

Putting Green Aeration

It is more important than you think.

BY DARIN S. BEVARD

Harsh winter weather may lead to golfer requests to eliminate or reduce spring putting green aeration programs. The spring golf bug makes many golfers desperate to get out on the golf course. Snow cover, cold weather, and wet, sloppy conditions lead many courses to close for the entire winter in many areas. Golfers are anxious to try out a new driver or other equipment accumulated since the end of the golf season, and when the weather breaks, the golfers soon follow. Superintendents and their staffs are cleaning their courses and beginning to establish grooming programs for the growing season. As the weather warms, the grass starts to grow and the greens are ready to go. Golfer comments then follow: "Now the

superintendent is tearing up the greens with core aeration and covering them with sand. Can't we just skip aeration since the greens are so good?"

Most commonly, golfer requests tend to range from eliminating core aeration from spring putting-green programs to, at least, reducing the size of tines and disruption created by the process. Eliminating or reducing spring aeration programs will not cause an agronomic catastrophe in the short term, but it is important to realize why aeration is an essential process and to understand the ramifications of eliminating any planned aeration.

WHY DO WE AERATE?

There are several reasons why aeration is so important, especially on putting

greens, and often background information is misunderstood by golfers. Compaction may be the most cited reason for performing core aeration and top-dressing maintenance practices. One argument often posed by golfers is that the greens do not need to be aerated because they have received little play or traffic since fall aeration, so compaction is not an issue. Frankly, this is correct; however, sand-based putting greens, as well as older greens that have been aggressively modified with sand topdressing, are not greatly susceptible to compaction. Aeration does help to alleviate compaction, but compaction is only one reason, and it probably is ranked towards the bottom of the list in terms of importance for putting green aeration.

No maintenance practice on golf courses receives more scrutiny and golfer ire than core aeration, and the role of aeration in the management of high-quality putting greens is often misunderstood.



Maintaining or even improving the rate water moves into soils is an important part of aeration. The procedure creates channels in the upper portion of the soil profile that allow water to percolate or move into the soil profile more rapidly. As the term *aeration* implies, the practice also increases the amount of space available for oxygen (air) to penetrate the soil, which is critical for root growth and, ultimately, plant growth. Improvement in oxygen levels and water infiltration are achieved through the removal of organic matter.

In modern putting green maintenance, removal of organic matter (or thatch) from the upper portion of the soil profile and replacement with new sand topdressing to modify the existing soil may be the most critical reasons to aerate greens. The grass is constantly producing organic matter through normal growth processes. Thatch is like a sponge, holding many times its weight in water. As organic matter increases, more water is held in the upper portion of the soil profile. While a limited amount of thatch is necessary, when organic matter levels increase to 3 to 4%, potential turfgrass problems, such as diseases and mower scalping, increase dramatically, especially under hot and wet conditions.

