Coated potassium fertilizer study

Two studies were established on sandy soils in western Michigan to evaluate the benefits of the use of coated potassium carriers. The studies were located on Kentucky bluegrass roughs at the Spring Lake Country Club in Spring Lake and the Grand Haven Golf Club at Grand Haven. Applications were made at Spring Lake as outlined in Table 6 on May 11, June 15 and September 5. The fertilizers were provided by the Sierra Chemical Co. The potash carrier was potassium sulfate with 0-0-45, 0-0-46 and 0-0-47 being coated products and 0-0-50 is uncoated. A similar study was established at Grand Haven but no further applications were made beyond the May 11 treatments. There was no visually observed turf response to these treatments at either location.

Soil samples were collected to a 3 inch depth on June 28, September 5 and December 8. Available potassium was extracted with neutral normal ammonium acetate. Soil potassium tests (Table 6) were relatively low on the June 28 sampling date while all tests increased for the September sampling date. This increase remains unexplained. The variability in the data reduce any significance in the data although the untreated plot was consistently lower for the June and September samplings. The data from the December sampling were quite variable and are not included. Although we expected to find more K in the plots which had been treated with the coated product, that was not apparent in this study. On sandy soils it would be desirable to have a slow release potassium carrier since the cation exchange capacity is so low the postassium can be leached readily from sands.

Mowing height study

A study was initiated March 31, 1989 on a sodded Kentucky bluegrass alley at the Hancock Turfgrass Research Center. The turf was still dormant with no green shoots and a high density of brown plants. A bagging rotary mower was used to mow at 1, 1.5 or 2.0 inches along with an unmowed treatment. Clippings were removed from the plot area. Nitrogen applications were made across the mowing treatments at 0, 1 or 2 pounds per 1000 sq ft subsequent to the mowing treatment. After the treatment date all plots were mowed at the normal height of 2 inches.

Upon mowing it was apparent that green tissue was exposed with the shorter mowing heights (Table 7). Turf quality ratings revealed that the short mowing resulted in improved turf color for about 3 weeks when no nitrogen was applied. After that time there were few meaningful differences due to initial mowing height.

When nitrogen was applied at the time of mowing turf quality ratings were better for closer mowing for about a month. Few differences occurred through May. But in June the plots which were mowed shorter again had higher quality ratings.

While more research is needed to evaluate these responses more fully, it appears that if the turf has a high density of dead leaf tissue in the spring there would be benefit in mowing the grass short to remove some of this debris. It is thought this would permit more rapid warming of the crown tissue and the soil resulting in quicker growth. There could be physiological

Table 7. Mowing height by nitrogen interaction effects on Kentucky bluegrass quality ratings. 1989 mowing height by nitrogen study. Treatments applied March 31, 1989. Hancock Turfgrass Research Center.

Mowing Height	Nitrogen Rate	Quality Ratings (9 = Ideal)													
		4./5	4/17	4/21	4/24	4/28	5/5	5/15	5/22	5/25	6/5	6/9	6/20	7/3	7/11
1.0 inch	Check	4.9b	5.8d	5.9de	5.8e	5.6ef	5.6de	5.8d	6.2e	6.0e	6.2e	6.7ef	6.9bcde	7.8ab	6.4a
1.0 inch	1 lb N/yr	5.2a	6.5ab	7.1bc	7.3c	7.4c	7.3bc	8.5ab	8.0c	8.1ab	8.2bc	8.0b	7.3abc	7.7bc	6.3a
1.0 inch	2 lb N/yr	5.4a	6.8a	7.8a	8.0a	9.0a	8.8a	9.0a	9.0a	8.5a	9.0a	8.5a	7.7a	8.0a	6.3a
1.5 inch	Check	4.4c	5.3e	5.8de	5.0f	5.2ef	5.0e	6.2cd	6.3e	6.1e	6.1e	6.8ef	6.5efg	7.2d	6.3a
1.5 inch	1 lb N/yr	4.6c	6.0cd	7.0bc	7.1bc	7.3c	7.7bc	8.2ab	8.1bc	7.6bc	7.9bc	7.6cd	6.8cdef	7.3d	6.3a
1.5 inch	2 lb N/yr	4.5c	6.4b	7.2b	7.6ab	8.3b	8.8a	8.7ab	9.0a	7.8bc	8.3b	7.8bc	7.6a	7.3cd	6.4a
2 inch	Check	4.0d	5.1ef	6.0de	5.0f	5.8e	5.7d	6.7c	6.8d	6.3e	6.3e	6.8ef	6.7defg	7.2d	6.5a
2 inch	1 lb N/yr	4.0d	5.8cd	6.2d	6.4d	6.9cd	7.8bc	8.4ab	8.4b	7.2c	7.7cd	7.3d	7.0bcd	7.3cd	6.3a
2 inch	2 lb N/yr	4.1d	6.2bc	6.7c	7.0c	8.1b	8.6a	8.2b	9.0a	7.2c	7.9bc	7.6cd	7.3ab	7.4bcd	6.5a
Check	Check	3.0e	4.0g	5.2f	4.2g	5.0f	5.2de	6.5cd	6.8d	6.5de	6.2e	6.4f	6.3g	7.1d	6.2a
Check	1 lb N/yr	3.0e	q4.7f	5.5ef	6.1de	6.4d	7.3c	7.9b	8.4b	7.1cd	7.2cd	6.9e	6.4fg	7.3cd	6.1a
Check	2 lb N/yr	3.1e	5.0ef	6.0de	6.3d	7.1cd	7.9b	8.3ab	9.0a	7.4c	8.1bc	7.3d	7.3ab	7.4cd	6.5a

