STOP: 6

NITROGEN CARRIER EVALUATIONS FOR TURF

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There are many different nitrogen fertilizers available to the turf manager today. These plots and others are designed to determine what kind of response can be expected from specific fertilizers and how this information can be utilized in predicting their most efficient use.

The rapidly growing use of foliar applications of fertilizers to turf has renewed interest in the soluble nitrogen carriers, urea and ammonium nitrate. In 1975 and 1976 studies at Traverse City there have been no apparent differences in the turf response to these two materials when applied foliarly (see 1976 data in Table A), although ammonium nitrate is definitely more phytotoxic than urea at the same rate of N application. Although the quality ratings for the dry form of these two materials are slightly better (lower) than the foliar treatments, these differences are small and are a result of a lack of uniformity of application of the fertilizer which was the fault of the equipment used, not the fertilizer.

It is advised to water the turf following applications of these soluble carriers, especially ammonium nitrate, if at all possible. Lighter rates of application, cooler weather conditions at the time of application, and the use of higher rates of water with the application reduce the potential for foliar injury due to the fertilizer.

Note the differential injury demonstrated with recent applications to these plots.

Table A. Method of Application of Soluble Nitrogen Carriers on Kentucky Bluegrass at Traverse City, 1976. N Applied in May, June and August.

Nitrogen treatment			Visual Turfgrass Quality Rating (1=best;10=poo				
Carrier	Annual N Rate lbs/1000 sq ft	Method of application	Jun 24	Jul 21	Aug 18	Sep 9	Average
33-0-0	3	Foliar	3.5	3.0	3.5	3.0	3.3
45-0-0	3	Foliar	3.8	3.0	3.8	2.8	3.4
33-0-0	6	Foliar	1.5	1.5	2.0	1.2	1.6
45-0-0	6	Foliar	1.7	1.5	1.8	1.0	1.5
33-0-0	3	Dry	3.2	2.7	3.3	2.8	3.0
33-0-0	6	Dry	1.0	1.0	1.5	1.0	1.1
45-0-0	6	Dry	1.0	1.0	1.2	1.0	1.1
Check	0	---	7.8	9.0	9.3	9.0	8.9

In a comparison of several N carriers under greens conditions at Traverse City in 1976, all fertilizer sources performed well (Table B) when considering average quality ratings for the growing season. As would be expected, (urea-formaldehyde), fine ureaformaldehyde, Milorganite, and IBDU all responded more slowly than other materials. Typically, straight 38% UF needs more than one

season of application before turf quality begins to approach that from other N sources. Because of differences in the responses of these materials the turf manager must know the general N release characteristics of his fertilizer, and evaluate the specific environmental conditions which exist in order to predict how the turf should respond.

Note the differential responses of the Kentucky bluegrass turf to treatments applied June 4.

Table B. 1976 Nitrogen Carrier Study on a Bentgrass Green at Traverse City. Nitrogen Applied at the Rate of 6 pounds N per 1000 sq. ft. Annually.

N Treatment			Visual Turfgrass Quality Rating (1=best)				
Carrier	Time of Application	Method of Application	Jun 24	Jul 21	Aug 18	Sep 9	Average
33-0-0	May,Jun,Aug	Dry	3.1	1.8	2.9	2.0	2.4
33-0-0	Monthly	Dry	2.9	1.6	2.8	2.8	2.5
33-0-0	May,Jun,Aug	Foliar	2.8	1.8	3.0	2.3	2.5
33-0-0	Monthly	Foliar	2.8	2.3	2.6	2.9	2.7
45-0-0	May,Jun,Aug	Dry	2.3	1.5	2.5	1.9	2.0
45-0-0	Monthly	Dry	2.3	1.4	2.7	2.4	2.2
45-0-0	May,Jun,Aug	Foliar	2.7	1.4	2.8	2.1	2.2
45-0-0	Monthly	Foliar	2.3	2.3	2.8	2.7	2.5
SCU(32)*	May,Jun,Aug	Dry	1.9	1.3	2.8	2.1	2.0
SCU(32)*	May,Aug	Dry	1.4	3.0	2.9	1.4	2.2
SCU(20)*	May,Jun,Aug	Dry	1.7	3.1	2.6	1.8	2.3
SCU(20)*	May,Aug	Dry	1.0	2.8	2.0	1.0	1.7
IBDU(31)*	May,Jun,Aug	Dry	2.8	2.3	2.5	2.9	2.6
IBDU(31)*	May,Aug	Dry	1.9	2.9	2.8	2.4	2.5
6-2-0*	Monthly	Dry	2.5	2.7	2.2	3.0	2.6
6-2-0*	May,Jun,Aug	Dry	2.8	1.9	2.9	2.5	2.5
UF-Reg*	May,Jun,Aug	Dry	4.0	2.9	2.8	2.9	3.2
UF-Reg*	May,Aug	Dry	3.0	4.1	3.3	2.9	3.3
UF-Fine*	May,Jun,Aug	Dry	3.6	1.8	2.2	2.8	2.6
UF-Fine*	May,Aug	Dry	2.6	3.5	2.5	2.2	2.7

*33-0-0 is ammonium nitrate; 45-0-0 is urea; SCU(32) is sulfur coated urea (32%N) from Canadian Industries Limited; SCU(20) is sulfur coated urea (20% N); IBDU is isobutylidenediurea (31% N) from Swift's; 6-2-0 is Milorganite from Milwaukee Sewerage Commission; UF-Reg is standard 30% N (ureaformaldehyde) from duPont; UF-Fine is Powder Blue ureaformladehyde.