

Effect of Nitrogen Rate and Timing on Quality of  
Kentucky Bluegrasses, Perennial Ryegrasses and Coarse and Fine Fescues

Nitrogen rate and timing studies were initiated in 1982 on 8 Kentucky bluegrass cultivars, 9 perennial ryegrasses, 2 tall fescues, 1 meadow fescue, and 3 fine fescues. Treatment outlines are given in Table 29 for the fine fescues and in Table 8 for all other grasses. These are long-term studies designed to determine which of these grasses will maintain adequate density and quality under low nitrogen fertilization. Data for 1982 are given in Tables 9 to 28 and 30 to 32. One criterion in selecting a cultivar is color, thus a question to be asked is will a cultivar such as Bristol Kentucky bluegrass which has a dark color maintain good color and density under low nitrogen levels?

Another key is how grasses which responded to late fall nitrogen fertilization such as Derby, Fiesta or Pennfine perennial ryegrasses will withstand winter injury. These and other responses will be evaluated and reported at future conferences and field days.

Table 8. Treatments applied in nitrogen fertility studies on Kentucky bluegrasses, perennial ryegrasses and coarse fescues at the Hancock Turfgrass Research Center. Treatments initiated in 1982. Plot size is 4 feet by 6 feet. Three replications. Nitrogen applied as urea.

Treatment designation		Pounds N applied per 1000 sq ft					
Annual N rate	Months of application	May	June	July	August	Sept	Nov
0	--	---	---	---	---	---	---
1	Ma, Sp	0.5	---	---	---	0.5	---
2	Ma, Sp	1.0	---	---	---	1.0	---
4	Ma, Jn, Ag, Sp	1.0	1.0	---	1.0	1.0	---
6	Ma, Jn, Ag, Sp	1.5	1.5	---	1.5	1.5	---
3	Ma, Jn, Sp	1.0	1.0	---	---	1.0	---
3	Jn, Jl, Ag	---	1.0	1.0	1.0	---	---
3	Ma, Ag, Sp	1.0	---	---	1.0	1.0	---
3	Jn, Sp, No	---	1.0	---	---	1.0	1.0

Table 9. Nitrogen fertility study on Adelphi Kentucky bluegrass. 1982 data. Hancock Turfgrass Research Center. Averages for 3 replications. Treatments initiated July, 1982.

Annual N, lbs/1000	Treatment <sup>x</sup> Months of application	Turfgrass Quality Rating (9=best)		
		July 17	Nov 18	Dec 15
0	--	4.0c <sup>y</sup>	3.0e	2.5d
1	Ma, Sp	5.7b	4.0d	3.3c
2	Ma, Sp	5.7b	4.3cd	3.8bc
4	Ma, Jn, Ag, Sp	6.3ab	5.3a	4.5a
6	Ma, Jn, Ag, Sp	6.3ab	5.3a	4.7a
3	Ma, Jn, Sp	6.3ab	4.7bc	3.8bc
3	Jn, Jl, Ag	7.0a	4.2cd	3.3c
3	Ma, Ag, Sp	6.0ab	5.2ab	4.2ab
3	Jn, Sp, No	6.0ab	4.7bc	4.2ab

<sup>x</sup> - for specific treatments see Table 8.

<sup>y</sup> - means in columns followed by the same letter are not significantly different from each other at the 5% level using the Duncan's Multiple Range Test.

Table 10. Nitrogen fertility study on Baron Kentucky bluegrass. 1982 data. Hancock Turfgrass Research Center. Averages for 3 replications. Treatments initiated July, 1982.

Annual N, lbs/1000	Treatment <sup>x</sup> Months of application	Turfgrass Quality Rating (9=best)	
		Nov 18	Dec 15
0	--	3.7d <sup>y</sup>	2.8d
1	Ma, Sp	4.3cd	3.5bc
2	Ma, Sp	4.7ac	3.7ac
4	Ma, Jn, Ag, Sp	5.3ab	4.0ac
6	Ma, Jn, Ag, Sp	5.5a	4.2ab
3	Ma, Jn, Sp	4.8ac	3.8ac
3	Jn, Jl, Ag	4.2cd	3.3cd
3	Ma, Ag, Sp	5.0ad	3.8ac
3	Jn, Sp, No	4.5bd	4.3a

<sup>x</sup> - for specific treatments see Table 8.

