Table 4.

Oak & Maple Leaf Mulch Study 1996

Initiated 1991

Quality Ratings (9 = excellent, 6 and better is acceptable, 1 = dead)

	May 10	June 13	July 2	July 17	Aug 8	Sept 11	Nov 11
No Nitrogen	3.6 c	3.5 b	4.2 b	5.5 c	5.6 b	5.6 b	5.4 c
Spring N	6.8 a	6.5 a	6.7 a	7.9 a	7.2 a	6.7 a	7.2 b
Fall N	5.8 b	6.7 a	6.9 a	6.8 b	7.6 a	6.9 a	7.9 a
Probability	.00	.00	.00	.00	.00 *	.00 *	.00 *
LSD @ .05	.86	.88	1.18	.50	.46	.63	.48

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

* Statistical interaction between leaf type and nitrogen program.

Table 5.

Oak & Maple Leaf Mulch Study 1996

Initiated 1991

Broad Leaf Weed Counts (Number per plot)

	May 10	June 13	July 2	Sept 20
No Nitrogen	7.1 a	8.5 a	9.3 a	20.4 a
Spring N Program	0.2 b	0.3 b	0.1 b	1.8 b
Fall N Program	0.2 b	0.3 b	0.8 b	2.0 b
Probability	.00	.00	.00	.00 *
LSD @ .05	2.61	3.99	3.74	7.10

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

* Statistical interaction exist between leaf type and nitrogen program.

Three new leaf mulch studies were initiated during the Fall of 1996. One of these is located in a heavy shade area on campus. This study includes either oak or maple leaves applied at several rates, including rates as high as 450 lbs. of leaves per 1000 sq. ft. (Over 12 inches of leaves) either in one application or split over 3 applications at weekly intervals. Another study includes a mowing height variable with plots mowed at either 1.5 inches or 3 inches. Rates of leaves are up to 450 lbs. per 1000 sq. ft. in one or three applications. The objective of this study is to determine the effect of mowing height and heavy leaf rates on turf survival. Samples of leaves have been collected and are being screened to determine particle size of the leaves.

II. GOLF SPIKE TRAFFIC STUDY

On July 25, 1996 a study was initiated to evaluate the effects of different golf shoe spikes on green speed. Extra Traction Soft Spikes and Greenspikes, both plastic type spikes, were donated by the respective companies and the Michigan Turfgrass Foundation provided money to purchase three identical pairs of golf shoes. Soft Spikes were placed in one pair of shoes, Greenspikes in another, and metal spikes remained in the third pair. On 17 days of the 22 day study one individual walked the same number of times across each plot (1 foot by 17 feet) wearing the appropriate shoes. Twenty passes were generally made on the day of a stimping event (40 passes on the final day) and on non-data collection days 10 passes were made.

Data are given in Table 6. Numbers reflect the average green speed taken from 18 plots. On all four dates of stimpmeter data collection the metal spikes resulted in statistically slower green speeds than the Greenspikes, and on three of the four dates Soft Spikes were faster than the metal spiked greens. On August 9 the Greenspike-trafficked greens were approximately 3 inches faster than for Soft Spike-treated greens, a difference that would not be noticed by most golfers. Except for the August 16 data the difference between Greenspike and metal spiked greens was greater than 6 inches. Six inches is the length generally regarded as

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