Stop #6b: Evaluation of Products for Turfgrass Water Conservation Using a Linear Gradient Irrigation System (LGIS)

Marco Schiavon, Toan Khuong and Jim Baird

Objectives:

1. Determine effective irrigation and chemical management practices to reduce water use.
2. Evaluate the ability of products to maintain acceptable turf quality under reduced water use.

Methods:

The LGIS area was sodded with 'Tifway II' bermudagrass on 7 August 2012. Areas of each plot that receive 10, 25, 55, 60, 65, 70, 75, 80, and 85% Et_0 were determined using catch cans to capture irrigation water. This procedure was repeated and validated every month during the experiment. All treatments were applied initially on 23 May 2014. Every two weeks, plots were evaluated for turf quality, NDVI (measure of greenness), volumetric soil water content, and surface temperature in the irrigation zones representing 10 to 85% ET_0.

Treatments:

See Table 1.

Results:

No differences were found in turf quality among treatments. Bermudagrass showed an acceptable quality of 6 or superior when irrigated with 55% ET_0 or above. Although differences in turf quality were different only among ET_0 ranges, differences in NDVI among treatments were discovered recently during the study. Kelplex and Ultraplex had the highest NDVI during two rating dates, and its indices were constantly superior than the control. Neptune, PK plus and Primo Maxx also had NDVIs greater than the control on four rating dates (Figure 1).

Table 1. List of chemicals used in the LGIS study.

No.	Treatment	Type	Dosage (oz./M)	Application Interval (Days)
1	Primo Maxx	Plant Growth Regulator	0.3	
1	Revolution	Surfactant	6.00	14
2	Amidas* spray	Nutrients	0.5 N	28
3	Calcinit* spray	Nutrients	0.5 N	28
4	Turf Royale* granular	Nutrients	0.5 N	28
5	Recovery Rx	Phosphite + Nutrients	5.00	14
6	PK Plus	Phosphite + Nutrients	6.00	14
7	Kelplex	Nutrients +	2.00	7
7	Ultraplex	Surfactant	4.00	7
8	Revolution	Surfactant	6.00	28
9	Neptune	Surfactant	6.00	28
10	Aquaplus	Polyacrylamide	3.00	28
11	Primo Maxx	Plant Growth Regulator	0.30	14
12	Control	--	--	--

All treatments applied in a carrier volume of 2 gal/M.

*Treatments first applied on July 25. Application interval was 14 days from initial application until September 5. Subsequently, applications were switched to monthly.

LGIS Study Plot Plan

East

Replication 1												Replication 2											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***10***	***11***	***7***	***2***	***1***	***12***	***6***	***3***	***9***	***4***	***5***	***8***
11	***10***	***2***	***3***	***9***	***8***	***6***	***12***	***4***	***7***	***5***	***1***	***4***	***9***	***6***	***10***	***7***	***2***	***8***	***1***	***11***	***3***	***5***	***12***
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
Replication 3												Replication 4											

West

(Road)

Figure 1. Naturalized Difference Vegetation Indexes (NDVI) of treatments that performed better than control.