<sup>y</sup> - means in columns followed by the same letter are not significantly different from each other at the 5% level using the Duncan's Multiple Range Test.

Table 11. Nitrogen fertility study on Bristol Kentucky bluegrass. 1982 data. Hancock Turfgrass Research Center. Averages for 3 replications. Treatments initiated July, 1982.

Annual N, lbs/1000	Treatment <sup>x</sup> Months of application	Turfgrass Quality Rating (9=best)		
		July 17	Nov 18	Dec 15
0	--	6.0a <sup>y</sup>	3.8b	3.0c
1	Ma, Sp	6.3a	4.5ab	4.0b
2	Ma, Sp	6.3a	5.2a	4.3ab
4	Ma, Jn, Ag, Ap	6.7a	5.3a	5.0ab
6	Ma, Jn, Ag, Sp	6.0a	5.7a	5.3a
3	Ma, Jn, Sp	7.0a	4.7ab	4.2b
3	Jn, Jl, Ag	6.7a	4.5ab	4.3ab
3	Ma, Ag, Sp	5.7a	5.5a	4.7ab
3	Jn, Sp, No	6.3a	4.8ab	4.8ab

<sup>x</sup> - for specific treatments see Table 8.

<sup>y</sup> - means in columns followed by the same letter are not significantly different from each other at the 5% level using the Duncan's Multiple Range Test.

Table 12. Nitrogen fertility study on Cheri Kentucky bluegrass. 1982 data. Hancock Turfgrass Research Center. Averages for 3 replications. Treatments initiated July, 1982.

Annual N, lbs/1000	Treatment <sup>x</sup> Months of application	Turfgrass Quality Rating (9=best)		
		July 17	Nov 18	Dec 15
0	--	4.7c <sup>y</sup>	3.7c	2.7c
1	Ma, Sp	6.0ab	4.3c	2.8bc
2	Ma, Sp	6.3ab	5.0ac	3.8ac
4	Ma, Jn, Ag, Sp	7.0a	6.2ab	4.5a
6	Ma, Jn, Ag, Sp	7.0a	6.5a	4.8ab
3	Ma, Jn, Sp	6.7ab	5.2ac	4.0ab
3	Jn, Jl, Ag	6.7ab	4.8ac	3.7ac
3	Ma, Ag, Sp	6.3ab	5.0ac	4.2a
3	Jn, Sp, No	5.7bc	4.7bc	4.0ab

<sup>x</sup> - for specific treatments see Table 8.

<sup>y</sup> - means in columns followed by the same letter are not significantly different from each other at the 5% level using the Duncan's Multiple Range Test.

Table 13. Nitrogen fertility study on Kenblue Kentucky bluegrass. 1982 data. Hancock Turfgrass Research Center. Averages for 3 replications. Treatments initiated July, 1982.

Annual N, lbs/1000	Treatment <sup>x</sup> Months of application	Turfgrass Quality Rating (9=best)		
		July 17	Nov 18	Dec 15
0	--	4.3b <sup>y</sup>	3.7d	2.7e
1	Ma, Sp	6.3a	4.5cd	3.0e
2	Ma, Sp	6.7a	4.7c	3.7d
4	Ma, Jn, Ag, Sp	7.0a	5.5bc	4.5bc
6	Ma, Jn, Ag, Sp	6.7a	6.7a	5.2a
3	Ma, Jn, Sp	6.3a	5.8ab	4.2bd
3	Jn, Jl, Ag	7.0a	5.2bc	4.0cd
3	Ma, Ag, Sp	6.0a	5.5bc	4.0cd
3	Jn, Sp, No	6.0a	4.7c	4.7ab

<sup>x</sup> - for specific treatments see Table 8.

<sup>y</sup> - means in columns followed by the same letter are not significantly different from each other at the 5% level using the Duncan's Multiple Range Test.

Table 14. Nitrogen fertility study on Merit Kentucky bluegrass. 1982 data. Hancock Turfgrass Research Center. Averages for 3 replications. Treatments initiated July, 1982.

