

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

Treatment	Clegg reading	Bare soil,%	Annual bluegrass,%	
	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. K₂O 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.

OTHER STUDIES

Another study in which there is considerable interest is maintaining sod growing on compacted subsoil. The sod was finally laid on all the plot area in the fall of 1993. The clay subsoil brought onto the site stayed wet much of the summer and was too soft in places to lay sod. The objectives of the research planned on these plots is to determine the effects of several cultural practices on turf quality, stress tolerance, rooting, thatch and disease.

**Table 10. High Potassium Study on Kentucky Bluegrass 1993
Initiated in April 1990**

Treatment K ₂ O in lb/M/year	Potassium Levels lbs/A			Calcium Levels lbs/A			Magnesium Levels lbs/A		
	Thatch	0-3 in.	3-6 in.	Thatch	0-3 in.	3-6 in.	Thatch	0-3 in.	3-6 in.
None	257.8 D	120.3 C	77.78 C	1832 B	1747 A	1400 A	370 A	352 A	280 A
Soil Test KCl carrier	406.5 D	202.0 C	153.3 BC	2000 AB	1768 A	1460 A	370 A	354 A	284 A
4 lb. KCl carrier	574.5 C	347.5 BC	220.0 BC	1874 B	1895 A	1440 A	344 A	338 A	270 A
8 lb. KCl carrier	881.8 B	581.3 ABC	454.8 AB	2003 A	1895 A	1440 A	352 A	308 B	228 B
12 lb. KCl carrier	902.0 B	932.0 A	747.3 A	1832 B	1705 A	1300 A	304 B	294 B	238 B
12 lb. K ₂ O ₂ carrier	1086 A	701.3 AB	565.8 A	1895 AB	1811 A	1504 A	302 B	288 B	228 B

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

**Table 11. Effects of Wetting Agent Treatment on Water Droplet Infiltration
Time in Seconds
Wetting Agent Applied July 7 and August 16, 1993**

Treatment	Rate	Sample Date 8-23			Sample Date 10-6		
		thatch	0-3 in.	3-6 in.	thatch	0-3 in.	3-6 in.
Control	---	913 a	228 a	2.5 a	1070 a	110.4 a	1.563 b
Aqua Gro L	8oz/M	650 ab	289 a	4.7 a	737.6 ab	144.4 a	1.188 b
ACA 864	6oz/M	91 c	160 a	3.2 a	298.2 b	154.8 a	4.813 a
ACA 864	4oz/M	111 c	194 a	1.2 a	383.8 b	168.6 a	2.625 ab
ACA 864	2oz/M	333 bc	216 a	1.8 a	661.9 ab	165.2 a	1.25 b

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