* - Means followed by the same letter are not significantly different at the 5% level using Duncan's Multiple Range Test.

effects which accompany this practice as well. It is not known if this practice would expose the turf to greater potential for turf loss due to winter injury should crown hydration occur in the early spring followed by a hard freeze. Any benefit from mowing short the first time would not likely occur if the grass is already green.

Topdressing studies on greens

The long range topdressing study on the Penneagle creeping bentgrass green was concluded at the end of the 1989 growing season. This study was initiated in 1982. Topdressing treatments as outlined in Table 8 were: no topdressing treatment (check); 3 cubic feet of sand applied per 1000 sq ft at 3 week intervals (3 WK sand); 6 cubic feet of sand applied at 6 week intervals (6 WK sand); 12 cubic feet of sand applied spring and fall (12 WK Sand); and 12 cubic feet of a sandy soil based mix applied spring and fall (12 WK mix). Each topdressing treatment received either 3 lbs N or 6 lbs N per 1000 sq ft annually. Plot size was 4 feet by 12 feet with 3 replications.

The turfgrass quality rating data taken from these plots in 1989 (Table 8) were quite consistent with those observed in previous years. The light and frequent topdressing programs ranked higher than the infrequent topdressing treatments on a few dates. As expected plots receiving higher nitrogen rates (6 lbs N/1000 sq ft annually) ranked higher than when treated with the lower rate (3 lbs N annually). On a few dates the opposite effect was observed. After topdressing application turf quality ratings improved for a few days then the ratings stabilized. One key observation was turf quality on the non-topdressed plots ranked consistently lower compared to topdressed plots. Those plots which were not topdressed developed a significant thatch layer making the turf susceptible to scalping and lower turf quality ratings. These plots receive maintenance traffic only so would be more susceptible to thatch accumulation than when turf routinely received intense traffic.

In August plots were sampled to determine effects of treatment on the physical properties of the "thatch" layer, that layer of thatch (nontopdressed plots) or thatch mixed with topdressing material. The "thatch" like layer was separated from the original underlying soil. Measurements taken in this layer were measured for percent organic matter as determined by ashing and thickness and bulk density of the "thatch" like layer (Table 9).

The percent organic matter in the thatch layer was much higher for the nontopdressed plots as would be expected since no topdressing material diluted the thatch. Thickness of the "thatch" like layer was greatest for plots receiving less frequent sand topdressing, lowest for the check plots and intermediate for the light, frequent sand topdressed plots and those topdressed with the soil based mix in spring and fall. The bulk density of the topdressed plots was quite uniform. Sand and organic matter mixed together had a higher density (close to 1.0 gm/cubic centimeter). Clearly topdressing resulted in more uniform turf and "thatch" conditions than when no topdressing was done.

The topdressing study on the Penncross creeping bentgrass green which began in 1986 was continued in 1989 (Table 10). Soil mixes applied were: sand alone; 80% sand, 20% peat; and 60% sand, 20% soil, 20% peat. Topdressing programs were either 3 cubic feet of soil material per 1000 sq ft applied