Annual N, lbs/1000	Treatment <sup>x</sup> Months of application	Turfgrass Quality Rating (9=best)		
		July 17	Nov 18	Dec 15
0	--	4.0c <sup>y</sup>	4.3d	2.5c
1	Ma, Sp	6.0b	5.5bc	3.0c
2	Ma, Sp	7.3ab	6.0ab	3.0c
4	Ma, Jn, Ag, Sp	6.7ab	6.5a	4.0ab
6	Ma, Jn, Ag, Sp	7.3ab	6.7a	4.5a
3	Ma, Jn, Sp	7.0ab	6.2ab	4.2ab
3	Jn, Jl, Ag	7.7a	5.2c	2.8c
3	Ma, Ag, Sp	6.7ab	6.0ab	3.3bc
3	Jn, Sp, No	6.0b	6.0ab	4.0ab

<sup>x</sup> - for specific treatments see Table 8.

<sup>y</sup> - means in columns followed by the same letter are not significantly different from each other at the 5% level using the Duncan's Multiple Range Test.

Table 15. Nitrogen fertility study on Ram I Kentucky bluegrass. 1982 data. Hancock Turfgrass Research Center. Averages for 3 replications. Treatments initiated July, 1982.

Annual N, lbs/1000	Treatment <sup>x</sup> Months of application	Turfgrass Quality Rating (9=best)		
		July 17	Nov 18	Dec 15
0	--	4.0d <sup>y</sup>	4.5a	2.8e
1	Ma, Sp	5.3c	5.0a	3.7d
2	Ma, Sp	5.7bc	5.7a	4.0cd
4	Ma, Jn, Ag, Sp	7.0a	5.2a	5.7a
6	Ma, Jn, Ag, Sp	7.0a	6.0a	5.8a
3	Ma, Jn, Sp	6.7a	5.8a	4.7bc
3	Jn, J1, Ag	6.3ab	4.3a	4.2cd
3	Ma, Ag, Sp	5.7bc	5.8a	5.0ab
3	Jn, Sp, No	6.0bc	6.0a	5.2ab

<sup>x</sup> - for specific treatments see Table 8.

<sup>y</sup> - means in columns followed by the same letter are not significantly different from each other at the 5% level using the Duncan's Multiple Range Test.

Table 16. Nitrogen fertility study on Victa Kentucky bluegrass. 1982 data. Hancock Turfgrass Research Center. Averages for 3 replications. Treatments initiated July, 1982.

Annual N, lbs/1000	Treatment <sup>x</sup> Months of application	Turfgrass Quality Rating (9=best)		
		July 17	Nov 18	Dec 15
0	--	4.3a <sup>y</sup>	3.8c	2.2d
1	Ma, Sp	6.0a	4.0bc	2.8d
2	Ma, Sp	7.0a	5.2a	4.0bc
4	Ma, Jn, Ag, Sp	6.3a	5.5a	4.3ab
6	Ma, Jn, Ag, Sp	5.7a	5.3a	4.2ac
3	Ma, Jn, Sp	7.0a	4.7ac	4.3ab
3	Jn, J1, Ag	4.3a	5.0a	3.5c
3	Ma, Ag, Sp	6.3a	4.8ab	4.0bc
3	Jn, Sp, No	7.0a	5.5a	4.8a

<sup>x</sup> - for specific treatments see Table 8.

<sup>y</sup> - means in columns followed by the same letter are not significantly different from each other at the 5% level using the Duncan's Multiple Range Test.

Table 17. Nitrogen fertility study on Delray perennial ryegrass. 1982 data. Hancock Turfgrass Research Center. Averages for 3 replications. Treatments initiated July, 1982.

Treatment <sup>x</sup>		Turfgrass Quality Rating (9=best)		
Annual N, lbs/1000	Months of application	July 17	Nov 18	Dec 15
0	--	3.0d <sup>y</sup>	3.0d	2.7b
1	Ma, Sp	5.0c	3.7bd	2.7b
2	Ma, Sp	5.7ac	3.8ac	2.8ab
4	Ma, Jn, Ag, Sp	5.7ac	4.3ab	3.0ab
6	Ma, Jn, Ag, Sp	5.3bc	4.2ac	3.0ab
3	Ma, Jn, Sp	6.7ab	4.5a	3.0ab
3	Jn, Jl, Ag	5.3bc	3.5cd	2.7b
3	Ma, Ag, Sp	7.0a	4.2ac	3.2ab
3	Jn, Sp, No	5.3bc	3.8ac	3.7a

<sup>x</sup> - for specific treatments see Table 8.

<sup>y</sup> - means in columns followed by the same letter are not significantly different from each other at the 5% level using the Duncan's Multiple Range Test.

