

A DECADE OF PILING IT ON

Has fairway topdressing worked?

by LARRY GILHULY

ISN'T IT INTERESTING how some ideas come under attack due to the concept of being different from the industry norm? Putting green rolling, spikeless alternatives, and *Poa annua* seed come to mind. Going back a few decades, sand topdressing was in the same category.

Over the past four decades, good-quality sand has proven to be very helpful when used on soil-based greens, tees, collars, and aprons. Many times, when the correctly sized sand has been used following aeration and when lightly topdressed, the need for reconstruction has been completely eliminated. Improvements have included firmer and smoother surfaces, deeper roots, enhanced winter playing conditions, and increased green speed. There is little question that the use of high-quality sand has been an unqualified success. Now comes the question! Why, after all the success that has been achieved through sand topdressing in these areas, was the concept of topdressing fairways thought of as one of the most lavish wastes of money and

foolish ideas to hit golf course maintenance in the late 1980s? Why do many still feel the same way?

Let's step back and take a look at this topic to answer the basic question: Has fairway topdressing worked, and is it something I should do for my course?

Historical Perspective

Sand has been the tonic for wet conditions for centuries. Golf developed on the sandy links of Scotland, despite weather that would put El Niño to shame. After finding that sand made for good golf, the concept of sand use naturally spread to greens, collars, and aprons at courses that were not blessed with excellent natural drainage. Sand use in the U.S. did not gain momentum until player use increased along with expectation levels. As demands for improved playing conditions continued to rise, it became obvious that core aeration alone was not enough. High-quality sand became the choice to begin firming surfaces and extending playing conditions far beyond what

was possible before sand topdressing. In many cases, these same soil-based greens remain due to decades (several inches) of light topdressing and sanding following aeration.

Based on the success observed on greens, it was natural to assume that similar results could be expected on reasonably drained tees. Thus, a common practice viewed at virtually every golf course was regular aeration followed by sand topdressing to fill the holes. At the same time, this program mixed sand with the organic material and raised the profile above the less-than-desirable soils. In some cases, the same light sanding used for greens was practiced with very positive results on tees. Let's face it, without the use of sand and divot mixes on teeing surfaces, most of the golfers in America would be playing from mats or dirt!

Having learned the benefits of sand and aeration on the greens, collars, and tees, the next step in the sand trail naturally led to the green aprons. It is at this point that fairway topdressing truly began to take shape.



Before considering a fairway topdressing program, make sure your drainage is adequate!



Earthworm activity gradually declines as more sand is added. The soil sample on the left was taken from the rough area five yards away from the soil sample on the right. Note the difference between one year and five years of sand topdressing.

Apron Topdressing

Try this simple test sometime when you are with a group of golf course superintendents. In order, the questions are:

- Do you aerify your aprons in the spring and fall at least 10-15 yards in front of the greens? (Regardless of budget, the answer should be yes.)
- Do you topdress to fill the holes following the aeration process? (Again, the answer should be yes.)
- Finally, do you lightly topdress the aprons at the same time you lightly topdress the greens? (The answer should again be yes, but the chances are very high that the response will be no!)

During the past two years, this last question has been asked at more than 100 golf courses, with only three golf course superintendents practicing the very necessary program of frequent and light sanding on the aprons. Think about it from the players' perspective. The greens are firm, the hole location is forward, and the wind is blowing into your face. Looks like a low bump-and-run shot is in order. Unfortunately, the apron has not received regular topdressing, so the shot hits the exact de-

sired location and stops immediately! One up for a very unhappy player with a justifiable complaint! Regardless of your budget, this portion of fairway topdressing should be practiced by every golf course superintendent to provide consistent and dry conditions for one of the most important portions of the golf course — green aprons.

