TALL FESCUE FAIRWAY COMPACTION STUDY

A study was initiated in 1992 to determine if tall fescue could be mowed at fairway height and maintain a reasonable quality turf. The plots are mowed at 3/4 inch. Three compaction levels are included in the study: none, 3 passes weekly with a vibrating power roller and 6 passes weekly. In general, there is little difference in turf quality ratings among the treatments. Using a grid, the percentage of both bare soil exposed and annual bluegrass in the plot area was determined (Table 9). Density counts taken May 4 indicated the check plot had less bare soil (1.7%), rolled three times weekly had 4.0% and 6 times weekly was 6.3%. The percentage of annual bluegrass was counted on May 4 and July 27. While there was a trend for more annual bluegrass on the plots receiving the compaction treatment there were no significant differences observed. The increase in annual bluegrass has not been as rapid as we had expected for tall fescue mowed at this height and with this compaction treatment. The compaction treatments have increased the surface hardness of the turf as measured by the Clegg device.

Table 5. Long Term Study of Nitrogen Carriers on Kentucky Bluegrass, 1993 Clipping Weights In Grams, Treatments Applied June

Treatment	rate	7-13	8-4	8-31	9-14
UHS 25-5-10 2002	1#/M	32.26 EFG	28.57 BCDE	35.97 B	46.77 A
UHS 25-5-10 2002	2#/M	36.57 DEF	31.30 ABCD	41.52 AB	55.45 A
UHS 25-5-10 2002	4#/M	41.69 BCDE	41.25 A	46.53 AB	46.26 A
Once 39-0-0	1#/M	28.30 FG	17.13 E	42.90 AB	39.90 A
Once 39-0-0	2#/M	39.18 CDE	21.32 CDE	42.10 AB	38.92 A
Once 39-0-0	4#/M	49.46 AB	33.11 ABC	49.49 AB	58.25 A
Scotts 39-0-0	1#/M	34.36 EF	29.78 ABCD	40.29 AB	45.28 A
Scotts 39-0-0	2#/M	45.43 ABCD	34.36 AB	39.42 AB	42.64 A
Scotts 39-0-0	4#/M	51.54 A	37.99 AB	55.89 A	43.52 A
SCU	1#/M	32.57 EFG	19.06 DE	38.21 AB	47.41 A
SCU	2#/M	46.78 ABC	30.86 ABCD	48.26 AB	52.97 A
SCU	4#/M	47.10 ABC	30.46 ABCD	46.86 AB	49.08 A
UHS 25-5-10 2004	1#/M	23.64 G	17.22 E	35.34 B	43.32 A
UHS 25-5-10 2004	2#/M	34.60 EF	27.39 BCDE	41.69 AB	43.16 A
UHS 25-5-10 2004	4#/M	45.22 ABCD	39.29 AB	46.66 AB	46.52 A

Means in columns followed by the same letter are not significantly different at the 5% level using the mean separation test.

Table 6. Annual bluegrass - urea timing study and effects on seedhead ratings, May 11, 1993.

Treatment		Application Date							Seedheads	
No.	Annual N	April	May	June	July	Aug	Sept	Nov	%[a]	lbs/1000
1	1	0	.5	0	0	0	.5	0	23.5e	
2	2	0	1	0	0	0	1	0	25.3ce	
3	4	0	1	1	0	1	1	0	24.0de	
4	6	1	1	1	1	1	1	0	26.5be	
5	4	1	1	1	0	0	1	0	26.0ce	

Treatment No	Annual N	Application Date April	May	June	July	Aug	Sept	Nov	Seedheads %[a]	lbs/1000
6	4	0	0	1	.5	.5	1	1	33.5a	
7	4	0	0	1	1	1	1	0	32.8a	
8	4	0	0	.5	.5	.5	.5	2	31.8ab	
9	0	0	0	0	0	0	0	0	14.0f	

a - Percent of plot with annual bluegrass seedheads. Means followed by the same letter are not significantly different at the 5% level using the LSD mean separation test.

Table 7. Effect of Topdressing Program and Hydroject Treatment on Water Droplet Infiltration Time in Seconds, 8/23/93

Treatment	Rate	Rate in ft3	Thatch Layer		1-3 Inch		3-6 Inches	
			No Hydroject	Hydrojected	No Hydroject	Hydrojected	No Hydroject	Hydrojected
Sand	every 3 weeks	3	148.7 abcd	77.3 cde	154.2 abc	150.0 abc	11.9 bcd	36.4 a
Sand	spring/fall	12	155.1 abc	87.7 cde	221.7 a	45.1 cd	2.5 cd	20.2 abc
80 sand: 20 peat	every 3 weeks	3	98.9 bcde	106.1 bcde	106.1 abcd	81.5 bcd	16.7 bcd	18.7 abcd
80 sand: 20 peat	spring/fall	12	108.5 bcde	57.2 e	188.7 ab	50.7 cd	26.6 ab	9.3 bcd
60 sand: 20 peat: 20 soil	every 3 weeks	3	78.1 cde	53.3 e	71.1 bcd	41.6 cd	14.6 bcd	11.1 bcd
60 sand: 20 peat: 20 soil	spring/fall	12	63.9 de	43.4 e	61.0 bcd	18.9 d	7.1 cd	3.5 cd
Control	every 3 weeks	3	8157 cde	219.6 a	25.5 cd	3.2 d	1.2 d	1.0 d
Sand (Aerified)	spring/fall	12	180.9 ab	91.9 cde	75.1 bcd	80.1 bcd	4.8 cd	6.9 cd