Table 18. Nitrogen fertility study on Derby perennial ryegrass. 1982 data. Hancock Turfgrass Research center. Averages for 3 replications. Treatments initiated July, 1982.

Treatment <sup>x</sup>		Turfgrass Quality Rating (9=best)		
Annual N, lbs/1000	Months of application	July 17	Nov 18	Dec 15
0	--	5.3c <sup>y</sup>	3.5b	3.7c
1	Ma, Sp	6.0bc	4.2ab	3.8bc
2	Ma, Sp	7.0ab	5.0a	4.76ac
4	Ma, Jn, Ag, Sp	7.7ab	5.0a	4.8ab
6	Ma, Jn, Ag, Sp	8.3a	5.2a	5.0a
3	Ma, Jn, Sp	7.3ab	5.2a	4.8ab
3	Jn, Jl, Ag	8.3a	4.8a	5.0a
3	Ma, Ag, Sp	7.7ab	4.8a	4.7ac
3	Jn, Sp, No	7.0ab	5.2a	5.7a

<sup>x</sup> - for specific treatments see Table 8.

<sup>y</sup> - means in columns followed by the same letter are not significantly different from each other at the 5% level using the Duncan's Multiple Range Test.

Table 19. Nitrogen fertility study on Elka perennial ryegrass. 1982 data. Hancock Turfgrass Research Center. Averages for 3 replications. Treatments initiated July, 1982.

Annual N, lbs/1000	Treatment <sup>x</sup> Months of application	Turfgrass Quality Rating (9=best)		
		July 17	Nov 18	Dec 15
0	--	3.0c <sup>y</sup>	3.2c	2.0b
1	Ma, Sp	5.0b	5.0a	2.2b
2	Ma, Sp	5.3b	4.7ab	2.7ab
4	Ma, Jn, Ag, Sp	6.0ab	5.0a	3.3a
6	Ma, Jn, Ag, Sp	6.0ab	4.8ab	3.0ab
3	Ma, Jn, Sp	6.3ab	5.8a	4.2a
3	Jn, Jl, Ag	7.0ab	4.5cd	3.5ac
3	Ma, Ag, Sp	6.7ab	5.5ab	4.0a
3	Jn, Sp, No	5.7b	4.7bd	4.3a

<sup>x</sup> - for specific treatments see Table 8.

<sup>y</sup> - means in columns followed by the same letter are not significantly different from each other at the 5% level using the Duncan's Multiple Range Test

Table 20. Nitrogen fertility study on Fiesta perennial ryegrass. 1982 data. Hancock Turfgrass Research Center. Averages for 3 replications. Treatments initiated July, 1982.

Annual N, lbs/1000	Treatment <sup>x</sup> Months of application	Turfgrass Quality Rating (9=best)	
		July 17	Nov 18
0	--	4.0a <sup>y</sup>	2.5c
1	Ma, Sp	4.7a	4.7ab
2	Ma, sp	6.3a	5.2a
4	Ma, Jn, Ag, Sp	6.0a	5.5a
6	Ma, Jn, Ag, Sp	5.3a	4.7ab
3	Ma, Jn, Sp	5.3a	5.3a
3	Jn, Jl, Ag	4.0a	3.5bc
3	Ma, Ag, Sp	5.7a	5.2a
3	Jn, Sp, No	4.3a	4.7ab

<sup>x</sup> - for specific treatments see Table 8.

<sup>y</sup> - means in columns followed by the same letter are not significantly different from each other at the 5% level using the Duncan's Multiple Range Test.



Table 21. Nitrogen fertility study on Loretta perennial ryegrass. 1982 data. Hancock Turfgrass Research Center. Averages for 3 replications. Treatments initiated July, 1982.

Treatment <sup>x</sup>		Turfgrass Quality Rating (9=best)		
Annual N, lbs/1000	Months of application	July 17	Nov 18	Dec 15
0	--	3.7c <sup>y</sup>	3.8b	2.8b
1	Ma, Sp	5.3b	4.3ab	3.0b
2	Ma, Sp	6.3ab	4.8ab	3.8ab
4	Ma, Jn, Ag, Sp	6.3ab	5.5a	4.2ab
6	Ma, Jn, Ag, Sp	6.7a	5.0ab	4.0ab
3	Ma, Jn, Sp	7.0a	4.8ab	4.0ab
3	Jn, Jl, Ag	6.7a	5.0ab	3.8ab
3	Ma, Ag, Sp	6.3ab	4.3ab	3.0b
3	Jn, Sp, No	6.0ab	5.0ab	4.7a

<sup>x</sup> - for specific treatments see Table 8.

