

Table 4. Management practices effects on color of Merion Kentucky bluegrass at East Lansing. Treatments initiated in 1963. Data taken November, 1975.

Annual N rate lbs/1000 sq ft	Mowing height	Visual turfgrass color rating (1=dark green; 9=yellow)			
		Return clippings		Remove clippings	
		1 inch	2 inches	1 inch	2 inches
4		2.7	2.2	6.1	5.5
6		2.4	1.8	5.8	5.0
8		2.5	1.4	5.0	3.9
10		2.3	1.4	4.6	3.8
12		2.1	1.1	4.0	2.8
14		1.8	1.2	3.9	2.8
Average		2.3	1.5	4.7	4.0

Table 5. Management practices effects on the encroachment of Poa annua into Merion Kentucky bluegrass at East Lansing. Treatments initiated in 1963. Data taken November, 1975.

Annual N rate lbs/1000 sq ft	Mowing height	<u>Poa annua</u> in turf, Percent			
		Return clippings		Remove clippings	
		1 inch	2 inches	1 inch	2 inches
4		18	0	1	0
6		19	0	0	0
8		23	0	0	0
10		20	0	0	0
12		16	0	1	0
14		25	0	0	0

Applying ferrous sulfate to bentgrass turf mowed at 1/4 inch resulted in improved turfgrass color (Table 6). The ferrous sulfate was applied at rates of 0,3,6, and 12 ounces per 1000 square feet at 2 week intervals. The higher ferrous sulfate rates resulted in some injury to the turf. In some cases the higher rates caused the turf to turn a blackish-green color. The injury appeared as a tip burn of some of the leaves.

From a distance the turf appeared uninjured but a close examination revealed the injury. The length of the color improvement from the treatments depended on the environmental conditions at the time of application and the growth rate of the grass following treatment. When the turf was actively growing the color dissipated in 2 to 3 days. When the turf was growing slowly the color influence was longer.

Table 6. Ferrous sulfate effects on putting green bentgrass. Ferrous sulfate was applied at 2 week intervals at East Lansing beginning July 3, 1975. Averages for 10 weeks.

<u>Ferrous sulfate rate</u> oz/1000 sq ft	<u>Visual color rating</u> (1=best; 10=poor)	<u>Injury rating</u> (1=none; 10=severe)
0	6.0	1.0
3	3.1	1.3
6	2.0	1.9
12	1.2	2.8

The rate of recovery from injury followed the same pattern. The use of ferrous sulfate to improve turf color is useful as a means of reducing nitrogen needs somewhat, especially during key stress periods. But care should be taken to prevent injury to the turf. Rates of 1-3 ounces per 1000 square feet are suggested with repeat applications as needed. Injury will tend to be more severe during stress periods.

On heavily irrigated sands such as are often found on greens, potassium needs may be higher than are called for by standard recommendations which are based on soil tests. At Traverse City rates of up to 6 pounds K_2O have been applied annually per 1000 square feet. The soil tests at Traverse City on the untreated plots were about 100 pounds per acre (see Table 7). At that level the recommendations would be 2 to 3 pounds K_2O per 1000 square feet. We would like to maintain potassium soil tests of 250 pounds per acre or higher for good turf. Even with the 6 pound treatment (divided equally into spring and fall applications) the potassium soil test levels were not above 200 pounds per acre. This points out the need to apply potash regularly on such soils where there is very little cation exchange capacity to hold the potassium cations in the soil. Under conditions of reduced irrigation rates and soils with more clay the loss of potassium by leaching is much lower. The use of potassium sulfate (K_2SO_4) resulted in somewhat higher soil potassium tests than did potassium chloride (KCl or muriate of potash). There was little difference in the visual quality of the turf regardless of potassium carrier.

The soil mix plots for greens at East Lansing on which Cohansey bentgrass was established in the early 1960's have developed a resistant strain of dollar spot. The plots were not sprayed for control of the dollar spot so the disease would become extensive enough for Joe Vargas to evaluate fungicide programs for control of the disease. One half of each of the soil mix plots is compacted with a roller compacter which we have developed. There are golf shoes on the roller drum. As a