

USGA

Mr. Sandman...Is New Technology Lulling Us to Sleep?

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The game is played to the greens and on the greens. Needless to say, the quality of the putting surfaces defines a golf course. Superintendents strive to provide smooth, firm, consistent surfaces with enough speed to provide a fair test of putting skill. Really good greens can compensate for poor conditions on the rest of the course. However, when the greens are bad, the course is bad, regardless of the conditioning of fairways, tees, bunkers, and roughs.

Let's put the speed issue aside for this discussion. In fact, speed is a topic discussed less frequently on Turf Advisory Service visits during the past few seasons, perhaps due to the widespread use of rollers and the fact that most mid-to-upper end courses routinely mow at heights of cut at or below 1/8-inch most of the season.

Rollers definitely make the greens faster and smoother. In days gone by, making greens smoother was mostly dependant on how often and how much topdressing was applied to the putting surfaces. After observing hundreds of soil profiles from greens, it is apparent that many courses applied more sand to greens in the past.

This observation should come as no surprise considering the inability of old topdressing equipment to regulate the amount of sand that exits the unit. Old belt/brush type units were generally better suited for the task of applying heavy rates of sand on greens to fill aeration holes than making light applications of sand to greens to smooth and firm up the surface. Substitute or makeshift topdressing equipment, such as a Vicor or Lely fertilizer spreader, could be used to apply sand to greens, though it was still difficult, if not impossible, to apply a small, uniform rate of sand to the turf. As a result, you couldn't topdress all that often, due to the damage to mowers and disruption to play, but that was okay, since plenty of sand was being applied per operation.

Furthermore, it was a more common practice in the past to cultivate greens with 1/2 to 5/8-inch hollow tines every spring and fall. There was no deep-tine, deep-drill, water injection, sand injection, or 1/4-inch Quadratine units to consider as substitutes for standard aeration practices. Heavy applications of sand were made to fill holes and a significant amount of the topdressing filtered into the turf between the holes. The bottom line is that the combination of old topdressing equipment and biannual coring operations resulted in lots of sand being applied to greens each season.

Enter new technology, such as sophisticated, high capacity topdressing units with infinitely adjustable spinner spreaders and a myriad of cultivation options that do not require removing cores or filling holes. It became very easy to substitute one deep-tine operation and one 1/4-inch Quadratine aeration per season for the time consuming, labor intensive practice of coring greens with 1/2-inch tines spring and fall. It became very easy to substitute a quick pass across greens with the high capacity spinner unit every two weeks (sanding 6 or more greens per load) or, better yet, a pass every week using a walk behind fertilizer spinner spreader for the old practice of dumping a load of sand on greens every three to four weeks and then brushing, brushing, brushing in the sand. Progress is good and after all, topdressing greens 20 to 25 times a year just has to be better than topdressing three or four times per season. Or is it?

163 Yard Par 3 eighth hole at the Refuge Golf Club in Oak Grove, Minnesota.



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There are plenty of ways to rationalize why modern topdressing and aeration operations are better than the old ways. In the long run, more sophisticated equipment is less costly than labor. Golfers have one less thing to complain about when standard coring operations are suspended and when the sand is applied so lightly that they can't see it, it doesn't need to be brushed into the turf and it doesn't affect a putt. Greens are commonly mowed at or below 1/8-inch and any more than a dusting of sand will only end up in the clipping basket. The list goes on and on.

So what's the fuss? Well, if you were only topdressing to make greens smoother, then very light, frequent applications of sand would not be an issue. Then again, if you are topdressing to make greens smooth, why not just roll the greens and eliminate topdressing altogether? The fact is that topdressing and standard coring operations are necessary to manage organic matter (OM) accumulation in greens and rolling won't keep greens free from excess thatch accumulation.

OM accumulation is easy to ignore because you don't see it and it is difficult to measure. The many problems associated with excessive OM in the upper soil profile

of greens are a topic for an entire separate article. Suffice it to say that the Green Section staff considers inadequate OM management to be the most common reason why new sand based greens fail. Allowing the pore space at the surface of greens to become clogged with OM may not cause many concerns during a mild, dry season. However, it will make greens very difficult to manage during a hot, wet summer.

OM management is so easy, yet so difficult. Thatch accumulates when the rate of OM production exceeds the rate of decomposition. OM decomposition is a microbial process and microbial activity is inhibited by cool/cold temperatures, oxygen (aerobic microbes), and too little or too much moisture. A cool climate and excessive moisture due to poor drainage, overwatering, or frequent heavy rainfall can tip the scales in favor of OM accumulation. Likewise, turf that naturally has high shoot density or turf that is over-fertilized can be prone to excessive OM accumulation.

Why are hollow tine coring and topdressing important? Coring greens, removing the cores and filling the holes with sand will physically remove some of the OM from the upper soil profile. Frequent topdressing with sand constantly dilutes OM as it is pro-

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duced. Now that many courses are substituting other forms of cultivation for hollow tine aeration, the importance of managing greens with adequate amounts of topdressing increases.

Unfortunately, while the frequency of topdressing at many courses has increased due to new equipment, the actual amount of sand applied to greens per season has decreased significantly. It's not about how many times the greens are topdressed; it's all about how much sand is being applied to greens per season. Don't blame the companies that developed spinner spreaders for the problem, because every unit has a dial somewhere that regulates the amount of sand that exits the unit.

How much topdressing is enough and how can I quantify progress? As mentioned above, OM is difficult, but not impossible, to measure. However, analytical procedures can vary from lab to lab as well as the interpretation of results. Do not compare OM values between labs. Still, valuable information can be gleaned from sampling greens and developing a baseline to document the effects of modifying management practices. Keep in mind that OM accumulation can vary from

green to green. For example, a green with poor surface and subsurface drainage will have more potential for OM accumulation than a green that drains properly. Consequently, sample greens separately.

Contact the lab regarding sampling procedures. It makes little sense to pull an 8 inch core from the greens to measure the average OM of the entire profile when the problem clearly exists in the top inch of the root zone. It would be far better to remove multiple samples from the green and provide the lab a composite sample from the top inch of the turf when a well defined layer of excessive OM is visible.

It's never easy to make changes in course management that require more time and labor or changes that may inconvenience golfers. In the long run, providing firmer, smoother, more consistent greens capable of tolerating the extremes in weather patterns that have become common these past several seasons cannot help but benefit the golfers and the course. Strive to communicate the benefits of more aggressive coring and topdressing to the players. It can be surprising what some golfers will tolerate when given an opportunity to understand the concern. 



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