noticeable by most golfers when putting on a green. We hypothesize that the earlier data is more reflective of a real world situation and present the following argument for our hypothesis. The plots were 1 foot wide by 17 feet long with traffic restricted to this area for the duration of the experiment. The golf course superintendent repositions the golf cup in order to spread traffic effects. In this study space limitations restricted traffic to this long narrow plot which resulted in compaction along the traffic path. This may have reduced the differences between metal and non-metal spike effects even further. We have observed that metal spikes cause lifting of bentgrass stolons while the others give no evidence of this effect. New studies will be initiated in 1997. It is clear that the traditional metal spikes cause slower green speeds and result in more injury to the grass than some of the plastic spikes. We have not yet looked at effects if some of the larger non-metal spikes which have become available recently. There have been some reports from the superintendents that these may cause a dimpling effect on greens. It is clear that continued evaluations are necessary.

Table 6.

Metal and Non-metal Spikes Traffic Study

Initiated July 25, 1996

Stimpmeter Readings in feet

	July 25	Aug 2	Aug 9	Aug 16
Metal Spikes	8.81 b	9.33 b	8.81 c	9.73 b
Soft Spikes	9.69 a	10.28 a	9.29 b	10.00 ab
Greenspikes	9.72 a	10.46 a	9.53 a	10.19 a
Probability	.00	.00	.00	.02
LSD @ .05	.30	.22	.24	.32

HIGH POTASSIUM RATE STUDY ON A CREEPING BENTGRASS GREEN

The studies evaluating high annual rates of potash on creeping bentgrass and Kentucky bluegrass that were initiated in 1990 were continued in 1996. There were four replications of six different treatments in the study. Plot size was 5 feet by 7 feet. All applications during the season were made at the rate of 2 lbs. K_2O per 1000 sq. ft. per application. In these studies, soil samples are normally collected during the Fall, but due to arrival of winter weather early in 1995 these samples were taken in May, 1996. The soil test data from the thatch, 0-3, and 3-6 inch depths, are given in Tables 7-9, respectively. As expected there were statistically significant differences for the potassium at all three depths. For the first time there was a reduction in magnesium levels caused by high rates of potassium which was evident in the 3-6 inch depth. As mentioned previously, we do not recommend such high rates of potassium as were utilized in this study. Following soil test recommendations or slightly higher rates should provide adequate levels of potassium. On sands, the potash should be applied regularly throughout the season.

Table 7.

High Potassium Rate Study, Bentgrass
Soil test data in thatch layer (pounds per acre)
Sampled May, 1996

Treatment & Rate	P	K	Ca	Mg	pH
Check Plot	32	201 d	2817	411	7.0
Soil Test Recommend.	32	280 a	2697	382	7.0
4 lbs KCl / M / year	38	256 b	3059	445	7.0
8 lbs KCl / M / year	34	229 c	2556	368	7.0
12 lbs KCl / M / year	34	293 a	2600	372	7.0
12 lbs K2SO4 / M / year	33	297 a	2865	416	7.0
Probability	N.S.	.00	N.S.	N.S.	N.S.
LSD @ .05	5.7	23	407	73	.09

Table 8.
High Potassium Rate Study, Bentgrass
Soil test data in the 0 to 3 inch depth (pounds per acre)
Sampled May, 1996

Treatment & Rate	P	K	Ca	Mg	pH
Check Plot	27	75 d	1581 ab	272	7.2
Soil Test Recommend.	26	304 b	1582 ab	258	7.2
4 lbs KCl / M / year	31	201 c	1606 a	265	7.3
8 lbs KCl / M / year	29	285 b	1457 c	242	7.3
12 lbs KCl / M / year	31	378 a	1507 bc	247	7.2
12 lbs K2SO4 / M / year	27	372 a	1507 bc	244	7.2
Probability	N.S.	.00	.03	N.S.	N.S.
LSD @ .05	7.6	40	96	33	.09

Table 9.
High Potassium Rate Study, Bentgrass
Soil test data in the 3 to 6 inch depth (pounds per acre)
Sampled May, 1996

Treatment & Rate	P	K	Ca	Mg	pH
Check Plot	45	50 d	1210	219 a	7.2 b
Soil Test Recommend.	47	318 b	1225	168 bc	7.3 a
4 lbs KCl / M / year	57	211 c	1160	173 b	7.4 a
8 lbs KCl / M / year	55	341 b	1038	157 bc	7.4 a
12 lbs KCl / M / year	54	395 a	1088	160 bc	7.4 a
12 lbs K2SO4 / M / year	52	424 a	1088	131 c	7.4 a
Probability	N.S.	.00	N.S.	.01	.00
LSD @ .05	17	53	173	40	.12

On the morning of September 5 potash treatments were applied for treatments 3, 4, 5, and 6 at the rate of 2 lbs. K20 per 1000 sq. ft.. Treatments were not watered in until early a.m. on September 6. September 5 was an extremely hot and humid day that resulted in significant fertilizer burn. Table 10 gives the burn ratings taken on the afternoon of September 6. All plots treated with KCl had a higher burn potential than K2SO4. It is recognized that no more than 1 lb. of K20 is the maximum that should be applied at one time, particularly on a hot day, but the data confirm the safety in using potassium sulfate under such conditions. Of course, if black layer is a concern on a given turf the use of potassium sulfate would not be recommended. Lower rates of other potash carriers should be utilized. Potassium nitrate would be a good alternative where a black layer condition is present. It is interesting to note that even at 2 lbs. K20 per 1000 sq. ft. that KCl did not result in kill of the turf. Recovery from the burn occurred within a few days

Table 10.
High Potassium Rate Study, Bentgrass
Burn Rating September 6, 1996 (9 = no burn, 6 and above is acceptable, 1 = serious kill)

Treatment & Rate	Burn Rating
Check Plot	9.0 a
Soil Test Recommend.	9.0 a
4 lbs KCl / M / year	3.5 c
8 lbs KCl / M / year	3.5 c
12 lbs KCl / M / year	3.5 c
12 lbs K2SO4 / M / year	8.0 b
Probability	.00
LSD @ .05	.02