

September 24, 2012

**Windmill Ridge Golf Course**  
**Monett, Missouri**

**DATE OF VISIT: September 17<sup>th</sup>, 18<sup>th</sup> and 19<sup>th</sup>, 2012**

**PERSONS PRESENT:**

Darrell Easley, Assistant Golf Course Superintendent  
Michael D. Vogt, CGCS, CGIA

**Overview of Greens Conditions**

The greens have exhibited a remarkable improvement in density and vigor since my last visit in August. I can attribute this to careful watering and more favorable weather. Assistant superintendent Easley and his team have accomplished very good results in the past 40 days. Notice the difference in number 11 green from August to September in Photos 1 and 2 below.



*Photo 1 Number 11 green, August 8th*



*Photo 2 Number 11 green, September 17th*

*Greens Conditions (continued)*

The front third of number 11 green showed signs of thinning and wilt on August 8th, by September 17th the green fully recovered and no signs of stress were observed. Similar conditions are apparent on all greens during my visit this September.

## **Aerification**

Preventative maintenance is an integral part of successful golf course management. Golfers view aerification as an inconvenience that takes the greens out of play for a day. To add insult to injury, aerification is best done in many part of the country during late-summer, at the height of the playing season and when most greens are in prime condition.

But a golfer needs to understand how important aerification is to producing healthy turf.

Aerification (also known as aeration) achieves three important objectives. It relieves soil compaction; it provides a method to improve the root-zone around the highest part of a green's roots and it helps reduce the accumulation of excess thatch. The thatch content of the upper root-zone at Windmill Ridge is relatively low, thus the decision to solid tine aerify was made in August.

Like so many things, the quality of a good putting green is more than skin deep. In fact, the condition of a green has a lot to do with what goes on below the surface. In order for grass to grow and be mowed at desirable heights, it must have deep, healthy roots. Good roots demand oxygen. In good well functioning root-zones, they get the oxygen from tiny pockets of air trapped between sand particles.

Over time, the traffic from golfer's feet (as well as mowing equipment) tends to compact the upper portion of the root-zone under the putting surface. When soil becomes compacted, the air pockets on which the roots depend are crushed, and the roots are essentially left gasping for air. Without oxygen, the grass plants become weaker and will eventually wither and die.

Aerification is a mechanical process that creates more air space in the soil and promotes deeper rooting, thus helping the grass plants stay healthy. In the operation we just completed at Windmill Ridge, we used solid ½ inch tines to pierce a four inch deep hole into the green. This open hole allows for an infusion of air and water that brings a resurgence of growth. The spaces are then filled with sand "topdressing" that helps the root-zone retain air space and makes it easier for roots to grow downward.

Growing of turf adds to a layer of organic matter just below the surface naturally. This layer, called thatch, is an accumulation of dead stems, leaves and roots. A little organic matter makes for a resilient green, but too much invites diseases and insects. Topdressing with sand on a regular basis can dilute thatch buildup, and aerification is one of the best ways to reduce an existing layer and prevent an excess of thatch from becoming established.

*Aerification (continued)*

The aerification process just accomplished on September 17<sup>th</sup> and 18<sup>th</sup> consisted of the following events:

- Heavy sand topdressing, Photo 3, to dilute thatch, protect turf from aerification machine and smooth the surface



*Photo 3 Sand topdressing*

- Aerification with ½ inch solid tines, Photo 4, to open space for air, water and relive compaction for better root growth.



*Photo 4 Aerification of green surface*

*Aerification (continued)*

- Vertical mowing was used to remove surface thatch and stimulate lateral leaf growth, vertical mowing also helps incorporate sand into turf canopy, as illustrated in Photo 5.



*Photo 5 Vertical mowing after sanding and aerifying*

- Brushing was used to help incorporate sand into aerification holes and vertical mower grooves.



*Photo 6 mowing*

*Aerification (continued)*

- In photo 6, mowing was used to pick-up organic debris and sand that did not get brushed into the aerification holes or slices created by the vertical mowers. Mowing also cuts tufts of turf that protruded from the greens surface created by the aerification machine.



*Photo 7 Blowing the green for final clean-up*

- Back pack blowers were used to finalize the cleaning of the green surface, Photo 7.



*Photo 8 Fertilization of greens*

*Aerification (continued)*

- A fertilizer, mostly comprised of organic nitrogen, was applied to aide in root and leaf growth, Photo 8.



*Photo 9 Watering of greens completed the process*

- The final step to the aerification procedure was to water the greens to incorporate the fertilizer, wash in any remaining sand and help to firm and smooth the surface, Photo 9.

The entire aerification process was a great success and the final product was a very puttable surface that same day. Aerification was facilitated in two days with one nine being closed each day. Labor hours totaled approximately 90 total hours.

We originally planned a step involving bentgrass (*Agrostis stolonifera*) seeding, upon further examination, the turf population on greens was sufficient and additional seed would not yield an appreciable increase in greens quality. We did add seed on several areas on #2 green, mainly on the right side, Photo 10.

*Aerification (continued)*



*Photo 10 Dimples made to incorporate seed on #2 green*

## **Water Management**

With soil temperatures moderating and aerification completed to help move air and water into and through the root-zone, the used of overhead water is now permitted as a method to add water to greens on a regular basis. Care should be taken to not keep the root zone saturated, the method of deep, infrequent watering remains to be recommended.

## **Fairway Weed Control**

The broadleaf weed population on fairways has reached a critical point in several areas. A program to control these weeds has been discussed with assistant superintendent Easley. During the next several weeks spraying will begin in an effort to eradicate these weeds, primarily Knotweed (*Polygonum aviculare*) on fairways.

## **Sand Bunkers**

Sand bunkers have been mostly neglected in the past several years. An effort over the next few months will be made to edge and reclaim sand that is available in the sand bunkers. During my visit I demonstrated to assistant superintendent Easley the proper way to retool the left greenside sand bunker on number 17. It is my hope that we can retool several bunkers per month; the process is very labor intensive and will progress slowly and as time permits.

## Annual Bluegrass (*Poa annua*)

Trimmit® (paclobutrazol) is a chemical that weakens annual bluegrass (*Poa annua*). This chemical is going to be applied to greens during September, October and November. In many cases this chemical will turn annual bluegrass an off color; it will not kill the *Poa annua* turf but it will stunt its growth - giving the favorable bentgrass (*Agrostis stolonifera*) turf a competitive growing advantage during the fall.

## Conclusion

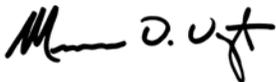
Considering all factors, especially the extreme high temperatures of this past summer I believe Windmill Ridges' greens are much improved.

Beginning the week of the 24<sup>th</sup> of September the greens will have a slightly lower height of cut with the onset of cooler fall weather.

My next scheduled visit is October 15<sup>th</sup>, 16<sup>th</sup> and 17<sup>th</sup>. During this visit we will work on programs to upgrade irrigation systems to comply with FCC regulations, if needed, adjust *Poa annua* reduction programs, fall weed control, sand bunker restoration and general course conditioning.

Any questions or comments, please feel free to contact me at your convenience.

Respectfully submitted,



Michael D. Vogt, CGCS, CGIA