<sup>y</sup> - means in columns followed by the same letter are not significantly different from each other at the 5% level using the Duncan's Multiple Range Test.

Table 22. Nitrogen fertility study on Manhattan perennial ryegrass. 1982 data. Hancock Turfgrass Research Center. Averages for 3 replications. Treatments initiated July, 1982.

Treatment <sup>x</sup>		Turfgrass Quality Rating (9=best)		
Annual N, lbs/1000	Months of application	July 17	Nov 18	Dec 15
0	--	4.3b <sup>y</sup>	4.0b	3.7d
1	Ma, Sp	6.3a	4.5ab	4.2cd
2	Ma, Sp	6.3a	4.5ab	4.3bd
4	Ma, Jn, Ag, Sp	6.7a	4.8a	4.7ac
6	Ma, Jn, Ag, Sp	7.3a	4.7a	4.8ac
3	Ma, Jn, Sp	7.0a	4.8a	5.0ab
3	Jn, Jl, Ag	7.0a	4.7a	4.8ac
3	Ma, Ag, Sp	6.7a	4.7a	4.5bc
3	Jn, Sp, No	6.7a	4.5ab	5.3a

<sup>x</sup> - for specific treatments see Table 8.

<sup>y</sup> - means in columns followed by the same letter are not significantly different from each other at the 5% level using the Duncan's Multiple Range Test.

Table 23. Nitrogen fertility study on NK-200 perennial ryegrass. 1982 data. Hancock Turfgrass Research Center. Averages for 3 replications. Treatments initiated July, 1982.

Treatment <sup>x</sup>		Turfgrass Quality Rating (9=best)		
Annual N, lbs/1000	Months of application	July 17	Nov 18	Dec 15
0	--	4.0cY	4.3d	2.8bc
1	Ma, Sp	5.7b	4.2d	2.7c
2	Ma, Sp	6.7ab	5.3ac	3.3ac
4	Ma, Jn, Ag, Sp	7.3ab	5.5ab	3.3ac
6	Ma, Jn, Ag, Sp	7.7a	5.7a	3.8ab
3	Ma, Jn, Sp	6.3ab	5.8a	4.2a
3	Jn, Jl, ag	7.0ab	4.5cd	3.5ac
3	Ma, Ag, Sp	6.7ab	5.5ab	4.0a
3	Jn, Sp, No	5.7b	4.7bd	4.3a

x - for specific treatments see Table 8.

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

Table 24. Nitrogen fertility study on Norlea perennial ryegrass. 1982 data. Hancock Turfgrass Research Center. Averages for 3 replications. Treatments initiated July, 1982.

Treatment <sup>x</sup>		Turfgrass Quality Rating (9=best)		
Annual N, lbs/1000	Months of application	July 17	Nov 18	Dec 15
0	--	5.0bY	5.0ab	3.5bc
1	Ma, Sp	5.7ab	4.5ab	2.8c
2	Ma, Sp	6.3a	4.8ab	3.5bc
4	Ma, Jn, Ag, Sp	6.0ab	4.8ab	3.7bc
6	Ma, Jn, Ag, Sp	6.0ab	4.7ab	3.3bc
3	Ma, Jn, Sp	5.3ab	5.0ab	4.0b
3	Jn, Jl, Ag	5.3ab	4.8ab	3.7bc
3	Ma, Ag, Sp	3.0c	4.3b	3.0c
3	Jn, Sp, No	5.3ab	5.2a	5.2a

x - for specific treatments see Table 8.

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

Table 25. Nitrogen fertility study on Pennfine perennial ryegrass. 1982 data. Hancock Turfgrass Research Center. Averages for 3 replications. Treatments initiated July, 1982.

