

# AERIFYING FAIRWAYS RYAN GREENSAIRE

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Sounds like a new idea, but wait a minute, I can remember a guy by the name of Bob Musbach doing this very thing 10 years ago.

Why use Greensaires when quicker less expensive operating aerifiers are available? I think I should go back a step before I can answer that, and determine just why I aerify in the first place.

**Compaction:** This is sometimes termed the "hidden" stress since its effects are not readily apparent. For example, compaction of a soil in spring may not result in deterioration of the turf until later in the season. How compaction affects soil physical properties is important in understanding soil compaction as a stress.

**Bulk density** refers to the density of a soil. Compaction tends to increase bulk density, particularly if traffic occurs near field capacity moisture. When this happens we destroy the large noncapillary pores [air space] and increase the small capillary [water space] pores. Noncapillary pores are essential for proper water infiltration and percolation as well as good gas exchange. Without gas exchange oxygen levels drop and root growth stops, and even retreats. You know, this description sounds like fairways we water every night during the season and then allow maintenance equipment, golf cars, and alike to roll down them.

**Soil strength** refers to the hardness of soil. A hard compact soil offers little hope for deep root penetration, and without that wear tolerance is nil, diseases tend to be more severe, and the turf cover tends to "Check Out" in summer stress periods.

**Aeration**, as mentioned in bulk density, decreases with compaction. The important factor being, oxygen levels for root respiration decreases, while carbon dioxide and other lethal to growth gasses increase.

**Soil moisture content.** Moisture holding capacity increases due to increased capillary pore spaces. However lack of moisture holding capacity is not a problem on soils prone to compaction, but lack of aeration is.

**Infiltration and percolation.** Without noncapillary pores water infiltration and percolation are reduced. Poor infiltration makes proper irrigation programming difficult. Also, standing water in low areas and excessive run off on slopes contribute to inefficient water utilization.

**Soil temperature.** A wet, compacted soil retains more moisture than if not compacted. In order for a compacted soil to warm up in early spring, the constituents of the soil plus any retained water must be heated. Thus, compacted soils are slower to warm up in the spring. However, compacted soils may become drier in summer due to poor infiltration rates. In this situation such soils tend to heat up

more rapidly compared to noncompacted soils. Sounds to me like just the opposite of what I would like to happen.

Well, now that I have the soil with the strength of a stretch of I-94, I don't think I'm going to get much root penetration into it. So if roots don't go down they will stay up and form another problem, thatch.

Thatch basically is a tightly intermingled layer of living and dead grass stems, leaves, and roots that develop between the zone of green vegetation and the soil surface. Give grass some credit, its smarter than some people I know, instead of trying to beat its roots into soil that resembles a rock, it develops above the problem. But by taking the easy route it will accumulate excessiveness which makes it more susceptible to environmental stress, disease, and insect problems.

Actually the roots and rhizomes themselves can alleviate some compaction by fracturing the soil with their mass penetration. But with a lower percentage bulk density in the thatch than in the soil the roots and rhizomes stay above the soil, with the end result of more soil compaction.

How do we get rid of the thatch, and get the roots back in the soil?

Topdressing mixed into the thatch will help decompose the organic debris, give better moisture retention, and may be due to the abrasive action of soil particles it will grind away the thatch also. Sounds good to me, but I'm not "YET" equipped to topdress fairways, but I can aerate them and leave the cores on top and drag them in to get some topdressing material on, plus have the bonus of relieving the soil compaction below the thatch.

Now that I have convinced myself that aerifying is indeed beneficial, I can now specify the job performance I want out of an aerifier.

The aerifier I want should be able to do the following:

1. Penetrate the deepest into the soil. The deeper the machine goes, the more soil it will bring to the surface to decompose thatch, plus, compaction is reduced deeper in the soil, and water and nutrients can pass easier to greater depths in the soil allowing the roots to go after them.

2. The surface penetration of the turf must be neat, not ragged. Let us not forget the golfer, the employer, they want the surface to be playable, and back into tournament condition in the shortest period of time.

3. The holes must be close together. The further apart the holes the less compaction I'm relieving and the less soil I'm bringing to the surface to topdress. You, might say that you could accomplish the same thing with a large fairway aerifier by going over the same area several times, but that practice causes more ragged holes on the surface, the very thing we wanted to avoid in our #2 requirement. Then you might say, why don't you just aerify three or four

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different times per year with a large fairway aerifier going over the area only once each time. Well, for one thing that makes three or four times I have to inconvenience the golfers. But even more important than that, you miss doing the complete job the first time, and the total benefit of the practice is delayed beyond prime time. Its like a doctor saying to his heart patient, you have four bad arteries going into your heart, and I'm going to fix one this month and than do the other three, one each month for the next three months. And if your lucky, you won't die before I get to those other three. I like doing the complete job all at once, it saves more grass plant lives per square foot the first time around.

4. If I want to oversee, the machine must bring the most soil to the surface for good soil seed contact, and provide the most holes per square foot for sheltered niches for maturing grass seedlings.

To my knowledge, the machine today that can accomplish the aforementioned practices is the Ryan Greensaire. Which, this past season was my choice at Westmoor for core cultivation of fairways.

We aerified our 27 acres of fairways this past Spring with two Ryan Greensaires. We started April 29, and it took us 11 working days to complete the task. We began each day at 6:00 am and ran the aerifiers continuously until 4:30 pm. Once a fairway was aerified we broke up the cores with a harrow by going slowly up and down the fairway, and then in a circle pattern. We watered lightly that night to wash the soil down into the turf, and the next afternoon we mowed with a triplex mower with no buckets, again trying to separate the soil from the tufts of grass. Immediately after the mowing we swept the fairway with Parker lightweight sweepers pulled by Cushmans, and adjusted so they only picked up the tufts and not the soil.

The maintenance of the aerifiers was the responsibility of our Service Technician, Mr. Robert Kenngott. Bob had the aerifiers lubricated every hour while they were in operation, and at the end of each day he changed the engine oil, cleaned the precleaner on the air filter, checked the cam case oil, changed the tines, checked chain tensions, checked the machine's timing, and checked all nuts, bolts, and set screws for tightness. And every third day he changed the air cleaner.

After the fairway coring was one, Bob estimated the rebuilding of the machines to be between \$2,000 and \$2,500 each. With the major replacements being; pushrods, bushings, bearings, seals, chains, drive clutch, and master clutch.

The 1985 season at Westmoor until September, saw dry warm temperatures with little humidity, and low dew points. In other words, ideal drying out conditions. I definitely feel that the early season coring task helped us maintain ideal fairway playing conditions throughout that droughty period, besides helping to keep thatch under control.

The close proximity and depth of the holes, along with the vast amount of soil brought to the surface, and the minimum playing surface damage, have sold me on the use of Ryan Greensaires as the best tool to perform a one time annual fairway core cultivation, that delivers maximum agronomic benefits.



Neil Richter presents WGCSA President Bill Roberts a \$500 S&R donation from Hanley Implement.

## HANLEY IMPLEMENT ADDS TO WGCSA SCHOLARSHIP AND RESEARCH FUND

Neil Richter, General Manager of Hanley Implement in Sun Prairie, presented newly elected WGCSA President Bill Roberts a check for \$500 to be added to the Association's S&R Fund. It was the third consecutive year that Hanley's, Wisconsin's Ransomes distributor, has given that amount. It is presented with the understanding that the membership determines where it will be best used. Thanks to Neil, Dean Lund and Ray Woznik for their generous support of the most worthy of causes!



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