



Photo courtesy of: John Stier

# Aeration:

A PRESCRIPTION FOR SICK FIELDS

BY DR. JOHN STIER

**Aeration is a type of cultivation that produces holes in the ground. The benefits may be either short or long term, occasionally both, depending on the type of aeration employed.**

The main types of aeration include coring, drilling, spiking and slicing. Coring (often called aerifying) can be accomplished using tines (hollow or solid) or water injection. Hollow tines bring soil cores to the surface while solid tines push the soil deeper into the ground. Tines range from 1/4 to 1 inch diameter. Tines are usually 3 inches long although longer tines are occasionally used. Spiking uses solid tines less than 1 inch in length, while triangular-shaped knives mounted on a drum or disk are used for slicing. Drilling is a type of solid-tine cultivation that uses drill bits approximately 16 inches in length. Knowing the reason for aerating will help you choose the process and equipment which is right for your situation.

## How Aeration Is Helpful

Aeration can produce the following results depending on the type of equipment selected and the type of turf and soil:

- Alleviate compaction problems, including some weeds
- Improve water infiltration
- Mix soil layers
- Incorporate lime or soil amendments into an established turf
- Smooth fields
- Manage thatch
- Facilitate overseeding

## PRODUCT SHOWCASE

### THATCH - MASTER 48" & 60" FINE TURF VERTI-CUT



1. Commercial quality fine turf verti-cut
2. PTO powered - 20 to 30 H.P.
3. Thin (.060) blades do NOT leave grooves
4. Extremely low maintenance
5. Fast

### Turf Specialties, Inc.

320 Third Street, S.W. • Winter Haven, FL 33880

Telephone: (863) 293-1657

Circle 114 on Inquiry Card.

### DIAMOND series The Ballfield Grading Laser



**The Diamond Series** represents the very latest in ballfield grading technology. This unique grading system allows you accurately and efficiently complete athletic field grading in a fraction of the time of conventional methods. The Diamond Series is a self-leveling adjustable cone laser. This means that you can actually dial in the amount of slope you desire on each field, giving you unparalleled versatility and control.

### LaserLeveling

P.O. Box 17678 Tampa, FL 33682

800-622-5777 [www.laserleveling.com](http://www.laserleveling.com)

Circle 104 on Inquiry Card



The main reason for aerating a turf is to reduce compaction-related problems. Compaction is mostly a problem on clay, silt and loam soils. Turfgrasses grow poorly in compacted soils, resulting in thin turf, bare ground or weeds. Aeration provides space in the soil for roots to grow and allows oxygen to enter the soil for root metabolism. It allows fertilizer and water to better penetrate the soil and be absorbed by turf roots. The improved root growth provides more vigorously growing turf which recovers better from traffic and outcompetes weeds. Dense growths of knotweed, annual bluegrass (*Poa annua*) and other weeds that have short, fibrous root systems may indicate a compaction problem exists.

Aeration holes temporarily increase soil drainage rates. Drainage rates will approach previous rates as the holes close up, but some long term benefits are possible with regular aeration.

Core cultivation, which brings soil to the surface, can help mix soil and organic layers that reduce root growth and water infiltration. Coring can be especially useful to mix two soil types which result when sod grown on an organic (peat) soil is placed over a clay or sand-based root zone. Even in a sand-based root zone which was sodded with soilless sod or established from seed, coring helps reduce layering problems produced as the turf builds an organic layer over the sand.

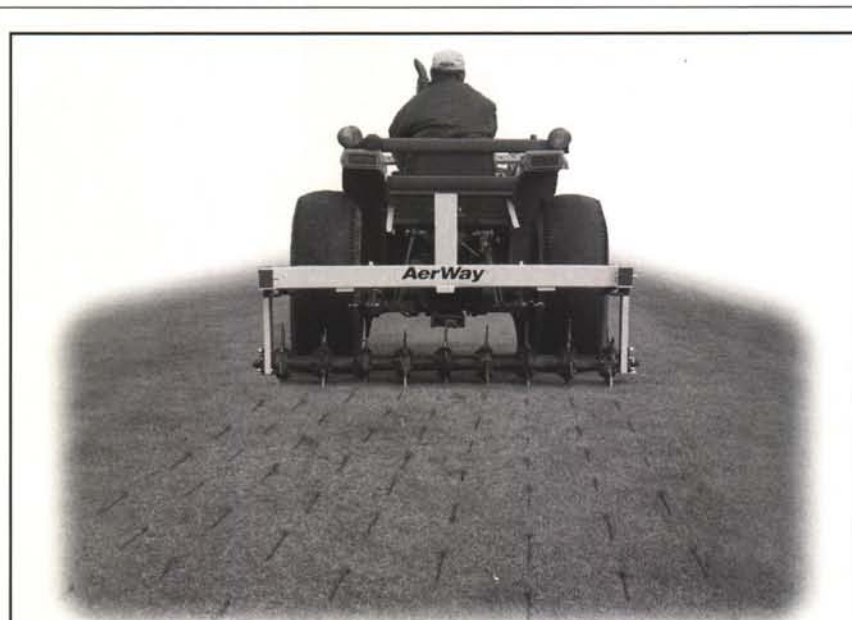
The holes left by coring can place lime, fertilizer, and other types of soil amendments including sand into the root zone of an established turf. When used for this purpose, it is important to apply the material immediately after coring before the holes close.