Treatment <sup>x</sup>		Turfgrass Quality Rating (9=best)	
Annual N, lbs/1000	Months of application	July 17	Nov 18
0	--	3.7c <sup>y</sup>	3.7d
1	Ma, Sp	4.7bc	3.8cd
2	Ma, Sp	5.7ab	5.0ab
4	Ma, Jn, Ag, Sp	7.0ab	5.2a
6	Ma, Jn, Ag, Sp	7.3a	5.0ab
3	Ma, Jn, S	5.7ab	4.3bd
3	Jn, Jl, Ag	7.0a	4.5ac
3	Ma, Ag, Sp	6.3a	4.5ac
3	Jn, Sp, No	6.0ab	4.5ac

<sup>x</sup> - for specific treatments see Table 8.

<sup>y</sup> - means in columns followed by the same letter are not significantly different from each other at the 5% level using the Duncan's Multiple Range Test.

Table 26. Nitrogen fertility study on K-31 tall fescue. 1982 data. Hancock Turfgrass Research Center. Averages for 3 replications. Treatments initiated July, 1982.

Treatment <sup>x</sup>		Turfgrass Quality Rating (9=best)		
Annual N, lbs/1000	Months of application	July 17	Nov 18	Dec 15
0	--	5.0b <sup>y</sup>	3.8c	2.0b
1	Ma, Sp	6.3a	4.3bc	2.5ab
2	Ma, Sp	6.3a	4.5bc	2.5ab
4	Ma, Jn, Ag, Sp	6.7a	5.3a	3.2a
6	Ma, Jn, Ag, Sp	6.3a	4.8ab	3.0ab
3	Ma, Jn, Sp	6.7a	4.2bc	2.5ab
3	Jn, Jl, Ag	6.7a	4.7ab	2.5ab
3	Ma, Ag, Sp	6.7a	4.8ab	3.0ab
3	Jn, Sp, No	6.7a	4.2bc	3.3a

<sup>x</sup> - for specific treatments see Table 8.

<sup>y</sup> - means in columns followed by the same letter are not significantly different from each other at the 5% level using the Duncan's Multiple Range Test.

Table 27. Nitrogen fertility study on Rebel tall fescue. 1982 data. Hancock Turfgrass Research Center. Averages for 3 replications. Treatments initiated July, 1982.

Treatment <sup>x</sup>		Turfgrass Quality Rating (9=best)		
Annual N, lbs/1000	Months of application	July 17	Nov 18	Dec 15
0	--	5.3c <sup>y</sup>	3.8b	2.3d
1	Ma, Sp	5.3c	3.8b	2.5cd
2	Ma, S	6.3ab	4.5ab	3.2ac
4	Ma, Jn, Ag, Sp	7.0a	5.0a	3.3ab
6	Ma, Jn, Ag, Sp	6.7ab	5.2a	3.2ac
3	Ma, Jn, Sp	7.0a	4.5ab	3.3ab
3	Jn, Jl, Ag	7.0a	4.3ab	2.7bd
3	Ma, Ag, Sp	6.0bc	4.5ab	2.8ad
3	Jn, Sp, No	6.3ab	4.7ab	3.5a

<sup>x</sup> - for specific treatments see Table 8.

<sup>y</sup> - means in columns followed by the same letter are not significantly different from each other at the 5% level using the Duncan's Multiple Range Test.

Table 28. Nitrogen fertility study on Beaumont meadow fescue. 1982 data. Hancock Turfgrass Research Center. Averages for 3 replications. Treatments initiated July, 1982.

Treatment <sup>x</sup>		Turfgrass Quality Rating (9=best)		
Annual N, lbs/1000	Months of application	July 17	Nov 18	Dec 15
0	--	5.3c <sup>y</sup>	3.8b	2.7de
1	Ma, Sp	5.3c	3.8b	2.3e
2	Ma, Sp	6.3ab	4.5ab	3.0cd
4	Ma, Jn, Ag, Sp	7.0a	5.0a	3.3bc
6	Ma, Jn, Ag, Sp	6.7ab	5.2a	3.7ab
3	Ma, Jn, Sp	7.0a	4.5ab	3.2cd
3	Jn, Jl, Ag	7.0a	4.3ab	3.0cd
3	Ma, Ag, Sp	6.0bc	4.5ab	3.2cd
3	Jnb, Sp, No	6.3ab	4.7ab	4.0a

<sup>x</sup> - for specific treatments see Table 8.

<sup>y</sup> - means in columns followed by the same letter are not significantly different from each other at the 5% level using the Duncan's Multiple Range Test.

Table 29. Treatments applied in nitrogen fertility studies on fine fescues at the Hancock Turfgrass Research Center. Nitrogen applied as urea. Treatments initiated 1982. Plot size is 4 feet by 6 feet. Three replications.

