Al Capitos

BY **EVAN LUBOFSKY**

DATA LOGGERS IMPROVE TURF MANAGEMENT AT CAMDEN YARDS

One is buried behind the mound of Baltimore's Oriole Park at Camden Yards, the other in right field.

The crowd can't see them, nor can the players. In fact, only a handful of people know they are there, entrenched just 2 inches below the lush green ball field.

What are these objects buried beneath one of America's most beautiful ballparks? If you guessed Orioles season's tickets or Cal Ripken's old batting gloves, guess again.

They are data loggers–tiny, battery-powered devices that Oriole Park groundskeepers use to continuously monitor soil temperature throughout the season. More specifically, the loggers are used to record and time-stamp field root-zone temperatures over month-long intervals, at which time the data is offloaded onto a PC for graphing and analysis.

"We try to track field conditions to the greatest extent possible, and part of our strategy is to use data loggers as a record-keeping mechanism," explains Al Capitos, head groundskeeper at Oriole Park. "By keeping track of the temperatures over time, we can establish trends, which ultimately puts us in a better position to proactively deal with turf diseases associated with high soil temperatures."

Capitos monitors the soil with HOBO H8 data loggers from Onset Computer Corp. The H8 incorporates a microprocessor, an internal temperature sensor, and a user-replaceable battery into a hard-plastic casing slightly larger than a matchbox. By burying one H8 behind the pitcher's mound and the other in the outfield, the groundskeeping team can profile two distinctly different microclimates that exist at the stadium. Each logger is housed in a moisture-resistant enclosure, and takes temperature readings every 30 minutes.

After a month's worth of data has been collected, groundskeepers "unearth" the data loggers and offload the data from each onto a PC. Using Onset's software, the data is immediately translated into easy-to-read graphs that clearly show spikes and drops in root zone temperature. The data is then matched up with soil temperature readings that are taken manually with a probe, a process that Capitos refers to as "double-measuring."

"Some people may think this is way too much information, but we believe that having as much temperature data as possible is key to really getting in touch with the field," he says.

One area where data loggers have really proved their value at Oriole Park is in crabgrass prevention. In order for a pre-emergent herbicide to be effective in preventing crabgrass, the field must be sprayed after the soil temperature has been 55 degrees F for at least 4 days. According to Capitos, historical data recorded by the loggers over the past several seasons helps them predict when this block of time is likely to occur.

"The year-to-year data allows us to almost predict exactly when the temperatures will break," he says. "Knowing this helps us make good decisions as to when we need to spray. After all, the chemicals we spray on the field are expensive, and we have an obligation to be responsible applicators. I sure wouldn't want to be the guy who goes out and puts down chemicals ineffectively."

Capitos now trains new turf management interns on using the products. "We have interns from a variety of schools, including Penn State and Iowa State, and it's great to get them involved with the equipment so they can visualize the collected data and begin learning how to predict trends. It's fun for the students, and they can take the knowledge and experience with them after they graduate and go on to manage their first field."

Since the data loggers were originally buried in the spring of 1999, they have been functioning without any problems. Capitos has been impressed with their durability, and feels that any ballfield, especially those with a variety of microclimates, could benefit from the technology.

He says, "The most important thing is that we can now manage our field proactively instead of having to catch up with problems that we didn't expect." **ST**

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