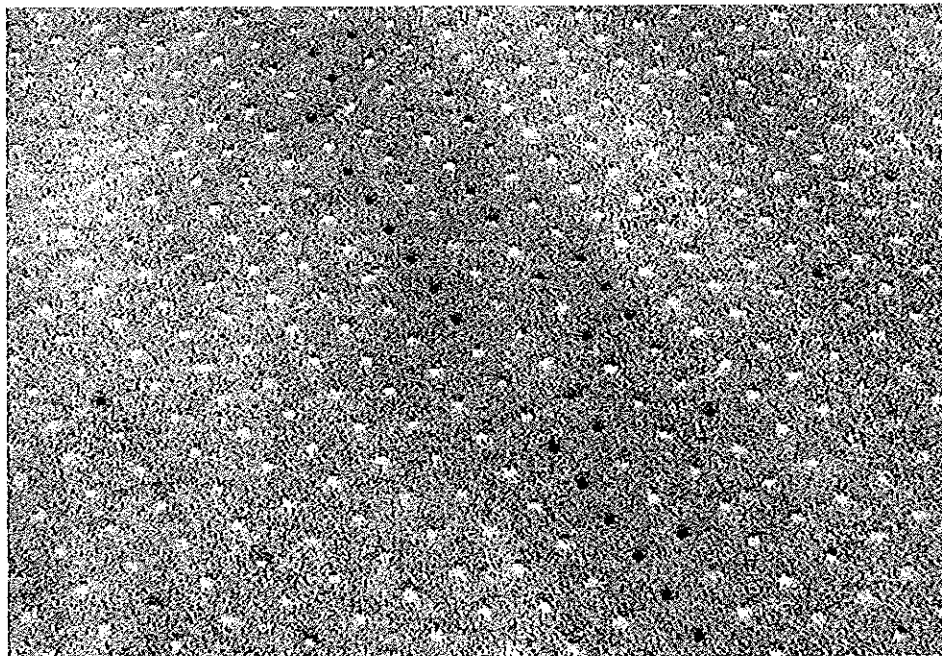


A heavy topdressing application allows aeration holes to be filled completely and limits the need for excessive dragging. This application completely fills the aeration holes to maximize the benefit of the aeration practice and limit disruption to playability. Completely filled holes also provide a uniform appearance on the putting green, which can affect perception of green smoothness as healing progresses.

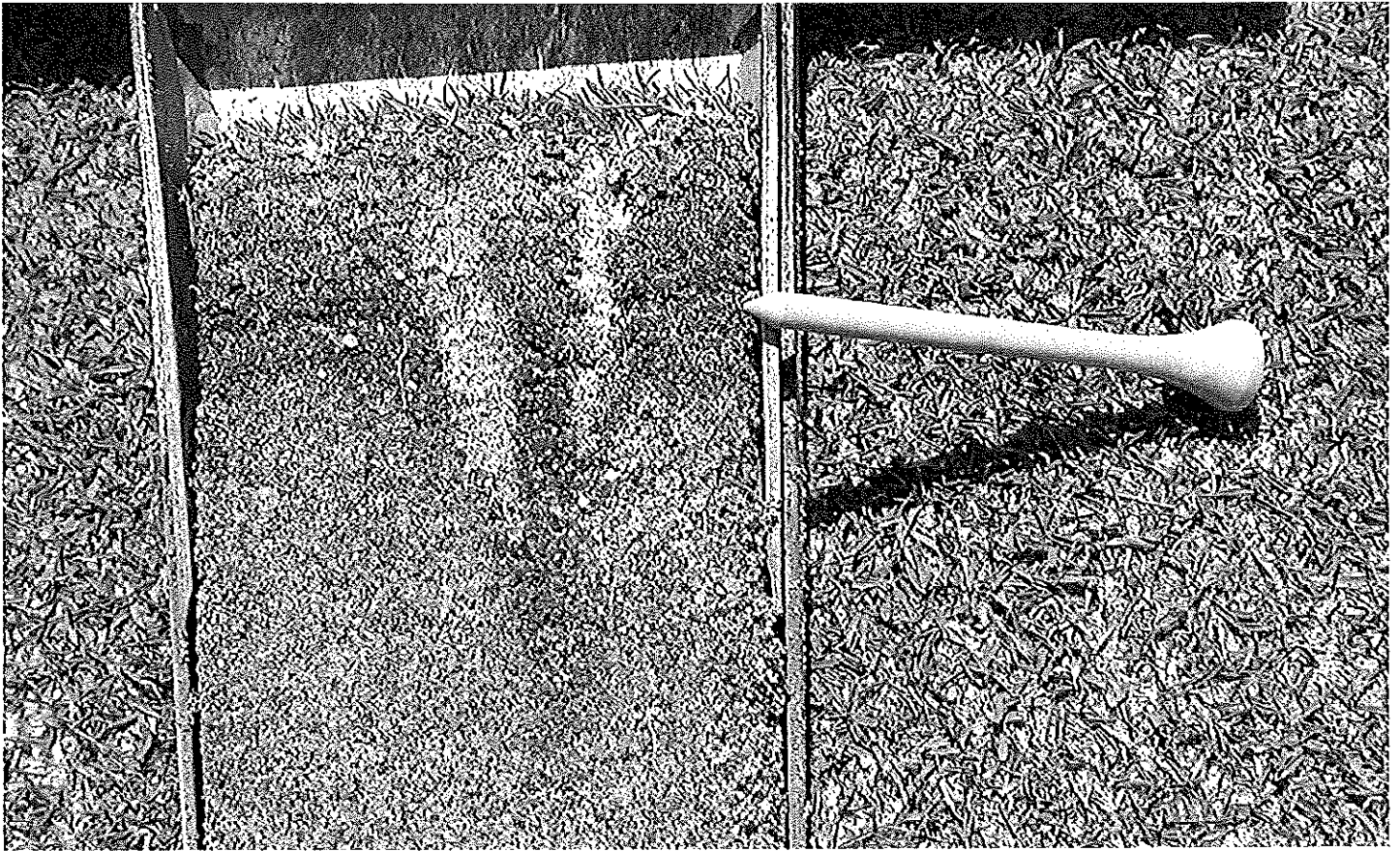
To prevent excessive organic matter accumulation, research suggests that 15 to 20% of the surface area of a putting green needs to be impacted via some method of soil/

