

**Table 3. Bentgrass Potassium Study. Initiated 1990 Soil test data from November 1997**

Treatments and Rate	Potassium lbs./A			Calcium lbs./ A			Magnesium lbs./A		
	Thatch	0-3"	3-6"	Thatch	0-3"	3-6"	Thatch	0-3"	3-6"
Check Plot	223 c	67 d	33 d	1994	1350	925	219	199 a	160
Soil Test Recommendation	349 b	199 c	132 c	2142	1300	1000	210	178 ab	283
4 lbs. KCl/ M annual	381 b	174 c	120 c	2119	1125	950	215	144 c	124
8 lbs. KCl/ M annual	397 b	255 b	194 b	2262	1325	825	232	173 b	110
12 lbs. KCl/ M annual	490 a	310 a	258 a	2070	1350	850	205	162 bc	107
12 lbs. K <sub>2</sub> SO <sub>4</sub> / M annual	420 ab	343 a	263 a	1945	1325	850	212	172 b	116
Probability	0.00	0.00	0.00	0.52	0.19	0.15	0.81	0.00	0.37
LSD at 0.05	72.3	50.0	21.8	ns	ns	ns	ns	21.0	ns

Means followed by the same letter are not significantly different using the LSD mean separation test.

### **Phosphorous Soil Test Correlation's on Sand: Peat Green**

A study was established in 1993 on a an 85% sand, 15% peat green built to U.S.G.A. specifications. The grass was Penncross creeping bentgrass mowed at 3/16 inch. Not long after establishment a serious phosphorus deficiency developed with the typical purplish/gray green appearance and the turf had very little growth. The Bray P phosphorus soil test was 4 lbs. of phosphorus per acre. At the initiation of the study treatment 1 received no phosphorus; treatment 2 received 1 lb. P<sub>2</sub>O<sub>5</sub> / 1000 sq. ft annually; treatment 3 received 2 lb. P<sub>2</sub>O<sub>5</sub> / 1000 sq. ft annually; treatment 4 received 4 lb. P<sub>2</sub>O<sub>5</sub> / 1000 sq. ft annually; treatment 5 received 4 lb. P<sub>2</sub>O<sub>5</sub> / 1000 sq. ft in 1993 with no further applications; treatment 6 was treated annually at the rate recommended by the Bray P1 phosphorous soil test; and treatment 7 was treated annually at the rate recommended by the Olsen phosphorous test. Plot size was 4 ft. by 12 ft. with 3 replications of each treatment. In 1996 the plots inadvertently received 0.2 lb. phosphate per 1000 sq. ft. as part of a complete fertilizer. With that exception no phosphate has been applied since 1995 when all treatments were ceased. Interestingly, the phosphorus soil test values in Table 4 are similar to those reported in 1997.

The plots receiving no phosphorus have exhibited typical deficiency symptoms, particularly during spring and fall. Some symptoms have been evident at times on the plots that had received 1 or 2 lbs. phosphate annually. In spite of deficiency symptoms being evident on the check plot there was no difference in clipping weights taken in June. We have observed that as soils warm the symptoms tend to disappear. Perhaps the early warm year in 1998 resulted some release of phosphorus from soil organic matter, causing no differences in growth in June. The phosphorus content in clippings in the June sampling reflect the low soil phosphorus tests. Only treatments treated with phosphorus through 1995 have at least .4 % phosphorus. Most agronomists suggest phosphorus levels in clippings should be above .3-.4%.

**Table 4. Sand/peat Root-Zone Phosphorous Study. Data Collected June 23, 1998**

Treatment lbs P <sub>2</sub> O <sub>5</sub> /1000 sq. ft.	Clipping Weights in grams	% P from clippings	Lbs. P/A soil test	Lbs. P/1000 sq. ft. Recommended*
1) No Phosphorus since 1992	38.9	0.19 c	7 b	4.0
2) 1 in 1995	33.9	0.20 c	10 b	4.0
3) 2 in 1995	48.9	0.29 b	12 b	3.5
4) 4 in 1995	53.5	0.43 a	27 a	3.0
5) 4 in 1993	41.8	0.19 c	10 b	4.0
6) 3 in 1995 <sup>Y</sup>	48.0	0.45 a	26 a	3.0
7) 3 in 1995 <sup>Z</sup>	48.1	0.45 a	37 a	2.0
Probability	0.12	0.00	0.00	
LSD at 0.05	ns	0.03	12.9	

Means in columns followed by the same letter are not significantly different using the LSD mean separation test.

Y-Based upon Bray Soil Test Recommendations

Z-Based upon Olsen Soil Test Recommendations

\* Annual phosphate recommended bases on soil P test (Bray P<sub>i</sub> extractable) at the Michigan State University Soil Testing Laboratory.