Aeration can be useful for smoothing athletic fields. Coring with hollow tines or spoons brings soil to the surface which acts as a form of topdressing. This can help smooth the surface as the cores disintegrate with the soil falling to the lowest-lying areas. The holes provided by coring allow soil to be moved into them by rolling—without macropores in the soil, rolling by itself has little chance of smoothing the field without excessively compacting the soil.

Traffic usually prevents a significant thatch layer from forming. In low-traffic areas, core cultivation helps manage the thatch layer: as cores of soil are brought to the surface and disintegrate, the soil falls into the thatch, creating a "mat" layer. The mat layer is less spongy than the thatch layer which reduces the potential for scalping. It provides a better

environment for root growth than thatch alone because it buffers the roots from temperature extremes and is a better source of water and nutrients. It may also assist in thatch breakdown by providing a better environment for microbes.

Overseeding can be more successful if integrated with aeration because it provides seed to soil contact which is crucial for successful germination. Hollow tines are better for this than solid tines because soil is brought to the surface. Spikers press the seed into the soil to obtain seed to soil contact.



## Faster compaction relief, starting under \$3000\*

*Treat a sports field in about an hour, be ready for play right away*



*Just a slicer? No way. AerWay gently lifts and loosens soil 7" and deeper to improve water movement and root growth*

Only AerWay® has patented Shattertines that produce a unique shattering action that gently lifts the soil, yet leaves the surface ready for play. It's a new "window of opportunity" for treating sports field compaction during times of heaviest use, when it's needed most.

Call today for a free video and the name of your nearest dealer, or a no-obligation demonstration.

**AerWay®**

*Turf aeration easy enough to do today*

**1-800-457-8310**

\*AerWay 4" three-point hitch model

AerWay is manufactured by the Holland Group of companies.

Circle 115 on Inquiry Card



### Different Types of Aerators for Different Purposes

Aerators can be self-propelled walk-behind units or larger units pulled by a utility vehicle or small tractor. Aerators have either a vertical or a circular motion. Vertical-motion aerators generally make the deepest holes while minimizing the surface disruption around the holes. Vertical-motion aerators work well over a range of soil types and moisture levels. They provide more consistent depth of penetration, often as deep as the tines are long. These units move slowly compared to circular motion aerators. Circular motion aerators employ tines, spoons, or knives mounted on a disk or drum. These are usually pulled by a vehicle operating at much greater speeds than the walk-behind units. Due to the lack of downward force, they usually do not create holes as deep as vertical-motion units and they disrupt the turf around the hole as the tines or spoons enter and exit the soil. In dry,

compacted soil the circular motion aerators may not penetrate enough to be effective. Irrigate dry soil a day or two before aerating to provide proper moisture levels for good penetration.



Photo courtesy of John Stier

A slicer with triangular knives from Detroit Country Day School, Detroit

### The Tines Make a Difference

Hollow tines provide more of the advantages listed from aeration than any other type because they pull up soil cores. They do break easier than solid tines and the presence of the cores may be undesirable. Solid tines provide good penetration but can compact the soil at the bottom and sides of the core holes more than hollow tines, particularly in wet soils.

Slicing provides minor, short term improvements in drainage and aeration with little disruption to the turf surface. It is particularly useful during summer stress periods when turf growth is slow or before an event when cores would be objectionable. Slicing severs stolons and rhizomes, causing them to initiate new plants that can thicken a turf. Spiking provides less benefit, though it is useful for breaking up soil crusts during establishment and for overseeding.

Water injection units shoot jets of water deep into the soil with extremely little surface disruption; the holes may be less than 1/4 inch in diameter on the surface but 12 inches or more deep. Water injection does not bring soil to the surface but can stimulate root growth. Due to the high cost of the units, their slow speed, and need for a nearby water source they are rarely suitable for aerating entire fields. They are used mostly for putting greens on golf courses. ■

*Dr. John Stier is an assistant professor in the Horticulture Department of the University of Wisconsin. He is an active member of STMA and the Wisconsin Chapter. Contact Dr. Stier through e-mail at [jstier@facstaff.wisc.edu](mailto:jstier@facstaff.wisc.edu).*

If they could,  
they would...

Play their game on Thomas Bros. Grass

That's because they know Thomas Bros. grows and installs the finest quality turf grass for golf courses and sports fields. With 17 different turf varieties, Thomas Bros. can provide durable, attractive playing surfaces for any grass field (sorry, hockey!)



Call Today 888-New-Grass

A Turfgrass America Company

Call 1(800)817-1889 use Fast Fax #1160700 and/or Circle 116 on Inquiry Card