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SloGrow Fertilizer Trial

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Introduction

The purpose of this study was to evaluate Slogrow fertilizer at different rates and application schedules. A control as well as a Urea fertilizer was used for a comparative study. This study was made possible by Craig Dick at Calcium Products, Inc.

Materials & Methods:

The study was conducted in the summer and fall of 2008 on two separate areas. The first site was at the Iowa State University Horticulture Research Farm located north of Ames near Gilbert. The second site was located at the Athletic Complex Research Area adjacent to the Iowa State University football team's 2-a-day practice facility. Kentucky bluegrass has been established at both sites for some time and was the target for this study. At both sites the study areas were mowed weekly at 1" with a Toro walk behind mower reel-type mower.

At both sites, the experimental design was a randomized complete block. Treatments dates were 11 May, 2 Sept. and 15 Oct. and were applied by hand over the 25 sq. ft. treatment plots. There were 12 treatments total consisting of the following: 1) Slogrow at 1.0 lbs. N/1000 ft² applied in May, 2) Slogrow at 1.5 lbs. N/1000 ft² applied in May, 3) Slogrow at 2.0 lbs. N/1000 ft² applied in May, 4) Slogrow at 3.0 lbs. N/1000 ft² applied in May, 5) Slogrow at 2.0 lbs. N/1000 ft² applied twice in May and Sept., 6) Slogrow at 3.0 lbs. N/1000 ft² applied twice in May and Sept., 7) Urea at 1.0 lbs. N/1000 ft² applied in May, 8) Urea at 1.5 lbs. N/1000 ft² applied twice in May and Sept., 9) Urea at 2.0 lbs. N/1000 ft² applied twice in May and Sept., and 10) a control with no fertilizer applied. The treatments were the same at both locations.

At the Horticulture research station, dry biomass (clipping weight) was taken 4 times during the summer and fall in June, July, August and September. At the Athletic complex, dry biomass was evaluated 3 times in July, August and September. The protocol for evaluation was to mow the study area on Friday and allow it to grow for one full week. The following Friday, the plots were mowed so that only one strip 17" wide by 3' long was left in the middle of each plot, measuring 4.26 ft². A McLane reel-type mower with a 17" reel was used to collect clippings from each treatment sub plot. After the clippings were collected from a sub plot, they were transferred to a brown paper bag, labeled and dried in an oven at 106 °F for a minimum of 48 hrs. After drying, the biomass was weighed in grams to determined differences in clipping yield between the treatments. The data were analyzed with SAS version 9.1.

Results:

Overall:

Table 1a. Overall F-test for main effect of treatment on clipping yield for all sample dates and both locations.

Site	Source	df	Sample Date - 2008			
			June	July	Aug	Sept
Hort Farm	Treatment	9	0.001	NS	NS	0.0002
Athletic	Treatment	9	.	0.0053	NS	0.0077

At the Horticulture Research Farm, there was a difference among treatments on clipping yield for June and September and no difference in July or August.

At the Athletic complex, there was a difference among treatments on clipping yield in July and September but not August.

Table 1b. Overall F-test for main effect of treatment on turf color for all sample dates and both locations.

Site	Source	df	Sample Date - 2008			
			June	July	Aug	Sept
Hort Farm	Treatment	9	0.0322	.	.	.
Athletic	Treatment	9

At the Horticulture Research Farm, there was a difference among treatments on turf color for June.

Horticulture Research Farm:

Table 2a. Mean dried biomass (clipping) weight (g/4.26 ft²) for 4 sample dates in the summer and fall of 2008 at the ISU Horticulture research farm site.

Treatment	Rate	Sample Date - 2008			
		13-Jun	14-Jul	11-Aug	26-Sep
1. Slogrow	1.0 May	6.97	10.1	11.37	4.66
2. Slogrow	1.5 May	8.31	12.3	12.16	6.12
3. Slogrow	2.0 May	10.36	11.58	12.78	5.77
4. Slogrow	3.0 May	10.65	10.68	13.84	4.12
5. Slogrow	2.0 (1.0 May, 1.0 Sept.)	7.63	10.15	12	7.39
6. Slogrow	3.0 (1.5 May, 1.5 Sept.)	9.55	10.62	12.63	7.4
7. Urea	1.0 May	9.67	12.63	13.09	5.92
8. Urea	1.5 (0.75 May, 0.75 Sept.)	8.59	11.61	12.62	7.86
9. Urea	2.0 (1.0 May, 1.0 Sept.)	8.67	10.51	12.37	9.61
10. Control	No Fertilizer	5.38	8.79	12.75	5
LSD_{0.05}		1.74	NS	NS	1.87

For the June sampling date, the highest biomass yield was treatment 4 (Slogrow at 3.0 lbs. N/1000 ft² applied once in May) and the lowest for fertilized plots was treatment 1 (Slogrow at 1.0 lbs. N/1000 ft² applied once in May). For Slogrow fertilizers applied in May, increases in N rate resulted in an increase in biomass yield and were significantly higher than treatments divided into two applications. The same trend was observed in Urea treatments. All treatments resulted in an improvement over the control.

