

TURFGRASS SOIL MANAGEMENT RESEARCH REPORT - 1985

P. E. Rieke and M. T. McElroy
Department of Crop and Soil Sciences, MSU

This report summarizes the turf soil management research conducted primarily at the Hancock Turfgrass Center in 1985 and which was supported financially in large part by the Michigan Turfgrass Foundation. We are most grateful for this support and encouragement.

LONG TERM NITROGEN FERTILITY PROGRAM EFFECTS ON THREE CREEPING BENTGRASSES MAINTAINED UNDER GREENS CONDITIONS

The treatments outlined in Table 1 have been applied for 4 years to the blocks of Emerald, Penneagle and Penncross creeping bentgrasses. These grasses have been maintained under greens conditions and are growing on a modified loamy sand soil. Plot size was 4 feet by 6 feet with 3 replications. In previous years the Emerald plots tended to provide a very open turf, especially at the lower nitrogen rates. And the Emerald was highly susceptible to dollarspot as well. Quality ratings in 1985 (Table 1) indicated smaller differences between Emerald and Penneagle in particular, although some variability in data occurred. Frequently, Penncross had higher quality ratings for given month than the other grasses except for the August 23 rating date. There was no apparent cause for the low ratings on all grasses on that date. Some of the plots, particularly the Penncross plots and the Penneagle at higher nitrogen rates, are developing a significant thatch layer which will likely influence the turf quality in the future. Some evidence of scalping appeared in 1985 on these plots. Further, there was more wilting on the higher nitrogen plots on a few days earlier in the summer when there was more moisture stress.

LONG RANGE NITROGEN CARRIER EFFECTS ON A PENNCROSS CREEPING BENTGRASS GREEN AND AN ANNUAL BLUEGRASS FAIRWAY TURF

This cooperative study with J. M. Vargas, Jr. was established in 1982 with revisions in some treatments in 1985. Treatments outlined in Table 2 were applied to a 5-year old Penncross creeping bentgrass green growing on a modified loamy sand soil and to an annual bluegrass turf growing on a loam soil and maintained under fairway conditions at the Hancock Turfgrass Research Center. Plot size was 6 feet by 6 feet with 3 replications. Treatments for April and May were initiated in early June because of a change of technical personnel. Further, the 1985 November applications outlined were not applied as scheduled so data for treatments 1, 3, 5, 7, 9 and 11 should not be compared for others for 1985. The sulfur-coated urea is a greens grade from CIL while the 18-4-10 is a greens fertilizer from the Lebanon Co. Although the treatments receive 1 pound of nitrogen during the summer months from several carriers (treatments 3, 4, 6, 8, 10 and 12) rated highly on many dates, we suggest summer applications (July and August) of nitrogen on greens or fairways should not normally exceed 1/2 pound per 1000 square feet at one time, with an upper rate of 3/4 pound in rare cases.

Data in Table 4 are quality ratings for the annual bluegrass plots. Interestingly, the Penncross green and the annual bluegrass fairway plots

Table 1. Effect of N fertilization program on turfgrass quality ratings of Emerald, Penneagle and Penncross creeping bentgrasses maintained under putting green conditions. Total nitrogen rates shown were divided in monthly applications and made in May, June, June, August and September except as noted. Averages of 3 replications.

Treatment lbs N/1000 yr	Carrier	Turfgrass quality rating (9 = greenest)			
		July 11	Aug 2	Aug 23	Nov 27
Emerald					
1	Urea	5.5 de**	5.3 d	3.2 d	5.7 d
2	Urea	6.3 c	5.8 d	4.8 c	6.2 bd
3	Urea	6.2 cd	6.5 c	5.7 b	6.7 ab
4	Urea	6.5 bc	7.2 b	5.5 b	6.7 ab
6	Urea	7.2 ab	7.7 ab	7.3 a	6.8 a
8	Urea	7.2 ab	7.7 ab	6.8 a	6.7 ab
4*	Urea	4.3 f	6.0 cd	5.7 b	6.3 ac
4*	Milorganite	5.2 e	5.7 d	5.5 b	6.0 cd
4*	Am. Nit.	7.3 a	8.0 a	7.0 a	6.8 a
Penneagle					
1	Urea	6.2 ab	5.5 d	3.0 e	5.5 e
2	Urea	6.7 ab	6.2 cd	4.2 d	6.0 de
3	Urea	7.3 a	7.8 ab	5.8 bc	6.5 cd
4	Urea	6.5 ab	7.3 b	5.0 cd	7.2 ab
6	Urea	6.5 ab	8.0 ab	7.0 a	7.7 a
8	Urea	7.0 ab	8.5 a	6.8 ab	7.3 a
4*	Urea	4.7 c	5.7 d	5.0 cd	6.3 cd
4*	Milorganite	6.0 b	7.0 bc	5.0 cd	6.3 cd
4*	Am. Nit.	6.3 ab	7.8 ab	7.2 a	6.7 bc
Penncross					
1	Urea	6.2 de	6.0 c	2.8 d	6.0 b
2	Urea	7.2 ac	6.3 c	2.7 d	6.8 ab
3	Urea	6.3 cd	7.4 b	4.5 c	6.5 ab
4	Urea	6.7 cd	7.5 b	4.2 c	7.3 a
6	Urea	8.0 a	8.2 a	7.3 a	7.5 a
8	Urea	7.8 ab	8.5 a	7.0 ab	7.0 ab
4*	Urea	4.7 f	5.8 c	4.0 c	6.5 ab
4*	Milorganite	5.3 ef	6.3 c	4.2 c	6.7 ab
4*	Am. Nit.	7.0 bd	8.2 a	6.5 b	6.8 ab

* Nitrogen program includes 1 pound N per 1000 sq. ft. applied on December 5.

** Means within columns with like letters do not differ significantly according to Duncan's Multiple Range Test (5%). Cultivars evaluated individually.