



# Aerating: an invaluable cultural practice

*Editor's note: This article was written by Dr. Van Cline and Chris Hannon of The Toro Company*

**A**ERIFICATION IS OUR MOST VALUABLE CULTIVATION PRACTICE in turf management. There are several types: coring using hollow tines, solid tine aerification, slicing or spiking, and deep tine aerification. Similarly, there are a variety of problems that can be solved by this set of aerification methods including soil compaction, layering in the soil profile, poor drainage, restricted gas exchange, thatch, modifying heavy soils in the rootzone, and improving the establishment of sod or overseeding.

The best method of aerification depends on the particular problem that needs to be solved. A second important consideration in devising an aerification plan is timing. Specific problems develop at different times of the growing season. Periods of heavy field use result in high levels of wear and compaction. High summer temperatures amplify the need for gas exchange in the root zone to replenish soil oxygen and remove carbon dioxide. And, aerification imposes a temporary stress on turf. Speed of recovery from aerification is linked closely to weather conditions and to stage of the annual growth cycle for different species of turf. All of these factors make timing important for each type of aerification.

### Core aerification

Core aerification is the most versatile cultivation method since it addresses several turf and soil issues at once. Core aerification creates open channels that improve soil gas exchange and both surface and internal soil drainage. Removing soil from the profile as cores can also reduce bulk density or compaction particularly in fine textured soils. Aerification followed by core removal and sand topdressing is the best method of controlling the buildup of un-decomposed organic matter that can plug the rootzone in sand-based soils. When cores are not collected and



removed they can be pulverized and incorporated back into the thatch layer as topdressing. And, core removal followed by sand topdressing allows the soil profile in the rootzone to be permanently modified over time.

### Solid tine aerification

Solid tine aerification is a more specialized practice that enhances gas exchange between the rootzone and the atmosphere by creating aeration channels without removing cores. It is a particularly useful practice in cool season turfs during the middle of summer when root respiration is high increasing demand for O<sup>2</sup> and causing an accumulation of CO<sup>2</sup> in the rootzone. Because solid tining stresses turf less than coring, it can be done throughout the growing season. Coring is typical-

## The equipment

Toro has created two new large area aerators, the ProCore 864 and 1298, and their names describe their configurations: the 864 has eight coring heads and is 64 inches wide, while the 1298 unit has 12 coring heads and is a full 98 inches wide. Both aerators are tractor mount, PTO driven and offer multiple tine head configurations.

The heavy duty 864 and 1298 units use the RotaLink tine guide system to ensure the tines remain vertical as they enter and exit the turf.

Toro also recently launched the ProCore SR series deep-tine aerators with a hydraulic depth adjustment that allows you to adjust the depth of the tines from the seat of the tractor. These deep-tine models feature aeration widths of 54–72 inches and depth capabilities of up to 16 inches.

The company's new ProCore Processor mounts directly behind a tractor-pulled aerator to sweep, process and disperse cores, all in one continuous operation. The 70-inch wide Processor collects the cores as soon as they are pulled and pulverizes them into fine particles, and then distributes it back as a layer of topdressing.

ly limited to times when the turf is vigorous and best able to recover (spring and fall).

### Deep-tine aerification

Deep-tine aeration has become an increasingly popular practice to penetrate through the compaction layer that is created from traditional aeration methods. It increases drainage, improves gas exchange, and promotes deeper root growth resulting in healthier, more vigorous turf. In addition, turf that has been aerated at a deep level more efficiently uses fertilizers, water, and resists disease.

Deep tine aerification to depths up to 12 inches using both solid and hollow tines has become increasingly popular as a way of breaking through deep layers of compaction and improving drainage deeper into the profile. Repeated aerification using conventional 4-inch long hollow and solid tines results in what is known as a cultivation pan or layer of increased compaction just below the depth of aerification. Deep tining can penetrate this cultivation pan. Deep tining can also relieve deeper compaction created during sports field construction when significant earth moving occurs with heavy equipment.

### Slicing or spiking

Slicing and spiking are similar to solid tine aerification since their primary benefit is to improve gas exchange by creating channels into the rootzone. Both are generally shallow treatments and cause minimal injury to the turf. As a result they are most useful during mid-summer stress periods when root respiration is high.

Often collecting aeration cores is impractical, so turf managers will destroy

the cores using a variety of methods, the most common being a drag mat behind a work vehicle. The traditional drag mat method of processing cores can be a challenge depending on the moisture level of the cores. Too wet, and they make a mess, too dry and the cores are extremely difficult to break up. Hours of drag matting can also be stressful to the turf.

Aeration is essential for promoting healthy and safe turf. While the benefits are known, aeration brings forth many chal-

lenges to turf managers. Aeration is an unenviable task for any maintenance crew. Not only is it labor intensive and time consuming, it also is a dirty, messy job that few look forward to. Even more critical is the amount of time the complete aeration process takes the turf out of play. ■

*Chris Hannon is a marketing manager with The Toro Company. Dr. Van Cline is an agronomist for the company.*

**AerWay®**

***AerWay® Leaves Sports Fields  
Safe and Playable***

***AerWay® venting  
tines can be used all  
season long to  
reduce compaction  
and stimulate strong  
root development  
without taking the  
field out of play. The  
result is a resilient  
playing surface with  
excellent top growth.***



for more information call

**1-800-457-8310**

***Advanced Aeration Systems***

**www.aerway.com email: aerway@aerway.com**