

1983 TURFGRASS SOIL MANAGEMENT RESEARCH REPORT

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Irrigation regime and nitrogen-potassium ratio effects on Adelphi Kentucky bluegrass

A study was conducted in 1983 at the Hancock Turfgrass Center on the effect of irrigation regime and the ratio of nitrogen to potash applied on Adelphi Kentucky bluegrass. This study is cooperative with J.M. Vargas, Jr. Treatments are outlined in Table 1. Throughout the growing season plots receiving approximately .17 inch of irrigation daily at noon were more uniformly green than plots irrigated either at approximately 80% of open pan evaporation or on wilt. In spite of the dry summer, the plots irrigated on wilt required irrigation only twice. All plots received about .1 inch of water after fertilization five times during the year.,

Few significant differences in quality rating occurred on plots receiving daily irrigation regardless of nitrogen or potash treatment. In contrast, those plots irrigated less frequently demonstrated significant responses to increasing N levels. There were no responses to increasing potash levels in spite of low soil test levels of potassium.

A similar study on a Penncross creeping green growing on a USGA green did not give similar responses. Watering rates used were 120%, 100%, and 80% of open pan evaporation. It is assumed that the perched water table which underlies all plots allowed water from more heavily irrigated plots to move laterally to drier plots.

Nitrogen fertilization programs on three creeping bentgrasses under greens conditions

Three creeping bentgrasses -- Penncross, Penneagle, and Emerald -- each received the nitrogen treatments shown in Table 2. Generally, Emerald did not exhibit as high quality turf as the other two grasses. Emerald was also more susceptible to dollarspot than the other two grasses.

Table 2. Effect of fertilization with N and K₂O, on turfgrass quality ratings of Emerald, Penneagle and Penncross Creeping bentgrasses maintained under putting green conditions.

Treatment, lbs/1000/yr			Turfgrass quality rating (9=greenest)			
N	Carrier		May 30	June 24	Sept 29	Nov 10
Emerald	1	Urea	2.7 m ^x	1.7 g	2.7 kl	3.2 i
	2	Urea	3.8 lm	2.0 pg	2.5 l	3.7 fi
	3	Urea	4.5 il	3.5 mn	3.0 jl	3.8 ei
	4	Urea	4.6 ik	4.1 kl	5.2 cf	4.5 ce
	6	Urea	7.3 ce	6.8 de	5.7 cd	4.7 cd
	8	Urea	7.8 bd	7.0 bcd	6.7 ab	5.8 b
	4 ^y	Urea	7.4 ce	4.0 km	3.2 il	4.3 cf
	4 ^y	Milorganite	5.5 hi	4.4 jk	5.0 df	3.2 i
	4	Am. Nit.	4.7 ik	4.7 hj	3.0 jl	4.2 cg
Penneagle	1	Urea	3.8 lm	2.1 op	3.0 jl	3.3 hi
	2	Urea	4.4 kl	2.5 no	3.0 jl	4.0 dh
	3	Urea	4.6 ik	3.8 lm	3.3 ik	4.2 cg
	4	Urea	5.8 gi	4.4 jk	5.2 cf	4.7 cd
	6	Urea	8.0 bc	7.3 bc	4.8 eg	4.8 c
	8	Urea	8.0 bc	7.6 ab	5.5 ce	6.2 b
	4 ^y	Urea	6.8 ef	5.4 gh	3.7 hj	4.3 cf
	4 ^y	Milorganite	5.8 gi	4.6 ik	4.5 fg	3.2 i
	4	Am. Nit.	5.8 gi	5.8 eg	3.3 ik	4.0 dh
Penncross	1	Urea	4.2 km	2.2 op	3.7 hj	3.8 ei
	2	Urea	4.4 bl	2.4 no	3.3 ik	4.2 cg
	3	Urea	5.0 ij	4.7 hj	3.8 hi	4.3 cf
	4	Urea	6.1 fg	5.8 eg	5.8 c	4.3 cf
	6	Urea	8.2 ab	7.7 a	6.5 b	5.7 b
	8	Urea	8.5 a	7.7 a	7.2 a	6.8 a
	4 ^y	Urea	7.1 df	5.6 fh	3.8 hi	4.7 cd
	4 ^y	Milorganite	6.1 fg	4.8 hi	5.0 df	3.5 gi
	4	Am. Nit.	6.0 fh	5.8 eg	4.3 gh	4.5 ce

^xMeans in columns followed by the same letter are not significantly different from each other at the 5% level using Duncan's Multiple Range Test.