Don't Get Perked Up Over Perc Test

BY DAVE WILBER

Imagine splitting a 5-gallon bucket of sand three ways, sending it to three USGA/A2LA-accredited labs and getting three different sets of results. That's nothing new except that the new laboratory accreditation program wisely implemented by USGA was presumed to pull testing closer together. It's not the entire test process that's giving labs so much trouble. It's the infamous Saturated Hydraulic Conductivity Test, also known as Perc. In the field, we are all starting to wonder about it.

I'm not going to bash USGA or beat on USGA greens. Jim Moore, head of the USGA Construction Education Program, is doing a great job. He wants good greens, good methods and good testing.

The American Association of Laboratory Accreditation (A2LA) is also doing good things. Don Waddington and the A2LA folks care a lot about good lab work. The labs that have gone through the accreditation process have spent time and money to participate in a valuable process.

But the Perc test is an interesting animal. A column of sand is compacted to imitate how it would be in a green, and the sample is saturated to field capacity. The number of inches of water that moves through the column in an hour is the target result. The results, designed to tell us what speed the water moves through the soil profile, are often misunderstood.

In a recent check sample run by all of the A2LA/USGA accredited labs, Saturated Hydraulic Conductivity varied with the labs anywhere between 2 inches to 29 inches per hour. Blind samples showed that the labs had consistent results individually because the same sands were checked within the same lab with virtually the same results.

The problem happens when the comparison is made between the accredited labs. With almost 100 percent standard deviation between laboratories, something is wrong.

I've been saying for a long time that the Perc test can be frivolous. After eyeing thousands of USGA tests, I realize that the test is the last thing we should be placing our pass/fail grade upon. I'm always looking at pore spaces. I've learned that the best USGA greens have ample and balanced air-filled and water-filled pore spaces, regardless of variability in saturated conductivity.

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As the green gets older and the root system develops, the Perc rate will always slow. The problem is when it stops. The thinking was we needed all the water possible, but letting the water run through the root zone at 20 inches to 30 inches an hour only creates a dry, hard green.

When did we ever have an irrigation system that delivered a precipitation rate of 12 inches of water an hour? I hope I never see rain that brings that much water. Common sense seems to be the only thing running out at such a high speed.

The USGA green section guys met with the lab folks earlier this year, and they decided the problems associated with Perc warranted money to conduct a study. Let's hope this analysis goes quickly because we continue to build greens, study or no study.

In the field, we need the laboratory system to work. Nevertheless, something has to change if a test can't be done on a solid, repetitive basis with the results within acceptable lab error.

Some agronomy aces bring up the possibility that we could create a computer model to predict the performance of a mix based on the parts of the test that are easiest to test for. It's a great idea that's already happening with those who know how to read these tests and spot meaningful data.

By the way, no amount of lab testing — good or bad — can overcome poor construction. Every time I see 20 inches of mix in one area and 8 inches in another, I think of all those times somebody got upset at a lab about a 2-inch difference in Perc rate. Talk about common sense, but this happens frequently.

The bottom line: The USGA testing/lab certification is sound, but that doesn't mean it can't be improved — and it all starts with Perc.

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