Soil pH control study

The soil pH control study was initiated in 1981 on sandy loam soil. Soil pH values for 1982 and 1983 are given in Table 7. Of particular interest is the marked increase in pH of the 0-2 inch depth between 1982 and 1983 for plots which were acid in 1982. The higher sulfur plots increased from pH 3.4 to 4.3; the lower sulfur treatment increased from 4.1 to 4.8 and the untreated check increased from 6.0 to 6.4. This was likely caused by the free lime in the irrigation water. An increase in pH is frequently observed where the turf is irrigated regularly with water drawn from a limestone acquifer. We have seen this previously on other plots.

The effects of pH modification on available nutrient soil tests are given in Table 8. Acidifying the soil increased phosphorus tests although there was too much variability for statistically significant differences. There was no pH effect on potassium soil tests, but acidifying the soils resulted in highly significant losses in both calcium and magnesium. These data confirm the importance of monitoring available magnesium soil tests on acid soils. The test result of 34 pounds available magnesium in the 2-4 inch depth for the higher sulfur treatment would be considered deficient for most plants. There is sufficient magnesium in the 0-2 inch depth to provide for the magnesium needs of the turf.

In spite of the range of soil tests on these plots there is no apparent difference in growth of three grasses established on these plots - Baron Kentucky bluegrass, Pennlawn red fescue and Manhattan perennial ryegrass.

Responses of Penncross creeping bentgrass to phosphorus and postassium

The Penncross creeping bentgrass growing on dune sand (Purr-Wick Green) ciency with the typical symptoms of very slow growth and a dark purplish-green color. Phosphorus applications resulted in turf responses as indicated in Table 9, although soil tests indicated there was little phosphorus left in August from the spring application of phosphorus.

A study to evaluate soil test responses was initiated on September 30. Soil tests a month later point out the increases in soil tests in response to application of phosphorus (Table 10) and potash (Table 11) on three soils. There was no apparent turf response to these nutrient treatments in spite of the low tests, although these plots were not subjected to severe stress.

Table 7. Soil pH control study on sandy loam at the Hancock Turfgrass Research Center. Treatments applied August, 1981. Averages for 3 replications. Sampled in August each year.

Treatment		Depth of sampling, inches			
		0-2		2-4	
Chemical	Rate, tons/A	1982	1983	1982	1983
Limestone	6.0	7.5a[x]	7.6a	7.0ab	7.3a
Limestone	3.0	7.6a	7.3ab	6.6bcc	6.7b
Limestone	1.5	7.0ab	7.0b	6.1cd	6.5b
Check	---	6.0cd	6.4c	5.5d	5.8c
Sulfur	0.5	4.1ef	4.8d	4.6c	4.6d
Sulfur	1.0	3.4g	4.3e	3.8fg	4.1d

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

Table 8. Effect of sulfur and dolomitic limestone applications on soil tests. Treatments applied August, 1981 at the Hancock Turfgrass Research Center.on a sandy loam soil. Sampled August, 1983.

Treatment		Sample	pH[y]	Available[y] soil test levels, pounds/A			
Material	Rate Tons/A	depth inches		P	K	Ca	Mg
Limestone	6.0	0-2	7.6a[x]	64ns	187a	3933a	441b
		2-4	7.3ab	69	107d	1706cd	507a
Limestone	3.0	0-2	7.3ab	84	187a	2595b	349c
		2-4	6.7cd	90	121cd	1493cd	356c
Limestone	1.5	0-2	7.0be	77	173ab	1920c	270d
		2-4	6.5d	88	126bd	1387de	273d
Check	---	0-2	6.4d		187a	1742cd	260d
		204	5.8e		129bd	1422ce	185e
Sulfur	0.5	0-2	4.8f	93	171ac	960ef	178e
		204	4.6fg	108	141ad	853fg	134e
Sulfur	1.0	0-2	4.3gh	125	174ab	676fg	136e
		204	4.1h	130	136ad	427g	38f

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