Treatment designation		Pounds N applied per 1000 sq ft					
Annual N rate	Months of application	May	June	July	August	Sept	Nov
0	--	---	---	---	---	---	---
1	Ma	1.0	---	---	---	---	---
1	Sp	---	---	---	---	1.0	---
1	Ma, Sp	0.5	---	---	---	0.5	---
2	Ma, Sp	1.0	---	---	---	1.0	---
3	Ma, Jn, Sp	1.0	1.0	---	---	1.0	---
3	Ma, Ag, Sp	1.0	---	---	1.0	1.0	---
3	Jn, Sp, No	---	1.0	---	---	1.0	1.0
4	Ma, Jn, Ag, Sp	1.0	1.0	---	1.0	1.0	---

Table 30. Nitrogen fertility study on Biljart hard fescues. 1982 data. Hancock Turfgrass Research Center. Averages for 3 replications. Treatments initiated July, 1982.

Treatment <sup>x</sup>		Turfgrass Quality Rating (9=best)		
Annual N, lbs/1000	Months of application	July 17	Nov 18	Dec 15
0	--	4.3b <sup>y</sup>	2.5d	1.7f
1	Ma	5.7a	3.0cd	2.2e
1	Ma, Sp	4.0b	4.3ab	3.0d
1	Ma, Sp	5.3a	3.7bc	2.3e
2	Ma, Sp	6.0a	4.5a	3.3cd
3	Ma, Jn, Sp	5.3a	5.0a	4.5ab
3	Ma, Ag, Sp	6.0a	4.7a	3.7c
3	Jn, Sp, No	5.7a	4.7a	4.7a
4	Ma, Jn, Ag, Sp	6.0a	5.0a	4.2b

<sup>x</sup> - for specific treatments see Table 29.

<sup>y</sup> - means in columns followed by the same letter are not significantly different from each other at the 5% level using the Duncan's Multiple Range Test.

Table 31. Nitrogen fertility study on Jamestown chewings fescue. 1982 data. Hancock Turfgrass Research Center. Averages for 3 replications. Treatments initiated July, 1982.

Treatment <sup>x</sup>		Turfgrass Quality Rating (9=best)		
Annual N, lbs/1000	Months of application	July 17	Nov 18	Dec 15
0	--	5.0c <sup>y</sup>	3.0c	2.3c
1	Ma	6.3ab	3.0c	2.3c
1	Ma, Sp	6.0bc	3.2c	3.0c
1	Ma, Sp	5.0c	4.2ab	2.5c
2	Ma, Sp	7.0ab	3.8bc	2.8c
3	Ma, Jn, Sp	7.3a	5.0a	3.8ab
3	Ma, Ag, Sp	6.7ab	4.3ab	3.2c
3	Jn, Sp, No	6.7ab	4.7ab	4.3a
4	Ma, Jn, Ag, Sp	7.0ab	5.0a	4.0a

<sup>x</sup> - for specific treatments see Table 29.

<sup>y</sup> - means in columns followed by the same letter are not significantly different from each other at the 5% level using the Duncan's Multiple Range Test.

Table 32. Nitrogen fertility study on Pennlawn red fescue. 1982 data. Hancock Turfgrass Research Center. Averages for 3 replications. Treatments initiated July, 1982.

Treatment <sup>x</sup>		Turfgrass Quality Rating (9=best)		
Annual N, lbs/1000	Months of application	July 17	Nov 18	Dec 15
0	--	4.0b <sup>y</sup>	2.7b	2.7d
1	Ma	5.7a	2.7b	2.5d
1	Ma, Sp	4.0b	4.5a	3.7c
1	Ma, Sp	5.7a	2.5b	2.5d
2	Ma, Sp	6.0a	4.5a	4.2bc
3	Ma, Jn, Sp	6.0a	5.2a	4.2bc
3	Ma, Ag, Sp	6.0a	4.8a	4.3bc
3	Jn, Sp, No	5.7a	5.0a	5.5a
4	Ma, Jn, Ag, Sp	6.3a	5.2a	4.7ab

<sup>x</sup> - for specific treatments see Table 19.

<sup>y</sup> - means in columns followed by the same letter are not significantly different from each other at the 5% level using the Duncan's Multiple Range Test.