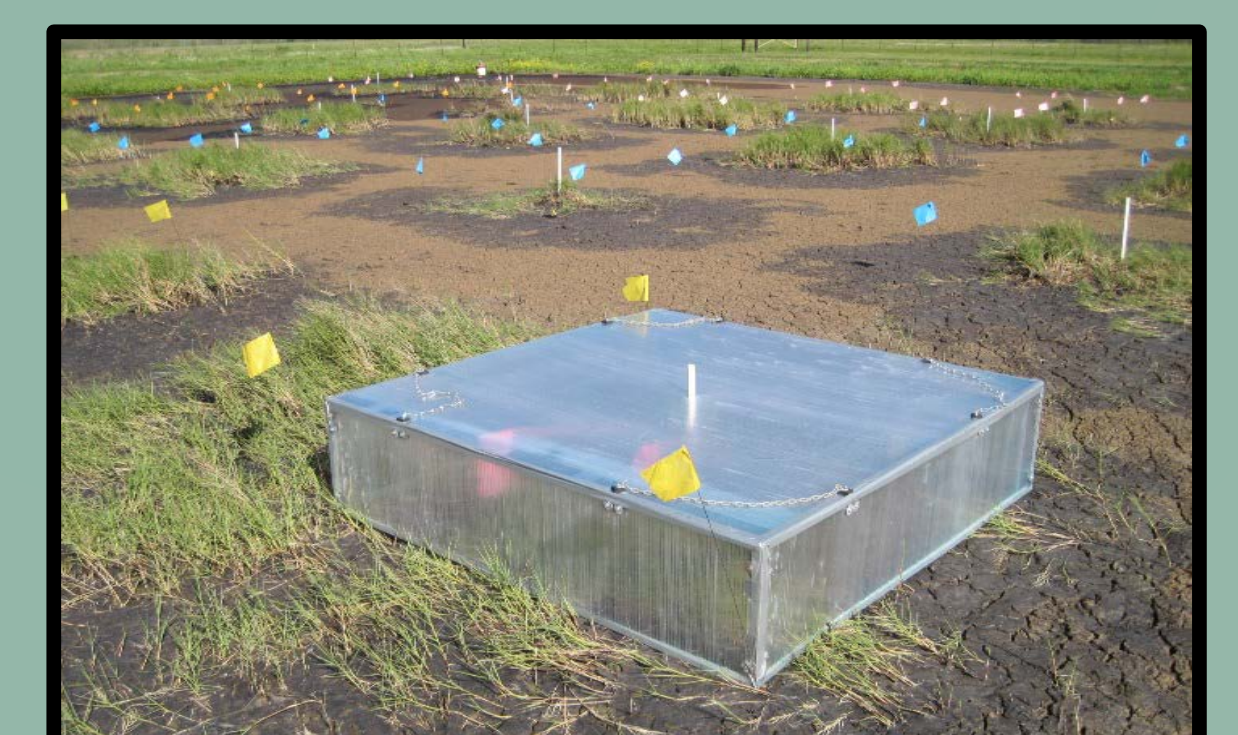


Photo 2



Photo 3

Table 1 - Mean plant height of 25 accessions of Inland saltgrass (*Distichlis spicata*) by month and year, USDA-NRCS Golden Meadow Plant Materials Center, Galliano, LA.

