TOPDRESSING WITH SAND

by Dr. Douglas Hawes

Topdressing with sand versus none and summer versus winter fertilization are four management tools I am presently studying in an attempt to learn how to grow combination cool and warm season turfgrass combinations in the transition zone. I am attempting to grow these combinations for use on tees, athletic facilities, fairways and home lawns. In this study, topdressing with sand has greatly benefitted Penncross creeping bentgrass. At the same time Kentucky bluegrass, a blend of five varieties, has done better where it was not topdressed.

Topdressing was first applied in early summer of 1974. In 1975 and 1976 applications were made in late spring, mid-summer and early fall. The sand used has 89% of its size distribution between 0.1 and 1.0 mm. Each application consists of just under ⅛ inch. It is brushed and watered into the turf. The turf is maintained at ¾ of an inch from late spring till early fall. Height of cut is maintained at one inch after the fall topdressing till late spring.

The first noticeable benefit of topdressing was in the fall of 1975. During August, 1975, the bentgrass had been almost eliminated by chinch bugs, brown patch and drought. When the warm season grasses turned brown after the first hard frost it became very clear that the bentgrass was in much better shape where it had received topdressing. Similar data, but without clear differences, were obtained this fall.

On the topdressed half of these plots less winter annual weeds, lower severity of spring dead spot on bermuda, and a lower percentage of dead areas due to insect, drought and disease damage have been observed. Thus the quality of turf was found to be significantly better on topdressed plots in July and November of 1975 and in February, April, June and July of 1976. Thatch accumulation appears to be less in the topdressed plots. However, thatch has not yet become a problem, and thatch measurements have not been made yet.

Some layering of sand and organic matter has been observed. The layering does not appear to be creating a problem. Lighter, more frequent applications would eliminate this layering. Lighter applications would also be easier to work into the turf than the present ⅛ inch application.

There is very little literature on

The percentage of Kentucky bluegrass in a combination cool and warm season mixtures as influenced by topdressing.

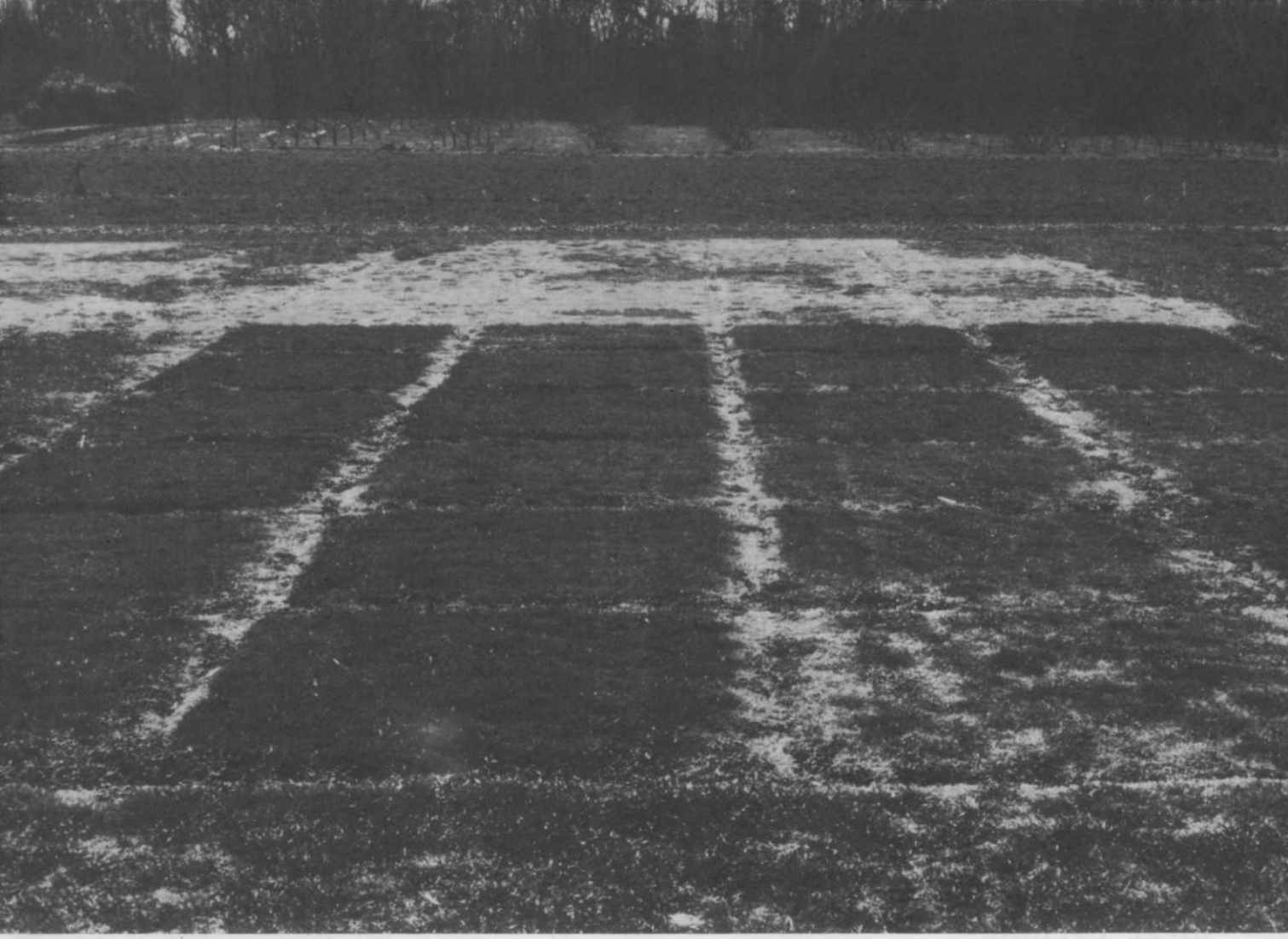
Date	Topdressing Treatments None	3 appli./yr.
April thru July '75	34 avg.	33 avg.
Sept. 75	11	10
Nov. 75	18	17
March 76*	46	36
May 76*	50	39
June 76	39	30
July 76	25	17
Sept. 76	13	10

