

Qualified



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Aerification

Aerification – The Necessary Evil

BY GORDON JOHANSSON, AGS, SUPERINTENDENT
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ONE OF THE cultural practices used extensively since the mid-70's has been aeration, specifically core aeration. This activity is an invaluable tool in the quest to maintain optimum playing conditions by reducing compaction, promoting air exchange, enhancing water penetration, modifying the root zone and managing thatch on turf, most notably on putting greens. Regardless of the stature of the golf course, however, aerification is a labour intensive, often-lengthy activity, especially if topdressing is applied in combination with the aerification and if turf recovery time is taken into account.

the importance of respiration it is often one of the more difficult things to manage, especially if the root zone is made of inferior material.

Water penetration through the soil profile is yet another challenge faced when managing a playing surface under constant use. When a root zone is saturated, especially one of high soil content, compaction is accelerated and gas exchange is limited. To negate the effects of these conditions, a turf manager would be wise to modify the root zone, usually through the combined activities of core aeration and sand topdressing.



HOLLOW-TINE AERIFICATION.



MINI HOLLOW-TINE AERIFICATION IN PROGRESS

THE NEED TO AERATE AND SCHEDULE AROUND YOUR GOLFERS CAN BE A DIVISIVE POINT WITH SOME SUPERINTENDENTS. IN THE FOLLOWING PAGES, TWO EXPERTS — ONE FROM THE RESEARCH/CONSULTING SIDE AND ONE SUPERINTENDENT — OFFER THEIR VIEWPOINT ABOUT AERIFICATION.

Compaction results from the constant foot and equipment traffic that a green is subject to, especially those constructed with a soil content, commonly referred to as "push up greens." This condition causes soil particles to move closer together and increases the effort roots need to expend in order to penetrate the soil as well as limiting root length in extreme cases.

Also, when soil particles move closer together the porosity of the soil is reduced, which negatively affects the exchange rate of oxygen, carbon dioxide and other gases. Along with photosynthesis, respiration is a basic necessity of life, without it life cannot exist. And despite

Modifying the root zone is a necessary activity, especially with older greens that have a high concentration of soil matter, which is more susceptible to all the aforementioned conditions than a USGA or California style green. An ideal greens profile would contain 50% pore space and 50% solid matter, a condition nearly impossible to create in a "push-up" style green. In order to change the root zone without committing to a renovation and taking the green out of play, is to perform several core aerifications throughout the season.

One of the quickest ways to irritate a golfer is to mention the word aerification. It may be the

longest four-letter word in the English language. As tough as aerification is on the patience of our customers, it is even tougher on the turf we manage. However, it is only when the turf is at its hardest that it can adequately handle and recover from the stresses placed on it through aerification. This is why late spring and early fall are usually the optimal times to "punch the greens," when growth rates are at their highest. This ensures that recovery time is kept to a minimum.

To add to this already difficult situation, there seems to be a trend in place that finds owners/operators/club officials less willing to sacrifice tee times for the sake of cultural activities. This is forcing superintendents to find alternate ways to alleviate turf stress. Some of these include using alternate types of equipment that are less disruptive and quicker; including slicers, wet injection units, air injection units and solid tine aerification. And though all of these have proven useful in specific situations, none will aid in modifying/improving the growing medium often needed on older courses. Other issues with some of these alternate methods include a price tag not reasonable for many courses to entertain.

Another thing sometimes attempted is to aerify at times that will not affect customers as significantly, like on inclement days or during the night. And though these efforts are sometimes successful, more often than not they are less effective and more cumbersome than traditional methods.

Taking advantage of inclement weather days to fit in aerification can reduce the friction with customers, but is not an ideal solution, especially if the conditions result in a saturated soil condition. In this scenario one of the stresses you're trying to relieve, namely compaction, may be worsened.

Performing activities at night cannot only be dangerous due to the lack of proper lighting; it can lead to worker fatigue in the days following. This latter consideration may not be of such concern if there is adequate staff to allow those working off-hours to take time to recover. However, in many cases these staff members are also the ones needed to perform the daily tasks the next morning.

Failing these attempts, many courses will ultimately find themselves aerifying less often than desired or needed with the result of declining turf conditions. Exactly what our customers refuse to accept.

ONE OF THE QUICKEST WAYS TO IRRITATE A GOLFER IS TO MENTION THE WORD AERIFICATION. IT MAY BE THE LONGEST FOUR-LETTER WORD IN THE ENGLISH LANGUAGE.

Aerification and Science

BY DAVID L. DOHERTY,
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AERIFICATION WITHOUT SCIENCE is a high-risk exercise which is not tolerable in today's world of high maintenance & high performance greens. Aerification into greens, tees or fairways without knowing what you are aerifying into is a gamble that is no longer acceptable. Proper aerification based on science can & normally does result in a decrease of monies spent on chemicals and allows for better use of water.

Without knowing what you are aerifying into you cannot answer any of the following questions and will in most cases waste valuable resources.

TO HAVE HEALTHY TURF, WE MUST HAVE BALANCED PHYSICAL PROPERTIES.

Balancing Physical Properties through Aerification

1. How often should I aerify?
2. How deep should I go?
3. What size tine should I use?
4. What size of spacing between tines?
5. Should I use hollows or solids?
6. Should I fill the holes or should I leave them open?
7. If I fill the holes, what should I fill them with?

Here at ISTRIC, we have worked with over 2,000 different golf courses over the last 11 years and have analyzed the physical properties of over 15,000 greens, including organic matter and particle size analysis in one inch increments of each green analyzed. I know of no greens that have regressed over that 11 year period when the agronomic program was based on science and not guesswork.

The first question that needs to be asked is why we are thinking of aerifying. Once we know what we have from a physical properties standpoint, we can determine if we need to aerify, and the amount of material that we need to displace over the next 12 months with our hollow core aerifying.

It is important to understand the ageing of a green from the day we seed, or sod. Grass plants/turf breathe oxygen in through their root system and deposit CO₂.

We must have enough air pores [the larger spaces between solids] in our root zone to have an adequate supply of oxygen for our turf to breathe properly. The roots of our turf deposit organic matter and that organic matter is deposited in our air or larger pores, thus reducing the amount of space available for oxygen. The majority of organic

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