Stop #5 Coating Warm-Season Turfgrass Seeds To Improve Establishment Under Saline Conditions

Marco Schiavon, Jim Baird, and Matteo Serena

Objectives:

The objectives of this research were to determine: 1) if five experimental seed coatings and Zeba coating help the establishment of 'Princess 77' bermudagrass and 'SeaSpray' seashore paspalum when irrigated with increasing levels of saline water; 2) how irrigation salinity affects establishment of 'NuMex Sahara' bermudagrass, 'Whittet' kikuyugrass, and 'Sundancer' buffalograss.

Methods:

A line-source gradient experiment was designed to alternate distribution of potable and saline water to establish an irrigation salinity gradient, identifying 5 different electrical conductivity (EC) levels (2, 3, 4.5, 5.5, and 7 dS/m). Plots were seeded on 2 July 2014 at the following rates: 2 lb/M (bermudagrass and buffalograss); 1 lb/M (seashore paspalum and kikuyugrass). Irrigation was set to 100% Et_o. Percent ground cover is assessed weekly throughout the experiment using Digital Image Analysis.

Results:

On 2 September 2014, the only seed coating treatment that had a positive effect on bermudagrass establishment was ASET 4000 6%, which increased ground cover in comparison to uncoated seed at 2 dS/m, 5 dS/m and 7 dS/m. In particular, ASET 4000 6% coating on Princess 77 and NuMex Sahara uncoated achieved the highest groundcover when irrigated with saline water at 7 ds/m (53% and 51% respectively). Kikuyugrass was slower to establish in comparison to bermudagrass and seashore paspalum, covering 70% of the ground at 2 dS/m, but only 5% at 7 dS/m revealing poorer adaptability to establish from seed under high salinity levels of irrigation water. The slowest to establish of all grass species was buffalograss (Figure 1).

Plot Plan **North**

14	12	1	17	16	5	7	13	9	2	11	4	10	15	3	8	6	**Potable Line**
14	12	1	17	16	5	7	13	9	2	11	4	10	15	3	8	6	
14	12	1	17	16	5	7	13	9	2	11	4	10	15	3	8	6	
14	12	1	17	16	5	7	13	9	2	11	4	10	15	3	8	6	
14	12	1	17	16	5	7	13	9	2	11	4	10	15	3	8	6	**Saline**
17	13	10	14	3	15	16	12	5	7	6	8	9	4	11	1	2	**Line**
17	13	10	14	3	15	16	12	5	7	6	8	9	4	11	1	2	
17	13	10	14	3	15	16	12	5	7	6	8	9	4	11	1	2	
17	13	10	14	3	15	16	12	5	7	6	8	9	4	11	1	2	
17	13	10	14	3	15	16	12	5	7	6	8	9	4	11	1	2	**Potable**
3	8	15	17	14	16	5	1	11	12	13	7	6	2	9	10	4	**Line**
3	8	15	17	14	16	5	1	11	12	13	7	6	2	9	10	4	
3	8	15	17	14	16	5	1	11	12	13	7	6	2	9	10	4	
3	8	15	17	14	16	5	1	11	12	13	7	6	2	9	10	4	**Saline**
3	8	15	17	14	16	5	1	11	12	13	7	6	2	9	10	4	**Line**

Entry List

Entry #	Treatment
1	Seashore Paspalum ‘SeaSpray’ uncoated
2	Seashore Paspalum ‘SeaSpray’ ASET 4000 1%
3	Seashore Paspalum ‘SeaSpray’ ASET 4000 6%
4	Seashore Paspalum ‘SeaSpray’ ASET 4000 20%
5	Seashore Paspalum ‘SeaSpray’ ASET 4001 10%
6	Seashore Paspalum ‘SeaSpray’ ASET 4002 10%
7	Bermudagrass ‘Princess 77’ uncoated
8	Bermudagrass ‘Princess 77’ ASET 4000 1%
9	Bermudagrass ‘Princess 77’ ASET 4000 6%
10	Bermudagrass ‘Princess 77’ ASET 4000 20%
11	Bermudagrass ‘Princess 77’ 4001 10%
12	Bermudagrass ‘Princess 77’ ASET 4002 10%
13	Seashore Paspalum ‘SeaSpray’ Zeba
14	Bermudagrass ‘Princess 77’ Zeba
15	Bermudagrass ‘NuMex Sahara’ uncoated
16	Kikuyugrass ‘Whittet’ uncoated
17	Buffalograss ‘Sundancer’ uncoated

Figure 1. Percent groundcover on 2 September 2014 of significant coating treatments, and uncoated bermudagrass, seashore paspalum, buffalograss and kikuyugrass.