*Means for these dates different at the 5% level of significance.

The percentage of creeping bentgrass in combination cool and warm season mixtures as influenced by topdressing.

Date	Topdressing Treatments None	3 appli./yr.
April thru July '75	48 avg.	48 avg.
Sept. 75*	10	21
Nov. 75*	9	37
March 76*	29	49
May 76*	35	52
June 76*	40	51
July 76	36	45
Sept. 76	3	7

*Means for these dates different at the 5% level of significance.



Improved turf quality for experimental plots on the left foreground are due to sand topdressing applied the previous year. Plots are a mixture of warm and cool season grasses.

the topdressing of turfgrasses. Engel (1967) reported on a ten-year study where topdressing was used in three out of ten treatments for thatch control.

He used a sandy loam topdressing containing 8 to 12 percent organic matter. Topdressing — containing treatments in this study were associated with reduced thatch, improved quality, reduced amounts of Poa annua, improved infiltration and freedom from dry spots.

Rice (1964) included topdressing in a relatively short term study he did on Penncross creeping bentgrass. He compared a sand, a loam and a loam-sand mixture with no topdressing. Skogley (1976) reporting on this thesis noted that the loam and the loam-sand mixtures produced the highest quality scores. Sand resulted in inferior quality scores in the spring but was better than no topdressing. In July of each year only the no topdressing treatment was rated inferior. Roots were more plentiful under topdressed turf, and in a fall sampling only sand topdressing had significantly more roots below two inches. Sand was found to be most effective in reducing the organic matter accumulation in the surface inch of soil.

Skogley (1975) also reported effects of topdressing on management of velvet bentgrass. Using a soil-sand mix he reports topdressing seven times per year resulted in reduced organic matter and improved turf quality score averages two out of four years when compared to two topdressings per year but not when compared to four topdressings.

Madison (1974), in several similar articles suggested topdressing with sand containing fertilizers and pesticides as "an alternative method of greens management". Thompson and Ward (1965 and 1966) report topdressing to be the management method which best reduces thatch under bermudagrass. Both Cole (1975), Madison and myself suggest that topdressing will reduce disease problems. Engel, however, found more dollarspot associated with topdressed bentgrass plots than untopdressed plots.

Most, but not all, writers on the subject favor topdressing. With those writers that do favor regular topdressing there is disagreement as to what should be used for topdressing material. Madison recommends sand and the USGA Greens Section appears to be leaning in this direction. Most of the old superintendents and most of the researchers above use or used a sandy loam, often with medium to high organic content. In the past, recommended practices were to use a material of

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the same composition as your soil. But if you want to improve the soil, most of you would want a sandier mix which would hold promise of better drainage. So why not topdress with sand? I personally see no good reason for including organic matter in a topdress mix when reducing thatch accumulation (organic matter) is a principal goal. I would feel more comfortable in recommending straight sand topdressing if there were some research results showing that it was indeed better than a loamy sand.

A straight sand topdressing does offer advantages over a topdressing mix. It should be a lot cheaper, and secondly, one should be better able to spread it cheaply and easily with large cyclone spreaders. If you do go the straight sand route, I suggest you follow Madison's advice. Use sand less than 1mm in size. This gives you a material which will work easily into the surface mat and thus not interfere with mowers or golfers.

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I agree with Madison in that the first couple of sand applications should go on after a heavy, deep aerification in which the cores are removed before topdressing. The sand should then be worked down into the holes so that there will be a transition zone of sand and old soil rather than a direct layer of sand on soil. If the soil below is extremely impervious you can still create a "Dagwood sandwich" of alternate layers of sand, thatch, calcined clay and other topdressing materials. Layers impede water, air and roots. Regardless of what you decide to do about topdressing, avoid layers of fine materials on coarse materials. Layers may cost you your turf and also your job.

Also I suggest that you topdress more frequently when creeping bentgrass stolons are growing the most. The peak growth period for stolon growth is the last half of June. Therefore, topdressing should be most frequent in the May through July period.

Holman Griffin recently wrote, "A good topdressing material (properly analyzed) can eventually modify or replace the poor soil to a depth which is adequate to give your green a new lease on life and provide a manageable situation." Properly done, topdressing can be beneficial to creeping bentgrass. Improperly done, it may cause you many more problems than it is worth.

I suggest you read the articles I mentioned by Engel, Madison, Skogley, Thompson and Ward before beginning on a topdressing program or before changing to a straight sand topdressing.

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