GT 1

Nitrate Leaching During Establishment of Creeping Bentgrass on Sandy Soils

Rafael Gonzalez-Carrascosa, Bruce E. Branham and Paul E. Rieke
Department of Crop and Soil Sciences

In the last decade, much higher rates of nitrogen fertilization have been used to establish new turf. The rates used during bentgrass establishment are so high that applications during the first two or three months can equal three years of a normal maintenance program. There must certainly be a limit beyond which the drawbacks would make these high fertility regimes unsuitable and unreasonable. Furthermore, society is becoming more and more concerned about the impact of maintenance practices on the environment. One of the consequences of using high rates of fertilizers is the higher risk for nitrate leaching, with the result of surface and ground water contamination. This is even more likely when high sand content soils are involved.

A two year research was started the summer of 1994 at the Hancock Turfgrass Research Center. Several different fertility programs were used to study their effect on both establishment rate, turf quality, and nitrate leaching (see table for 1995 programs). Suction lysimeters were used to collect soil water samples at the base of the rootzone mix that were later analyzed for nitrate, ammonium, and phosphate.

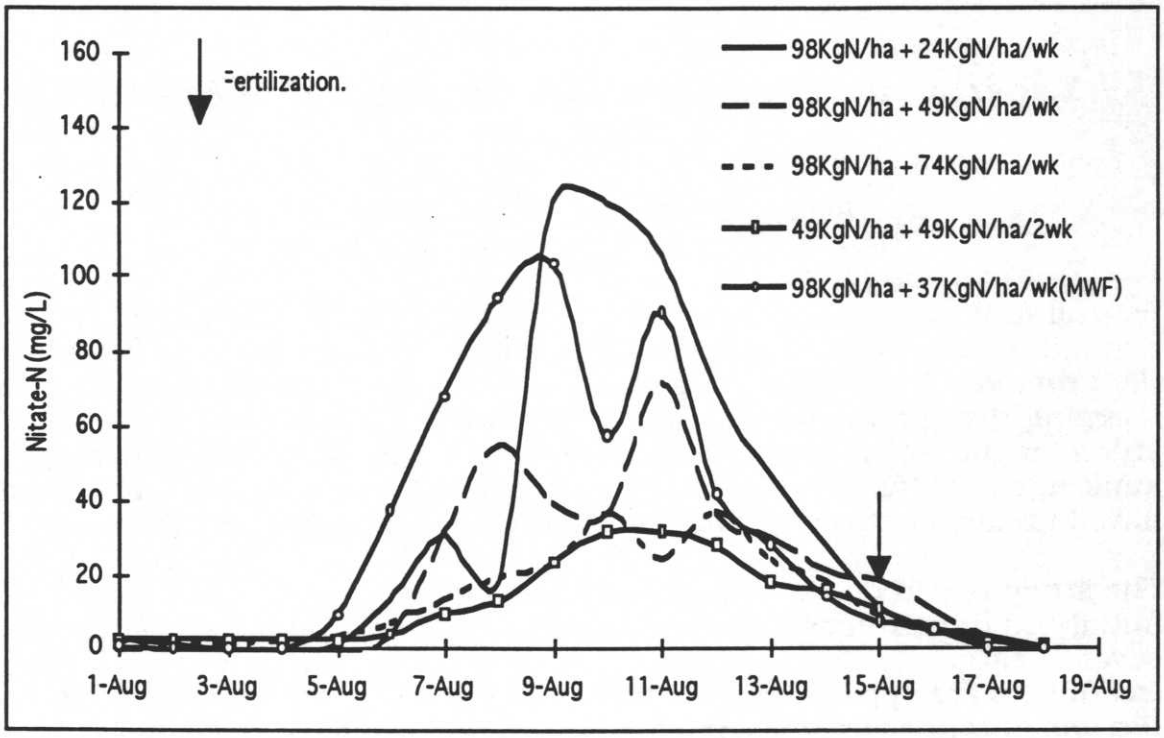
Following the starter fertilizer application, the plots were seeded with 1 lb/1000 ft^2 of Pennlinks creeping bentgrass (July 28, 1994 and June 14, 1995). Irrigation was used to keep the soil moist during establishment. In the third week, the grow-in fertilizer applications were begun. Coverage and color rating were collected on a regular basis. Water samples were collected daily.

From last year's results, some preliminary conclusions can be made. A starter fertilizer containing good levels of phosphorous, potassium, and 0.5 lbs N/1000 ft^2 should be enough to achieve a good germination. Rapid establishment was achieved with either 0.75 or 1.0 lbs N/1000 ft^2/wk. Surprisingly, these levels of fertilization did not result in high levels of nitrate movement in the drainage water.

Fertility Programs 1995

	Starter application	Grow-in application
1)	2 #N/M (14-28-10)	0.5 #N/M/wk
2)	2 #N/M (14-28-10)	0.75#N/M/wk
3)	2 #N/M (14-28-10)	1 #N/M/wk
4)	2 #N/M (14-28-10)	1,5 #N/M/wk
5)	1 #N/M (14-28-10)	1 #N/M/2wk
6)	5.3 #N/M (19-26-5)	1 #N/M/wk
	1 #N/M (15-0-30)	
7)	1 #K_2O/M (0-0-50)	1 #N/M/wk (on 2nd week)
	2 #P_2O_5/M (0-46-0)	
8)	1 #K_2O/M (0-0-50)	1 #N/M/wk (on 3rd week)
	2 #P_2O_5/M (0-46-0)	
9)	30 #SandAid/M	
	1.7 #N/M (14-28-10)	1 #N/M/wk
10)	60 #SandAid/M	
	1.4 #N/M (14-28-10)	1 #N/M/wk

Nitrate leaching from starter fertilization 1994.



Nitrate leaching from grow-in fertilization 1994.