The Five-Day Program

Alternative philosophy for managing your topdressing program.

BY TODD PIPPIN

Regular surface topdressing is necessary to dilute the normal accumulation of organic matter, but manipulating its impact on mowing equipment is challenging.

Editor's Note:
The Green Section believes that it is very important to use topdressing sand that is compatible with the existing rootzone of the green, as determined by laboratory testing. Failure to do so can create layers that restrict water movement and cause excess water to be held in the uppermost portion of the rootzone profile. Thus, it is essential that sufficient funding be provided to purchase topdressing sand of the highest quality — avoiding the problems caused by an excess of particles that are too large or too small.

Topdressing is a viable and necessary technique used to manage modern putting greens. The primary reason for applications of sand topdressing is dilution of organic matter (OM) content within the upper rootzone of a green, but an increase in surface smoothness, firmness, and uniformity are all by-products of sound topdressing strategies. Some may ask why more sand is needed beyond that applied during aeration. The amount of sand applied to fill aeration holes falls short of the amount needed to keep the accumulation of organic matter well diluted, and sand topdressing must be applied regularly throughout the growing season to keep up with the plant growth rate.

There are a number of deleterious effects associated with topdressing putting greens, including damage to cutting units, a temporary reduction in plant health/vigor, and a short-term lapse in greens performance. A long-term degradation of soil physical properties can occur through the harvesting of coarse sand particles during mowing operations following topdressing. Traditionally, topdressing with light amounts of dried, predominantly medium to medium-fine sands is performed on a frequent basis to navigate through these issues. However, this can produce problems in itself, potentially greater than the original issue of OM dilution. By reducing the rate, it requires the superintendent to make more frequent topdressing applications, subjecting physiological stresses on the turf. This also involves a huge amount of labor devoted to the operation, and I question if we net a tangible benefit by applying such ultra-low volumes of sand so frequently. The more looming issue, due to ultra-low mowing heights, is that many turf managers are forced to utilize topdressing sand of a medium (No. 80 sieve) to medium-fine (No. 100 sieve) texture to ensure complete incorporation into the turf canopy. This practice inevitably results in skewing the proper particle size distribution within a USGA rootzone, hence producing yet another set of new and potentially challenging problems.

THE PLAN OF ACTION

The intent of the outlined Five-Day Program is to provide a framework for topdressing strategies to circumvent all of the deleterious effects mentioned and to be practical and seamless for the golfer and maintenance staff. By manipulating mowing heights and properly preparing the surface prior to topdressing, the use of the program as described will result in less harvesting of sand through mowing, less damage to bedknives and reels, and less disrup-

Clippings from day two of the process. Notice what little amount of sand is mixed with the clippings.

tion to putting quality and green speed. It also will allow a broader spectrum of sands to be applied and incorporated into the turf, thus maintaining better particle size distribution within the rootzone.

The program typically involves five days of manipulating mower setup to successfully navigate a topdressing event. It is imperative to maintain an extremely high quality of cut throughout the process, beginning with Day 1.

DAY 1

To illustrate the process, let's assume that the current height of cut (HOC) for a given green is 0.125" or 3.2mm. On the day of topdressing, mowers are set up to mow at a 10%-15% differential below that starting HOC, or in this instance approximately 0.115" or 2.8mm. If mowers are equipped with groomers, they would be set at 0.000" or the same as the roller height on the cutting unit. Greens would then be double-cut with this mower setup. If groomers are not an option, one could achieve the same effect by very lightly verticutting the greens prior to mowing, the idea being to open the canopy with aggressive grooming or light verticutting to better accept the sand applied during topdressing. The height differential will be explained further as we work through the process.

It has been my experience that an upper limit of 75 to 100 lbs. of dried sand per 1,000 sq. ft. is attainable without incurring any negative effects. Depending on the time of year, traditionally incorporating sand by lightly brushing dry greens is acceptable. Through my experience, the method of choice has been by irrigating the greens with a flush cycle. The flush cycle is assuming that the greens are built to USGA specifications and still percolate well. If not, irrigate with as much water in a single event as the green can comfortably accept. A full flush cycle would typically provide approximately three gallons of water per square foot of green. This amount will vary depending on the specific physical properties of a green's rootzone. A true flushing event provides enough water to fill the rootzone and then creates enough head pressure from the perched water table to release with enough hydraulic force to flush the green.

DAY 2

Manipulation of mower setup continues with a 10%-15% differential HOC above the starting point, in this case 0.135" or 3.7mm. Groomers are raised to the "off" position. Take note of the differential between Day 1 and Day 2. That measurement is 0.500mm, which is the same for coarse-sized sands, screened through a No. 35 sieve. This should represent the largest-sized particle found in quality topdressing sand. In the ideal scenario, mowing greens dry has proven to provide the best results of virtually no sand harvesting during mowing operations. This is not always a practical approach, as mowing in wet conditions from morning dew is a more likely scenario.

