

Sand topdressing: Would it work for you?



Few cultural practices have been the subject of as much attention and discussion in recent years as has sand topdressing of putting greens. Practically every turfgrass conference and seminar in the past 6 months has devoted part of the program to sand topdressing, and these sessions have consistently been the best-attended by golf course superintendents. Many superintendents now seem to be topdressing their greens with sand, and still more are wondering, "Would it work for me?"

William B. Davis, extension environmental horticulturist at the University of California, Davis, has done extensive research on sand topdressing, including experiments on the campus experimental green over a period of several years. Realizing the interest and the practical needs of golf course superintendents in deciding whether to try sand topdressing on their greens, Davis recently prepared answers, based on his research, to questions commonly asked by superintendents:

Will just any sand or topdressing mix give basically the same results?

"No, for several reasons. Coarse sand particles do not work readily into the surface grass. Golfers do not like to putt on greens that have just been topdressed. Coarse, sharp sands dull mowers and are abrasive to the grass. Sands that are too fine can seal the surface of a green and reduce infiltration."

What type of sands do you recommend?

"A relatively fine narrow range of particle size. Round sand particles are best. The table on page 19 gives the particle size ranges we presently suggest for construction and topdressing."

Are suitable sands readily available?

"Yes and no. For the past 10 years, we have tested sands from many areas of our state as a service to golf course superintendents. We find them in coastal deposits and dredge them from the San Francisco Bay. Some come from deposits on individual golf courses, and some come from many, varied river deposits."

"The nearest local sand and gravel company has been of little help. They produce concrete and plaster sands

that may be washed but are too coarse. They basically are producing sands with a wide range of particle sizes so that when a little clay (cement) is added they produce an impermeable, dense medium. Some sand companies now produce what we want because we have specified the grade of sand we desire and will no longer buy their standard grades. Most major sand suppliers can screen and wash to a specific grade range if you create the demand and will not accept second best."

Do you mix any amendments with the sand?

"No. Amendments must be uniformly and evenly mixed if they are to measure up to their potential, and this greatly increases the cost of the topdressing medium. Topdressing is difficult to apply when moist. When dry, mixes will separate. Typical sand and organic mixes become thin layers of organic matter and sand by the time they are brushed into the turf surface, and irrigation further separates them. Very fine organic matters can seal the surface, and coarse organic matter does not readily work down into the grass. Most greens already are producing more organic matter than we want, so why should we add more?"

How frequently do I need to topdress to achieve the maximum benefits of this type of program?

"How fast is your grass growing? It is very likely that 20 applications a year (year-round play) would be too many. Fifteen applications was just about right for our Penncross green. At some periods of the year, topdressing every 2 weeks is just right, but you may well go for 8 weeks between some applications."

Can I apply topdressing too frequently?

"Yes. It is important to maintain some organic cushion. Excessive turf damage can result from ball marks where sand is applied too frequently, too heavily, or both."

How much sand should I apply at each topdressing?

"Assuming your only objective is topdressing and not quick buildup of a new surface, you should be applying from 1/32 to a maximum of 1/16 inch."

How do I apply such small amounts?

"It takes good equipment and a

skilled operator. Topdressing machines set at almost closed application settings have done a good job. Some superintendents have found broadcast fertilizer equipment to be the answer."

Can these uniform medium fine sands be applied at the higher rates typically used when aerating and topdressing once or twice a year?

"No. These finer sands are not as easy to move and push around over the green. If heavy amounts are desired, it would be best to make several uniform fine applications."

Do you tend to build up the depth of the green much faster than typical aerating and topdressing practices?

"There is very little difference. At the frequencies that produced our best putting surface, the difference was less than 1/4 inch per year, when compared to standard practice. On golf courses, we have not seen an observable difference."

Do you recommend limiting aeration and verticutting once you start a topdressing program?

"No. The condition of your present green will, in part, govern how fast topdressing can become a major management program. It is best to increase aeration at first to ensure a good transition between your old and new surface. Some courses have found that a double aeration, deep aeration, or both, work best for them. During the first year, some courses have gone from two basic aerations to a maximum of six. Tines of 5/8 inch are used to start, then only 1/2- or 1/4-inch tines. Their topdressing might be much heavier at first, but they are soon on the 1/32- to 1/16-inch application rates. Verticutting may or may not be used, but with present-day equipment many superintendents have found it beneficial."

Once on the program, is aerating completely eliminated?

