

The Need To Understand Negative And Positive Gasses In Greens and Other Sports Turf

By Dave Doherty

A recent trade magazine article about the need to vent golf greens stated that the drainage tile system under a green does not need to be vented at the surface.

We have a difference of opinion! *The International Sports Turf Research Center, Inc.* (ISTRC) has been studying the different causes of turf failure on golf greens and athletic fields for over 25 years and one of the leading causes of turf failure on golf greens and athletic fields is a lack of oxygen in the root zone.

In the past it always has been assumed that if a root zone contained the proper number of air pores than there would always be enough oxygen to meet the needs of the plant/grass. Many times when there was turf failure we discovered that the air pores contained excessive amounts/levels of hydrogen sulphide, carbon dioxide and methane, *commonly referred to as sewer gas.*

The major components of sewer gas can include: Nitrogen, hydrogen sulphide, carbon dioxide, methane, and ammonia, and the presence of any of these components can vary with time, temperature and ph. It is not uncommon when greens age for the drainage under and extending out from the greens to be compromised and to begin holding water.

This water will in many cases become anaerobic because of a lack of oxygen and as a result will produce sewer gas. These sewer gasses are forced by pressure to travel up through the drain tiles and if there is no exit point [vent], the gasses are then forced up through the root zone, displacing and replacing the oxygen in the air pores that the plants so desperately need to survive and be healthy.

In the last five years, we as an industry have made tremendous strides in understanding the role that gasses play regarding the health of our turf. If a plant has sufficient oxygen available in the root zone, it is better able to take in and process nutrients, retain a healthy state and require fewer chemicals to fight infections and diseases.

In January 2014 during a Chicago seminar, venting and gases were discussed for the entire afternoon three-hour session. And during an Arizona visit, architects and staffs from different courses discussed drainage and placement of vents in new greens' construction. In Florida, we revisited courses that had rebuilt greens over the last 10 years and that had installed vents during their construction.

Every course visited during that three-week period that had vented drain tiles reported no issues or problems with their vented greens.

In light of what industry-wide research has shown about the *disadvantages of not venting drain tiles*, it is baffling why someone would ever say that vents are not necessary.

The costs to vent drain tiles during construction are miniscule and not even an issue worthy of discussion. The cost to properly vent drain tiles in existing greens is also minimal when considering parts and installation labor.

Finding existing drain tiles *can* be a major project, however we have had great success in finding existing drain tiles by using camera snakes that have the ability to allow us to track the direction and depth of tiles with a surface wand communicating with the camera.

This type of camera snake also allows us to identify the exact location of water pockets in drain tiles.

My conclusion: The risk of not venting is just not worth it!

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