The Summary That Was…

Hot, Hot, Hot
& Wet, Wet, Wet

By Dave Doherty

I'm writing this from an airport in the Midwest. The temperature outside has registered 104F with a heat index of 114F when I parked my car.

The date: August 2, 2010, 3 p.m. CST.

The day temperatures this summer have been over 95F and the nights in the mid-80sF. The reason for telling you this now is because by the time you read this in November summer will be just a nightmare memory for most.

This year has been one of the toughest ever to keep bent grass alive, let alone healthy and providing a putting surface that our golfers rave about. Rain, heat, rain, heat, rain, heat and on and on it goes.

In January I started research on Vancouver Island measuring the temperature changes of bent grass greens while blowing air into the drain systems through the clean outs, and from Canada in January to Phoenix in January conducting the same research with almost identical ambient temperatures.

Then over the next six months conducting the same research throughout most of North America. Sometimes we were able to heat or cool the greens' temperatures by as much as 10 degrees F. and other times there was almost no change in the greens' temperatures before and after blowing air into the drain tiles.

The thinking behind blowing air into the drain tiles is this: The air from the surface being blown into the drain tiles goes through the drain tiles, comes out through the slits in the drain tiles and fills the gravel layer with fresh oxygen from the surface.

After filling the gravel layer and mixing with the cool air contained in the gravel layer the gas rising to the surface would be cooler and as a result it not only supplies more oxygen rich gas to the plants root system, but also help to cool the greens' mix.

Every green that we blew air into through the drain system seemed to have a healthier root system and in the spring and early summer these greens seemed to perform better than those that we did not oxygenate.

When summer and the heat hit, the research of measuring temperatures at different levels of the greens – 1/8th inch, one inch, four inches, 8 inches, 12 inches and gravel layer – continued. We also poked a 3/8-inch hole down to the gravel layer and measured the temperature of the air coming up through the hole. In most cases the air emerging from the gravel level was in the mid-70s, even though the ambient temperatures were between 90 degrees F, and 115 degrees F.

What we have learned from this research to date is that the percent of moisture being held in our root zones dictate the effects of the cooler air entering the root zones. When

the moisture content was high (18-plus percent), the air could not pass through the root zone to have an effect on cooling.

When the moisture content was on the low side (seven percent or less) there was nothing to hold the temperature. **Water heats up and cools down, not the sand particles**

The greens in which we were able to see positive changes in the root zones and putting surfaces had **balanced physical properties, and surface air movement.**

Recently I contacted over 30 courses to find out how they were surviving the heat and humidity. On the whole those that had balanced physical properties survived much better than those that did not have balanced physical properties. Most superintendents were doing every thing possible they could to cool their greens – fans, syringing, air injection through the drain tiles, needle tines, star tines etc.

Courses that started working on balanced physical properties two and three years ago fared much better than those that didn't. Even courses that started working to obtain balanced physical properties in the fall of 2009 did better than those that didn't. What we do in the fall and spring dictates how we will survive the dog days of summer.

Let's learn from this **summer from hell** and start the process of balancing our physical properties this fall. The first step is to find out what we have and start the modifying process, based on science, this fall and spring

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