Factors to Address Before Topdressing Fairways

There is no question that sand topdressing has been beneficial for greens, collars, tees, and aprons. In Ireland, the Pacific Northwest, and other portions of the U.S., the program of regular fairway topdressing has proven very beneficial when dealing with poor soils, wet weather, and less-than-desirable drainage. Therefore, expanding the acreage to include fairways and in-play roughs will improve every golf course in every climatic zone with every type of turf. Right? Wrong! It is critically important to understand that just because this program has been used with success in different areas of the country does not guarantee success in your locale. Before embarking on the fair-

way topdressing journey, the following questions need to be addressed to determine if fairway topdressing is for your facility:

- *Does your soil currently provide adequate drainage?* It would be a mistake and a waste of funds to start fairway topdressing if your golf course already has a high-quality soil that drains well during the wettest portion of the year.

- *Have the fairways received regular aeration to remove thatch and incorporate soil back into the thatch?* If the soil is of good quality, it should be incorporated back into the surface after regular aeration. If soil is not returned, excess thatch is created, leading to soft conditions during wetter months and the belief that sanding is necessary. If thatch is the main issue, increase aeration, vertical mow, and don't waste valuable funds on fairway topdressing.

- *Have the fairways been deep aerified?* Deep aeration is another method used to avoid the cost and other negatives associated with fairway topdressing. The combination of regular and deep aeration can be effective enough on certain soils to minimize the need for topdressing if permeable soil exists below the zone impacted by the deep-tine aerifier. It is far less expensive to deep aerify first and then observe the results during the wet months, rather than immediately starting a fairway sanding program if it is not necessary.

- *Have problems with trees been addressed?* Many golf courses simply suffer from too many trees on the south side that cast shadows on east/west fairways. In some cases, the simple removal of trees may be all that is necessary to improve firmness. If the trees remain, then fairway topdressing has proven successful in modifying these locations.

- *Has adequate in-ground drainage been installed?* This is the one key area that must be addressed before considering fairway topdressing. If adequate surface and subsurface drainage is in place and the golf course still suffers from excess moisture retention during the wet months, and all of the preceding factors have been addressed — congratulations, you have become a very good candidate for a fairway topdressing program.

Fairway Topdressing Do's and Don'ts

Fairway topdressing can produce significantly improved playing condi-

tions earlier in the spring, later in the fall, and during the winter, depending upon your climatic location. It cannot guarantee dry conditions and will not replace the need for adequate subsurface drainage. It is a program, however, that requires following certain standards to achieve positive results while avoiding pitfalls. The following list of do's and don'ts provides the basics when considering this program.

Do:

- Use the right equipment
- Use the right sand
- Apply light rates at frequent intervals
- Include the roughs and green surrounds
- Remove the aeration cores
- Cover the irrigation heads or blow off
- Add extra fairway reels and bedknives
- Demonstrate the program
- Consider an outside contractor
- Educate the pro shop and . . .
- COMMUNICATE!

Don't:

- Apply sand during warm weather
- Forget to overlap with the machine
- Apply Monday and Tuesday only
- Stop aeration
- Neglect raising irrigation heads
- Overapply sand
- Topdress in conjunction with greens aeration
- Start without a final goal
- Forget to take before and after photos
- Forget that subsurface drainage is first
- **START IF YOU ARE ALREADY DRY!**

• *Do use the right equipment.* The greatest change that has occurred in fairway topdressing programs during the past decade has been the upgrading of topdressing equipment. In the late 1980s, large-volume drop spreaders were introduced that carried large volumes of sand, yet were restricted to 5'- to 6'-wide spreading patterns. Days and weeks of heavy sanding gave results, but players rapidly tired of the never-ending existence of sand on fairway playing surfaces. With the introduction of large-volume spin spreaders, sand can now be applied at lighter rates, more frequently, and with far less disruption for players. Do not commit to this program without a large-volume spin spreader. Also, many

of these units are replacing single-function dump trucks due to unit versatility. The ability to rapidly fill topdressers when sanding greens, fill drainage lines with drain rock, and fill bunkers when adding bunker sand makes this unit a very wise investment for every golf course operation.

• *Do use the right sand.* If it is within your budget, and a sand that falls within USGA recommendations can be found, topdress with this sand! Topdressing with sand that is too coarse has resulted in conditions that are too droughty. Sands that have excess fines are even worse and simply do not address the excess moisture issue. Even if the cost of the sand means less area can be topdressed, choose the right sand!

