

## Management Programs for Greens

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There are several studies on greens management currently under way at the Hancock Turf Research Center. In one study there are nine different N fertilizer programs each on Penncross, Penneagle and Emerald bentgrasses. After 4 years of treatments there are few observable differences between Penncross and Penneagle on these plots which do not receive traffic. Reports from golf course superintendents and others indicate that Penncross is superior to Penneagle in wear tolerance and general turf quality but is more susceptible to thatch formation. Emerald generally ranks inferior to the other grasses and is highly susceptible to dollarspot. Our long term fertility program study on Penncross indicates acceptable quality turf from various carriers as long as reasonable times and rates of application of the various carriers are practiced. There has been a noticeable problem with spotting from several of the dry materials apparently caused by nitrogen release concentrated around the fertilizer granule. This has been especially noticeable with urea and sulfur coated urea.

*Penneagle*  
\* Topdressing programs continue to be of concern with regard to topdressing materials used and the rate and frequency of application practiced. Some people have used sand as the topdressing material because of its ready availability, but have not been consistent in the rate and frequency of application. Too often we are seeing layers developing in greens which have already created problems. In other cases the problems will likely appear later. If sand is to be used in a topdressing program it must be done on a light (2-4 cu ft/1000 sq ft) and frequent (every 3 weeks or so) basis. When the grass is growing actively the time interval between applications should be reduced to as short as 2 weeks while longer intervals (up to 4 weeks) may be appropriate when growth is slow and traffic is high. This is clearly a judgment call for the superintendent. There is one very clear message--do not use heavier rates of sand on an infrequent basis. Continue to use core cultivation to 1) break up any layers near the surface that might be present and 2) to "tie" the sand and thatch mix into the soil below.

On sandy soils it is necessary to adjust management practices such as watering, fertilization and the use of wetting agents. With the increased emphasis on putting green speed very low N rates have been utilized along with close mowing, verticutting and in some cases, sand topdressings. This results in very open turfs into which algae have encroached. In a field study several N and copper sulfate treatments have been applied to a Penncross green. Results will be evident at the stop. Increasing N levels and the use of a material like Fore are practices used to reduce the competition from algae.

Lighter and more frequent rates of both N and K<sub>2</sub>O are needed on sandy greens and higher rates of each will be needed annually to produce a comparable quality turf compared to finer textured soil mixes. Also, on sands be careful to keep the P levels adequate. We have had reports of P deficiency on sandy greens, but these were easily corrected with proper P applications. Soil testing is the easiest means to determine adequate P levels.

Since sandy soils are susceptible to the development of localized dry spots, it may be necessary to utilize wetting agents on sandy greens. Many superintendents have found following a preventative program works well, although others have a curative approach of wetting agent application combined with more frequent watering and core cultivation after the localized dry spots have appeared.

Table 1. Potassium soil test responses on Penncross creeping bentgrass greens growing on 3 soils. Hancock Turfgrass Research Center. Averages for 3 replications. Studies initiated September 30, 1983. Samples taken September, 1984.

<u>K<sub>2</sub>O Applied</u> lbs/1000 sq. ft. annually	<u>Dune Sand</u> 0-3"	<u>Sand/Peat</u> 0-3"	<u>Topsoil</u> 0-3"
0	23 c	47 d	126 b
0.5	47 bc	94 c	132 b
1.0	67 b	161 b	189 ab
2.0	102 a	247 a	275 a

Table 2. Phosphorus soil test responses on Penncross creeping bentgrass growing on dune sand. HTRC. Spring treatments on April 20, fall on September 25. Study initiated July 1983.

<u>Treatment</u> lbs P <sub>2</sub> O <sub>5</sub> /M	<u>time</u>	<u>P Soil test</u> lbs/A	<u>Quality rating (9-best)</u>		
			Jul 8	Aug 14	Sep 19
0	---	11 c	1.7 c	1.2 d	1.3 d
1	spr	14 c	3.7 b	3.0 c	3.2 c
2	spr, fall	21 b	4.3 a	3.5 b	3.8 b
4	spr, fall	34 a	4.5 a	4.2 a	4.7 a