thatch removal. This can be done through core aeration or aggressive, deep verticutting. Regardless of the method selected, filling the holes or grooves with sand is essential. The sand on the surface may be annoying at times, but it is an important part of maximizing the benefit of core aeration. Core aeration and topdressing are important parts of putting green maintenance, especially when golfer expectations for course conditioning are considered.

MINIMIZING HEALING TIME
Speaking of filling aeration holes with sand, topdressing is an important component for healing and playability. Golfers do not despise aeration; they rue the resulting 10 to 14+ days of reduced playability. If putting quality was disrupted only for a day or two, the process would not be so reviled. Thus, superintendents have a responsibility to ensure that all available programs are being implemented to restore playability as quickly as possible. Filling aeration holes completely with sand is an important start to this process. The



Partially filled aeration holes appear far more disruptive to the green surface compared to completely filled holes.



A thick organic layer at the surface creates soft conditions and greens that are more susceptible to mechanical damage. Soil modification to the upper portion of the green profile to reduce organic matter and increase water infiltration and aeration is the most important aspect of core aeration. The ultimate goal is improved playability.

greens will be smoother and their appearance will be better than partially filled or open holes. Completely filling the holes with sand also maximizes the agronomic benefit of core aeration. Excessive dragging of sand can result in severe mechanical damage in some instances, although not as often during cool weather.

A slight increase in nitrogen fertility to stimulate growth should be made immediately prior to aeration. Applying $\frac{1}{4}$ to $\frac{1}{2}$ lb. of actual nitrogen per 1,000 square feet from a readily available granular nitrogen source is one way to stimulate growth to decrease the time required for the aeration holes to close. Some superintendents apply liquid fertilizers through the sprayer on a tighter-than-normal interval to stimulate growth without causing an excessive flush. Application of around $\frac{1}{8}$ lb. of nitrogen per 1,000 square feet every five to seven days is common.

Keep in mind that soil temperatures are important to turf growth. If aeration

is performed under cold conditions, turf growth and subsequent healing will be slow. The goal is to close aeration holes as quickly as possible, and it is important to implement strategies to increase turf growth rate when weather conditions allow.

It was mentioned that missing spring aeration is not necessarily an agronomic catastrophe, but it is important to note that by skipping aeration, it only means inevitable maintenance is deferred. The need for aeration increases with each skipped maintenance practice. The problem is, aeration programs go hand in hand with the season-long golfer expectations for playability. Firm, well-paced greens are consistently expected. Diluting organic matter with sand through core aeration, deep verticutting, and light topdressing programs directly impacts a golf course superintendent's ability to provide expected conditions. Greens with greater quantities of sand to dilute thatch in the upper portion of the

soil profile are generally firmer, drain more quickly after rainfall, and provide better playability. Firm greens are less susceptible to scalping and other mechanical damage. So, while you may not have a catastrophe, this does not mean that skipping aeration does not have negative consequences.

The bottom line is, aeration is performed for the health of the grass and, ultimately, the playability of the putting greens. Greens with less organic matter, properly managed through aeration and other techniques, will be better greens on a season-long basis. Try not to get caught up in the short-term disruption to playability, and focus on the long-term benefits that core aeration programs provide.

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