• *Do apply light rates at frequent intervals.* The rates of sand applied while topdressing fairways are much higher than the light and frequent rates applied to greens and aprons. At the same time, the frequency is not the same; however, applying very heavy amounts in the spring and fall is generally not appreciated by the players. For this reason, applications as light as 1/16" to 1/8" (see Table 1) are applied during the growing season on a 4- to 6-week schedule. The spring and fall applications can be higher (3/16" to 1/4") and generally are completed in conjunction with open-core aeration. As with the greens, the goal is to match the growth rate of the fairways with the sand applications to create a consistent sand profile without layers. A yearly total of at least 1/2-3/4" of sand is the normal goal of a fairway topdressing program.

The accompanying table offers general amounts of sand required for topdressing selected areas on a typical

golf course. It does not include every fairway and rough, and the actual amount of sand is slightly less in the turf canopy. For example, if the fairway and rough areas selected for topdressing are 30 acres in size, it should take 810 yards of sand to complete the application at the 1/8" rate. Based on the 25-yards/hour application rate, the sand should be applied in 4-4.5 days with one large-volume topdresser.

• *Do include the roughs and green surrounds, especially in the traffic areas.* An interesting thing happened when golf courses started fairway topdressing without including the roughs. Power carts couldn't reach the drier fairways without doing damage to the roughs! Make sure to topdress the roughs on the cart path side of fairways and to the tree lines, if possible.

• *Do remove the aeration cores.* This is one of the greatest negatives with fairway topdressing since incorporating soil (especially silt and clay) back into the sand is counterproductive. Modifying the Cushman Core-Harvester (*USGA Green Section Record*, May/June 1997, "Fake Left, Throw Right") remains the best approach to this issue.

• *Do cover the irrigation heads or use a blower to remove excess sand.* The abrasive nature of sand can do significant damage to the irrigation heads.

• *Do add extra reels and bedknives to the inventory.* The hard edges of the sand particles can literally tear the fine cutting quality of a fairway mower to shreds!

• *Do demonstrate the program.* This can be accomplished at every golf course with the smallest budget. Select a small area (aprons are generally an

**Table 1
Topdressing Quantities**

- 8.5 yards/acre = 1/16" application
- 17.0 yards/acre = 1/8" application
- 26.0 yards/acre = 3/16" application
- 34.0 yards/acre = 1/4" application

- 200-233 yards/golf course = 1/16" application
- 400-466 yards/golf course = 1/8" application
- 600-700 yards/golf course = 3/16" application
- 800-933 yards/golf course = 1/4" application

Approximate time of application: 25 yards applied/hour

excellent choice, as is a par-3 fairway) and begin regular sand applications with your existing equipment. The smaller the equipment, the smaller the area. In this manner, those who set the budget can view the positives and negatives and make a more informed decision.

- *Do consider an outside contractor.* While this concept may not be available in your area, outside contractors have proven very popular in the Pacific Northwest. As with any contractual program, the positive aspects, which include not using the existing staff and thereby removing labor from regular golf course maintenance, not buying expensive equipment, and having two or three topdressers applying sand at one time to complete the operation in one day, are very attractive to many golf course superintendents and players alike.

- *Do let the pro shop and course personnel know exactly when, where, and why fairway topdressing is being conducted.* The folks behind the pro shop counter can be your best ally or your worst enemy when it comes to fairway topdressing. Always keep the lines of communication open so they can adequately explain to the players the purpose of the program.

- *Do communicate, communicate, communicate!* Newsletters, photographs, one-on-one conversations, Green Committee meetings, and playing golf with different players are all examples of getting the word out about the program. Players generally don't like sand applications; however, if they are informed, the acceptance level will be much higher.

Just as there are many do's, there are just as many don'ts. Some of these include:

- *Don't apply sand during warm weather.* Warm weather provides more than enough stress to the turf. Don't compound the problem with sand.

