Nitrogen vs. Disease: 1987 Observations

By Dr. Wayne R. Kussow

Four experiments being conducted in Madison with different nitrogen sources, rates and frequencies of application have provided some interesting observations regarding interactions between disease incidence and N use on turfgrass. In the first instance, *Poa annua* decline observed on fairways on three different golf courses was found to be related to the N treatments employed.

A first glance at the data in Table 1 might lead one to conclude that N source had a role to play in the relative amount of Poa decline. Closer inspection reveals, however, that this was an incidental association. Frequency and rate of N application and not N source were the real factors involved. This is best seen by looking at the data when averaged across N rates and frequencies of application (Table 2). Increasing the rate of N application from 100 to 200 1b/A (2.3 to 4.6 1b/M) per season or decreasing the number of N applications from six to two per season seems to have had similar unfavorable effects on Poa decline. Statistical analysis, however, suggests that frequency of N application was substantially more influential than rate of N as far as the degree of Poa decline was concerned.

In September, yellow tuft appeared in N plots established on a one year-old stand of Penncross creeping bentgrass. Numbers of yellow tufts per plot (70 ft²) bore a relationship to N treatment (Table 3). But unlike in the case of *Poa annua* decline, low N rates and high frequencies of application appeared to result in turfgrass that was more susceptible to yellow tuft infection. Statistically, the observed influence of N rate on yellow tuft incidence was nearly four times the influence of frequency of N application. In other words, should one attempt to minimize yellow tuft infestation via manipulation of N use, the indication is that attention should first focus on N rate rather than the number of applications per season.

Caution must be exercised in attaching too much significance to these N vs. disease observations. This is particularly true in the case of yellow tuft, where we are dealing with a single location and a single year. Whether or not the relationship reappears in the next two or three seasons remains to be seen.

The observation that increasing N rates or decreasing the frequency of N application leads to more extensive *Poa annua* decline during periods of heat stress has considerably more credibility. There are two reasons for this. For one, the relationships were observed at three different experimental sites. Secondly, studies conducted in Connecticut and Maryland have also shown that Poa stand density is improved and decline is reduced when N management practices shift away from relatively heavy infrequent applications toward frequent light N applications.

Table 1. Influences of N treatments on *Poa annua* decline (Scale of 1 to 5, 5 being the worst)

N MANAGEMENT PROGRAM			Poa decline rating (means for 3 sites)
SOURCE	SEASON RATE	Applications /season	
	1b N/A		
Fine grade Milorganite	100	6	0.7
	150	6	1.4
	200	6	1.5
Regular Milorganite	100	3	1.2
	150	3	1.5
	200	3	2.8
IBDU	100	2	2.5
	150	2	2.4
	200	2	2.7
UF	100	2	1.1
	150	2	2.1
	200	2	2.8

Table 2. Average influences of N rate and frequency of application on *Poa annua* decline ratings. (Scale of 1 to 5, 5 being the worst)

VARIABLE	Average Poa Decline Ratings
N Rate/Season	
1000 lb/A	1.4
150 lb/A	1.8
200 lb/A	2.4
N Applications	
6 per season	1.2
3 per season	1.8
2 per season	2.3

Table 3. Influence of N treatments on yellow tuft in creeping bentgrass.

N MANAGEMENT PROGRAM			Yellow tufts per plot (70 ft²)
SOURCE	SEASON RATE	Applications /season	
	1b N/A		
Fine grade Milorganite	2.4	12	19
	4.8	12	17
	7.2	12	1
Regular Milorganite	2.4	6	24
	4.8	6	1
	7.2	6	0
Urea	2.4	6	14
	4.8	6	1
	7.2	6	0
IBDU	2.4	3	0
	4.8	3	0
	7.2	3	0

TURFGRASS SHORT COURSE

The University of Wisconsin College of Agriculture and Life Sciences will offer a one week turfgrass management course the week of January 4-8, 1988. The one week short course was started in January of 1987 with an enrollment of 40. The course is offered the first week in January when classroom facilities are available during the Christmas break for long course students.

The short course is designed for professional turfgrass managers including golf courses, landscapers, sod producers, lawn care services and grounds maintenance people.

The short course is team taught by Robert Newman, Charles Koval, Wayne Kussow and Gayle Worf. The subject matter covers everything from turfgrass establishment and maintenance through pest prevention and control. Information is presented by lecture, slides, overhead projector, pest mounts, and printed handout materials. The interchange of ideas among students is encouraged as a teaching tool.

Sample problems in the areas of fertilizer application, pesticide application and equipment calibration are worked through to enable students to order and accurately apply the many products used on turf.

Time is allotted to ask and answer individual questions and solve individual problems.

In summary, the goal of the turfgrass short course is to review turfgrass management and update students relative to current turf problems and problem solutions.

For further information covering enrollment and fees please contact:

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