"No. But we no longer use aeration as our basic and most effective means of relieving compaction and removing thatch. Once we have a new uniform surface with a depth of 2 to 3 inches, late spring or early summer aeration, or both, may be in order. Even though we do not have a buried thatch layer, we may want to reduce the density or firmness of the surface."

"Verticutting the plugs on the

green will separate the sand from the organic matter. By removing the organic matter and brushing the sand into the green, you will have topdressed without the need for adding extra sand. Some superintendents feel that of their 12 to 18 topdressings per year, two or three would be verticutting their aeration plugs."

If you aerate, aren't you opening up the green for greater Poa annua invasion?

"Yes and no. It depends on the time of year. We recommend only aeration in the late spring and early summer when *Poa annua* germination is at a minimum."

How long before a topdressing program will make a major difference in the surface of the green?

"This again depends on the condition of your green when you start the program and how soon you are developing a uniform surface. Considerable improvement has been noticed in greens before the end of the first year. More typically, it takes about 18 months."

Will golfers like the new putting surface?

"Maybe yes, maybe no. If your golfers want a true firm green, the answer will be yes. If they expect a poor shot or an improperly played shot to stick on the green, they will be unhappy. Some players will have to take a few golf lessons and learn how the game is played."

Can this program be easily incorporated into my present turf management program?

"Yes. But it is a poor practice to go into any new program without first testing it on your practice green. Your sand source is critical. Do you need new storage bins for your sand? Do you need to relocate or add sand storage bins to reduce the time it takes to move sand to your greens? Is your present topdressing equipment in excellent condition, and will it evenly apply the right amount of sand? Does your crew know what is expected from the program and what they must do to make it work?"

"No doubt there are many other questions we might ask and answer. Here they should be unnecessary, because this program is not for the nonprofessional superintendent."

"The true professional can make it work, and results will be quite predictable. Tournament golf every day is possible. Less reliance on fungicides and herbicides is possible. You also may find that height of cut will be increased and frequency of mowing reduced. If the primary function of

your putting green is for putting and not just for a lush green carpet appearance, a properly developed sand topdressing frequency program could be the answer to great golf for your golfers and fewer problems for you."

Of the superintendents we know have been topdressing with sand, most would agree in general with Davis' positive remarks, though individual practices vary with climate, type of green construction, and turf variety. Most of these superintendents would agree that sand topdressing eliminates thatch, reduces or eliminates aerification and verticutting, and provides fast and true putting on a green that holds a ball well.

Ray Knapp of Tuckaway Country Club in Wisconsin began topdressing his greens with sand in 1975. He found that once his thatch problem was eliminated, he could cut back to topdressing three or four times a year.

Even those superintendents who are satisfied with the results they have achieved caution against starting sand topdressing unless you have problems with your greens. Once you

start using sand, you can't switch back to a regular topmix; if you do, you will create layers of different soil materials. As Dr. Douglas Hawes pointed out after his research at the University of Maryland, "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."

Louis Miller, superintendent at Louisville (Ky.) Country Club, has had good results with sand topdressing, but he cautions, "If you've got something that works and you've got the money to pay for it, why screw it up?"

Marvin Laird, who corrected heavy clay and compaction problems at Lincoln Greens (see cover photo), adds, "If you've got a successful program and you change to sand, you ought to be fired."

But Ray Knapp probably provided the best summary: "Sand topdressing is just another maintenance tool, but it has eliminated many problems for us." □

SUGGESTED PARTICLE SIZE RANGES FOR SAND USED IN GOLF GREEN CONSTRUCTION AND TOPDRESSING

Sieve opening (mm)	U.S. standard sieve number	U.S.D.A. class	Construction		Topdressing	
			Desired	Accepted	Desired	Accepted
2.38	8	Fine gravel				
2.00	10					
1.68	12	Very coarse sand				
1.41	14				0-10%	
1.19	16					
1.00	18					
.841	20	Coarse sand				
.707	25					
.595	30		0-15%	80-90%		0-15%
.500	35					
.420	40	Medium sand				
.354	45					
.297	50		80-95%		100%	75+%
.250	60					
.210	70	Fine sand				
.177	80					
.149	100					
.125	120					
.105	140					
.088	170	Very fine sand				
.074	200					
.063	230		4-8%	5-10%		0-8%
.053	270					
.044	325					
.037	400	Silt and clay				

NOTE: The proportions proposed are tentative guidelines only. Individual sands should be considered in terms of the infiltration rate when compacted and the moisture release curve. These will be affected by the particle size distribution within the limits proposed. The shape of the sand particles also must be considered, because round sand particles do not compact as readily as sharp sand particles.