- *Don't forget to overlap with the machine.* The current large-volume topdressers do not provide a consistent coverage pattern that allows for sand applications similar to a fertilizer spreader. For this reason, carefully view the unit in operation to determine how much overlap is necessary to achieve a consistent application over the entire fairway.

- *Don't apply sand on Mondays and Tuesdays only.* Wednesdays and Thursdays deserve "equal" treatment.

- *Don't neglect aeration.* Aeration removes thatch, relieves compaction,

and creates avenues for root development, and still should be done in the spring and fall. Increase the sand application rates when the fairways are aerified.

- *Don't forget to raise the irrigation heads.* This is one of the other major negatives with fairway topdressing that must be addressed periodically.

- *Don't overapply sand.* There is nothing that will stop this program faster than heavy sand applications on a regular basis. Players simply do not like heavy sand applications that can do damage to clubfaces and provide temporary lies that are semi-bunkers. Also, heavy sand applications can result in layers of sand and organic matter that can be counterproductive to the consistency desired in the upper profile.

- *Don't topdress fairways at the same time as green aeration.* Players can take one major course disruption. Give them two and problems will ensue!

- *Don't start without a final goal.* Fairway topdressing is not a once-in-a-while proposition. It requires consistency to apply $\frac{1}{2}$ - $\frac{3}{4}$ " of sand in one year. It takes even more to reach a final goal of 4-6" over a 10-year period. The amount of sand applied can be reduced when the goal is reached; however, the players must understand that this is a long-term program.

- *Don't forget to take ample before and after photographs.* Make sure the players remember the bad old days as well as the good.

- *Don't forget that subsurface drainage comes first.* Drainage provides the method for the bathtub to empty. Fairway topdressing only deepens the tub!

- *Don't start this program if the golf course is already dry.* Use your available funds for other priorities.

Positives and Negatives

Based on personal observations during the past decade at more than 100 golf courses in the Pacific Northwest, Florida, Hawaii, and California, and observations from fellow USGA agronomists, fairway topdressing has been an overwhelming success when used in an appropriate manner based on climatic and soil conditions. While the negatives include the cost for the sand, equipment, and labor, the removal of cores following aeration, the need to raise irrigation heads, increased fertilizer usage, damage to mowers, and more stress in the summer, the positives simply outweigh these negative factors. These positives include:

- *Much drier fairways during the fall, winter, and spring months.* During the recent "wettest winter in history" in the Pacific Northwest, golf courses such as Sahalee CC (site of the 1998 PGA Championship) were mowing fairways and roughs all winter and spring. Ten years ago the mowers at Sahalee would have been idle for long periods of time due to excess moisture. Unmowable, unwalkable, and unplayable are not a pleasant combination for areas where golf is played 12 months a year.

- *Deeper roots.* The profile photo in this article displays a consistent observation whereby the root system is very active below the sand/soil interface. Before fairway topdressing, the roots did not have the extra four inches of sand and subsequent root mass. Some golf course superintendents actually claim to be using less water with fairway topdressing; however, this is not the normal situation.

- *Less earthworm activity.* Let's face it. If you were an earthworm, would you want to ingest soft particles of silt and clay to act as your "teeth" when grinding up your food, or would you prefer the sharp and abrasive edges of sand? Don't know about you, but I'd be inclined to move to a new neighborhood (the roughs) to get away from that stomach ache!

- *Power cart use.* This may not be a positive to some; however, firming the surfaces allows power carts to be used off the cart paths more often.

- *Winter mowing.* In addition to the previous example at Sahalee CC, golf courses all over the Pacific Northwest reported similar results. Those that have topdressed during the past decade were able to mow. Those that didn't and are saddled with poor soil suffered with very long fairways.

Summary

So, is this program for you? It depends on your golf course, your budget, your goals, and your players. It has worked in the Pacific Northwest and throughout other areas of the world when it is practiced in a consistent manner. It may take a decade or more to complete; however, piling it on may be just what your aprons, fairways, and roughs need for better year-round play.

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