For the July sampling date, the highest biomass yield was treatment 7 (Urea at 1.0 lbs. N/1000 ft² applied once in May) and the lowest for fertilized plots was again treatment 1 (Slogrow at 1.0 lbs. N/1000 ft² applied once in May). Again, all treatments were an improvement over the control. It is important to note that during this sampling date, the overall effect of treatment was not significant.

For the August sampling date, the highest biomass yield was treatment 4 (Slogrow at 3.0 lbs. N/1000 ft² applied once in May) and the lowest was treatment 1 (Slogrow at 1.0 lbs. N/1000 ft² applied once in May). No treatment showed a significant improvement over the control plot. Again, note the overall effect of treatment was not significant for this sampling date.

For the September sampling date, the highest biomass yield was treatment 9 (Urea at 2.0 lbs. N/1000 ft² applied twice in May and Sept.) and the lowest was treatment 4 (Slogrow at 3.0 lbs. N/1000 ft² applied once in May). For Slogrow fertilizer, application schedules that involved a September application resulted in higher biomass yields than those with only one application in May. The same trend was observed for the Urea schedules.

Table 2b. Mean turf color ratings for 1 sample date in the summer of 2008 at the ISU Horticulture research farm site.

Treatment	Rate	Sample Date - 2008			
		13-Jun	14-Jul	11-Aug	26-Sep
1. Slogrow	1.0 May	7.67			
2. Slogrow	1.5 May	7.83			
3. Slogrow	2.0 May	8			
4. Slogrow	3.0 May	8.5			
5. Slogrow	2.0 (1.0 May, 1.0 Sept.)	7.83			
6. Slogrow	3.0 (1.5 May, 1.5 Sept.)	8.33			
7. Urea	1.0 May	7.83			
8. Urea	1.5 (0.75 May, 0.75 Sept.)	7.83			
9. Urea	2.0 (1.0 May, 1.0 Sept.)	8			
10. Control	No Fertilizer	6.67			
LSD_{0.05}		0.86			

For the June sampling date, the best turf color was a result of treatment 4 (Slogrow at 3.0 lbs. N/1000 ft² applied once in May) and the lowest for treatments with fertilizer was treatment 1 (Slogrow at 1.0 lbs. N/1000 ft² applied once in May). For Slogrow fertilizer, an increase in the initial application rate of N/1000 ft² resulted in an increase in turf color quality. With Urea treatments, the same trend was generally observed although there was no difference in turf color between an initial application rate of 0.75 and 1.0 lbs. 1000 ft².

Athletic Complex:

Table 3. Mean dried biomass (clipping) weight (g/4.26 ft²) for 3 sample dates in the summer and fall of 2008 at the ISU Athletic complex site.

Treatment	Rate	Sample Date - 2008		
		30-Jun	29-Jul	19-Aug
1. Slogrow	1.0 May	3.4	2.44	1.57
2. Slogrow	1.5 May	5.36	3.04	2.4
3. Slogrow	2.0 May	5.68	2.47	1.61
4. Slogrow	3.0 May	5.16	2.64	0.94
5. Slogrow	2.0 (1.0 May, 1.0 Sept.)	3.37	2.71	3.63
6. Slogrow	3.0 (1.5 May, 1.5 Sept.)	3.82	2.36	4.68
7. Urea	1.0 May	4.53	2.6	1.2
8. Urea	1.5 (0.75 May, 0.75 Sept.)	4.01	2.74	2.46
9. Urea	2.0 (1.0 May, 1.0 Sept.)	4.83	2.86	3.68
10. Control	No Fertilizer	1.72	1.13	0.89
LSD_{0.05}		1.72	1.11	1.98

For the July sampling date, the highest biomass yield was treatment 3 (Slogrow at 2.0 lbs. N/1000 ft² applied once in May) and the lowest treatment with fertilizer was treatment 5 (Slogrow at 2.0 lbs. N/1000 ft² applied twice in May and Sept.). For the Slogrow treatments, a single application of greater than 1.0 lbs. N/1000 ft² resulted in a higher biomass yield than those treatments with multiple applications to reach the same rate. The Urea treatments showed no significant differences from one another. All treatments showed an improvement over the control.

For the August sampling date, the highest biomass yield was treatment 11 (Urea at 3.0 lbs. N/1000 ft² applied three times in May, Sept. and Oct.) and the lowest of treatment including fertilizer was treatment 7 (Slogrow at 3.0 lbs. N/1000 ft² applied three times in May, Sept. and Oct.). However, the main effect of treatment was not significant for this sampling date.

For the September sampling date, the highest biomass yield was treatment 6 (Slogrow at 3.0 lbs. N/1000 ft² applied twice in May and Sept.) and the lowest of treatments including fertilizer was treatment 4 (Slogrow at 3.0 lbs. N/1000 ft² applied once in May). Slogrow fertilizer application schedules involving more than one application resulted in greater biomass yield than those with only one application. The same trend was observed in the Urea schedules.