Accession#	Date				
	Aug 2016	Nov 2016	May 2017	Nov 2017	Mar 2018
	inches				
9067624	14.3	14.6	13.3	10.0	6.3
9068003	13.0	14.0	12.0	8.0	8.6
9068004	19.6	19.3	17.3	23.3	10.6
9068005	12.6	13.6	10.0	18.3	8.3
9068009	20.6	17.3	17.3	26.0	13.3
9068011	23.3	22.6	20.0	28.0	16.3
9068012	14.0	9.0	13.3	20.0	8.3
9068031	21.3	20.0	20.6	26.0	12.6
9068112	24.0	17.6	20.0	24.0	17.3
9068113	22.0	23.6	22.0	26.6	12.6
9068306	23.6	19.3	20.6	22.6	17.3
9089473	22.3	21.0	24.6	23.3	15.6
9089474	24.3	23.0	22.0	23.3	16.6
9089475	22.3	23.3	23.0	32.0	18.0
9089476	19.0	20.0	18.0	26.6	16.6
9089480	21.6	21.6	21.0	24.0	15.3
9089484	19.6	16.3	16.6	23.3	10.0
9089485	22.0	16.6	16.6	28.0	11.6
9089487	23.3	23.3	23.3	24.0	13.6
9089515	19.0	20.6	20.0	26.0	12.3
9089516	20.6	22.0	19.0	24.0	13.3
9089517	17.3	16.3	19.3	20.0	14.0
9089535	19.0	18.6	20.6	19.6	12.3
9089536	17.0	16.6	18.0	16.3	11.3
9089541	21.3	21.6	22.6	21.3	14.6
Mean	19.9	18.9	18.9	22.6	13.4
LSD (0.05)	8.3	8.6	9.4	11.4	8.3

Table 2 - Mean percent cover of 25 accessions of Inland saltgrass (*Distichlis spicata*) by month and year, USDA-NRCS Golden Meadow Plant Materials Center, Galliano, LA.

Accession#	Date				
	Aug 2016	Nov 2016	May 2017	Nov 2017	Mar 2018
	%				
9067624	9.6	18.3	21.6	16.6	15.0
9068003	4.6	6.0	10.0	17.3	8.3
9068004	43.3	65.0	80.0	83.3	70.0
9068005	83.3	51.6	35.0	63.3	41.6
9068009	63.3	36.6	46.6	73.3	53.3
9068011	60.0	75.0	73.3	86.6	80.0
9068012	61.6	55.0	61.6	75.0	48.3
9068031	55.0	31.6	45.0	83.3	63.3
9068112	50.0	51.6	65.0	81.6	75.0
9068113	36.6	36.6	60.0	86.6	76.6
9068306	78.3	73.3	65.0	78.3	83.3
9089473	50.0	40.0	35.3	81.6	70.0
9089474	38.3	31.6	51.6	78.3	78.3
9089475	68.3	55.0	55.0	76.6	83.3
9089476	63.3	73.3	78.3	88.3	85.0
9089480	50.0	41.6	56.6	93.3	81.6
9089484	56.6	41.6	40.0	78.3	66.6
9089485	81.6	65.0	66.6	76.6	63.3
9089487	51.6	56.6	65.0	76.6	68.3
9089515	46.6	31.6	63.3	85.0	83.3
9089516	33.3	50.0	61.6	70.0	73.3
9089517	40.0	33.3	45.0	86.6	75.0
9089535	23.3	45.0	58.3	83.3	70.0
9089536	32.3	41.6	48.3	64.0	50.0
9089541	36.6	46.6	68.3	78.3	85.0
Mean	48.7	46.2	54.3	74.5	65.9
LSD (0.05)	61.8	52.4	52.5	61.4	39.7

Table 3. Mean vigor rating of 25 accessions of Inland saltgrass (*Distichlis spicata*) by month and year, USDA-NRCS Golden Meadow Plant Materials Center, Galliano, LA.

Accession#	Date				
	Aug 2016	Nov 2016	May 2017	Nov 2017	Mar 2018
9067624	8*	5	7	8	8
9068003	9	8	8	9	9
9068004	4	3	2	4	5
9068005	2	7	6	6	7
9068009	3	5	5	4	5
9068011	4	3	3	3	3
9068012	4	5	4	5	6
9068031	4	6	5	3	5
9068112	4	4	3	3	4
9068113	5	4	4	3	3
9068306	2	4	3	4	3
9089473	4	3	4	4	4
9089474	5	5	5	4	3
9089475	4	3	4	3	3
9089476	3	4	3	2	3
9089480	4	4	4	2	3
9089484	4	7	6	4	5
9089485	2	4	4	4	6
9089487	4	4	4	3	4
9089515	6	5	4	3	3
9089516	5	3	4	5	4
9089517	5	3	5	3	3
9089535	6	3	4	3	4
9089536	6	4	5	4	5
9089541	4	4	4	4	3
Mean	4	4	4	4	4

* = vigor rating of 1-9 where 1 equals best and 9 equals poor.



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