

Using Cultivation to Reduce Irrigation Use on Fairways

Spring Creek Ranch

Collierville, Tenn.

Scott Newman, superintendent

The Problem

Spring Creek Ranch was constructed with sand capped fairways and planted with Meyer zoysiagrass. Over the years, excessive thatch accumulation in the fairways made it difficult to get water to flow through the zoysiagrass and into the sandy soil. As a result, the turf stayed undesirably wet with minimal ball roll, but the soil was abnormally dry. Coupled with the shallow root system of Meyer zoysiagrass, this made the fairways prone to rapid wilt and frequent irrigation was necessary.

The Solution

An aggressive fairway core aeration program was planned over a ten year period that would remove large amounts of the existing thatch layer, improve infiltration, and break-up the layer between the zoysiagrass thatch and the sandy soil. The staff's goal was to provide a solution that corrected the problem, but was sensitive to the need to minimize disruption to golfers.

The Results

Over a period of four years the fairways were aerated six times with core removal using an approach similar to the one used on the putting greens. The program has been a great success. A significant amount of organic material has been removed and sand from the cores has been incorporated into the canopy. Water now penetrates much faster into the canopy and moves down into the soil. The course now plays as it was intended to play - firmer and faster.

Before implementing the program the fairways required over 1 million gallons of water every other night to keep the zoysiagrass from wilting and thinning or dying. The course played extremely soft. Now the staff irrigates with 400,000 to 500,000 gallons every other night, reducing annual fairway irrigation by about 50 percent. We have also reduced the need for afternoon irrigation cycles as well.

Any time a cultivation process to this magnitude is implemented it can take away from the golfing experience. It was difficult at first getting the membership to buy into the process but now they are seeing the benefits. Also, the staff had problems bringing gravel sized rocks up with the aeration plugs. This disrupted maintenance practices like mowing interfered with

golf as well. Nevertheless, the staff persevered and this issue has diminished over time. For anyone considering this program, Scott Newman would propose a more aggressive approach with more core aerations in fewer years, perhaps a five or six year plan instead of a ten year plan.



Figure 1 - A heavy thatch layer on a sand rootzone created a growing environment characterized by frequent wilt, necessitating frequent irrigation.



Figure 2 - Core aeration was an effective tool to remove thatch, improve infiltration, and break up the interface between the thatch layer and straight sand rootzone.