Means in columns followed by the same letter are not significantly different at the 5% level using the LSD mean separation test.

Table 8. Effects of Topdressing Program and Hydroject Treatment on Dollarspot Counts

Treatment	Frequency	Rate in ft^3	July 14		September 9	
			No Hydroject	Hydroject	No Hydroject	Hydroject
Sand	every 3 weeks	3	56.7 a	38.0 ab	28.3 a	12.3 bcd
Sand	spring/fall	12	8.7 cd	8.3 cd	11.7 bcd	7.7 cd
80 sand: 20 peat	every 3 weeks	3	28.7 bc	14.0 cd	22.7 ab	7.3 cd
80 sand: 20 peat	spring/fall	12	7.7 cd	1.3 d	9.0 cd	1.3 d
60 sand: 20 peat: 20 soil	every 3 weeks	3	16.7 bcd	8.3 cd	16.0 abc	3.7 cd
60 sand: 20 peat: 20 soil	spring/fall	12	4.7 d	2.3 d	7.0 cd	2.7 d
Control	every 3 weeks	3	8.0 cd	4.0 d	8.3 cd	7.7 cd
Sand (Aerified)	spring/fall	12	3.3 d	2.3 d	5.3 cd	2.3 d

Means for a date followed by the same letter are not significantly different at the 5% level using the LSD mean separation test.

Table 9. Effect of a compacting roller on a tall fescue turf mowed at fairway height. Study initiated 1992. Data taken in 1993.

	Clegg reading	Bare soil,%	Annual bluegrass,%	
Treatment	May 9	May 4	May 4	Aug 27
Check	69a	1.7a	21a	18a
3 passes weekly	80b	4.0b	26a	20a
6 passes weekly	89b	6.3b	30a	24a

HIGH POTASSIUM FERTILIZATION

The study evaluating high annual rates of potash were continued in 1993. Soil test data for the Kentucky bluegrass plot are given in Table 10. Using up to 12 lbs. K_2O per 1000 sq. ft. annually has dramatically increase available soil potassium levels as we have reported previously. What has become more apparent this year is that the potassium test in the 3-6 inch depths has increased greatly. This may have resulted from greater than normal rainfall during 1993. The effect of these high rates of potash on soil calcium levels is negligible, but the soil magnesium tests reflect the increased leaching of magnesium when such high levels of potash are applied. On sandier soils greater attention should be given to monitoring the balance between potassium and magnesium. Similar results were apparent on the other two grasses which have received similar treatments.

WETTING AGENT STUDIES

A study to evaluate the effect of a new wetting agent from the AquaTrols Corp. was initiated in 1993. Treatments were applied to a creeping bentgrass green growing on a sandy loam soil. The treatments shown in Table 11 were applied July 7 and August 16. Aqua Gro L is the present liquid formulation of Aqua Gro while the ACA 864 is a new experimental wetting agent. Again, the regular rainfall in 1993 prevented any appearance of localized dry spots on these plots. No differences in turfgrass quality among plots occurred during the summer. However, soil cores were collected from each plot on August 23 and October 16. In spite of the lack of appearance of localized dry spots, the laboratory test on water droplet penetration time revealed there were differences among treatments in the thatch layer. On both dates the higher rate of the experimental wetting agent provided reduced times for the drops to absorb into the soil core. No other differences occurred. The water droplet penetration time is a practical tool which the turf manager could utilize. A standard soil probe can be used to collect a profile sample. The important step is to allow the core samples to dry without being disturbed. Once dry, a uniform-sized drop of water is added to the core sample at different depths of the core sample, including the thatch layer. Then record the time (in seconds) for the droplet to disappear. This test can give an idea of the relative degree of hydrophobic condition which has developed in the soil at different depths. Several cores should be, and were, tested for a valid test on a given turf site.

MULCHING TREE LEAVES INTO TURF

This study has gained considerable interest from those who handle tree leaves each fall. In one study after 3 full years of mulching tree leaves into turf there has been no significant loss in turf quality. We will be evaluating responses more thoroughly in 1994. These studies are cooperative with Bruce Branham. A more thorough report can be found elsewhere in these proceedings in a paper authored by Thom Nikolai.