There are several helpful practices that I have used in these situations. A small application of water prior to mowing may help produce enough capillary action to tack the sand down for a morning cut. If available to you, a very tangible extra is the application of an aerosol wax to the reel and bedknife prior to mowing. It will reduce the amount of wet sand particles adhering to the reel or bedknife when mowing in damp conditions, thereby reducing or preventing any rifling of the bedknife or reel from sand adhesion.

After mowing, evaluate the sand-to-clipping content. There is some subjective evaluation as to the quantity of sand present in the clippings (i.e., how much is too much). It should be very minimal — only a few ounces of sand per green (85-100 grams). If the sand harvested by the mowers is more than several ounces, or more than what you have deemed to be an acceptable level, hold that mowing height as long as necessary until the amount of sand harvested is minimal to nonexistent. If you prepped the green to accept the topdressing and performed a good job of incorporating the sand through heavy irrigation or brushing, there should be little to no sand present with the clippings. This is due in large part to the differential in height of cut.

DAY 3

If the sand content from the prior day's mowing was acceptable, lower the HOC on the mowers by 0.005" or 0.125mm and perform the necessary maintenance to the cutting unit. HOC is now 0.130" or 3.5mm. Do not succumb to the mindset that you should accept less than the standard quality of

cut just because of topdressing. One of the key components of this process is reducing mower damage so that the quality of cut can be maintained. Keep the mowers sharp and well adjusted. Follow the same process of evaluation as Day 2 after concluding mowing operations.

DAY 4

If the sand content from yesterday's mowing (Day 3) was acceptable, lower the HOC on the mowers again by 0.005" or 0.125mm. HOC is now at its original starting point of 0.125" (3.2mm). Let's pause for a moment and look at the mowing height differential again between the HOC on Day 1 and Day 4. That differential of 0.010" (0.250mm) represents what should be the bulk of the sand particles present in good-quality topdressing sand. Medium-sized sands from the No. 60 sieve are that size. Having that differential allows you several days of turf growth to grow through those medium-sized sands, rather than exclusively trying to incorporate the sand and risk harvesting a sizeable portion with mowing. The greatest differential in HOC experienced is from Day 1 to Day 2, a gap of 0.500mm, representing coarse sand screened from a No. 35 sieve. Providing this differential should afford a greater possibility of incorporating more of these large-sized topdressing sands. This introduction of such large particles into surface applications can insure that the proper particle size distribution is being maintained throughout the rootzone.

DAY 5

I describe this as a five-day process to allow for complete incorporation of sand. Should a step in the process need to be repeated to achieve sand incorporation or should rolling be required, there is a built-in buffer. Either way, you should be able to work through the program from the beginning of the week and finish prior to hosting weekend rounds.

WILL THE END JUSTIFY THE MEANS?

In my experience, there is little deviation in green speed throughout the week using this protocol. For the first few days, the ball should roll across the layer of applied topdressing sand. As heights of cut are lowered, green speed may slow on Day 3 or Day 4. If this happens, rolling the greens dry to produce the desired green speed and also to assist in further incorporating the larger sand particles into the canopy can be beneficial. In general, not more than a six-inch deviation in green speed has been measured from my tests, which is negligible.

At the Club at Longview, we are able to rotate through several sets of greens mowers, which has added some additional benefits. Mowers are divided into sets of cutting fleets. One fleet is equipped with standard attitude bedbars, while the other has been equipped with an aggressive attitude bedbar. Rotating through the aggressive attitude fleet prior to topdressing, and then using the standard attitude fleet post topdressing has decreased the harvesting of sand over the standard protocol even further. The added element of using bedknives of different lengths, in combination with the two sets of bedbars, can elevate this technique even further still, nearly eliminating sand harvesting.

TANGIBLE GAINS

Proper manipulation of greensmowers can help alleviate many of the negative effects of topdressing. The steps outlined can be successful in improving playability, maintaining sound agronomic strategies, and protecting mowing equipment from damage during the process. Regardless of specific heights of cut, if mowing heights are manipulated to produce a differential relative to the size of sands used, larger-sized sands and a greater volume of sand can be applied at each topdressing event. This process also can potentially push the interval between topdressing from 7 to 10 days to as long as 14 to 21 days, saving on labor inputs, while still maintaining quality putting surfaces. The ultimate goal of the program is to provide a set of guidelines and tools that can be used in meeting the requirements of managing OM dilution through surface-applied sand. Coupling a robust aeration program with consistent topdressing should lead to successful management of the modern putting green.

A macroscope and turf prism gauge are helpful in examining quality of cut and sand incorporation following topdressing.

Todd Pippin *has ample opportunity to sharpen his skills as the new golf course superintendent at MacGregor Downs in Cary, N.C.*