



Shane Conroy of Spectrum Technologies addresses the audiences on some of the more popular tech-tools used for turf.

Chuck Anfield, CGCS Heritage Bluffs Golf Course

Shane Conroy of Spectrum Technologies made his presentation at the monthly MAGCS Meeting held at Aurora Country Club. “If you don’t measure it, you can’t manage it” was Shane’s advice to Golf Course Superintendents in attendance.

Monitoring Water Usage

The average golf course uses 312,000 gallons per day for irrigation use. Is your course using too much water or not enough?

Shane listed out and explained the reasons to conserve water:

1. Save natural water resources
2. Conserve energy used to pump water
3. Improve turf quality
4. Develop optimum irrigation programs
5. Reduce labor costs

How do we know when we have put down enough water? Historically, the turf was visually observed for wilting and hot spots. Often a probe or soil profile sampler was used to observe how wet the soil looked or felt. These techniques often lead to inconsistencies.



Soil Water Measurements Now

Permanent soil sensors can be installed in the soil profile. The challenge with this type of sensor is it is limited to one spot and many sensors need to be installed to get a complete soil moisture profile measurement.

A portable soil sensor will give the operator more flexibility and can monitor many areas quickly and efficiently. Data can be downloaded and mapped. This information can be used to create or adjust irrigation programs. Soil water is measured by quantifying (VWC) or volumetric water content. This is the actual amount of water in the soil structure and it is measured as a percentage of the overall volume of the soil. Different soil types have different pore space and consequently different wilt points and different field capacities.

The Spectrum TDR 3000 is a portable soil sensor that measures time domain reflectometry. It creates an electric wave pulse that shoots between two probes in the soil. The speed of the pulse will measure the VWC. Common measuring techniques include creating a grid of the area to be irrigated or just random probing. The goal is to have consistent moisture values. One attendee commented to make certain the length of the probes used (variable) on the meter are suited for your putting surfaces, especially if there is a significant layer of topdressing sand that most of the roots are growing into – this is where you would need to measure- not below it.

Adjustments that irrigation managers can make after taking measurements is to change nozzles, hand water specific drier areas and increase or decrease run times in the irrigation program.

The overall benefits that can be gained via more efficient irrigation use include: improved plant health, decreased disease incidence, improved esthetics, better playing conditions promoting a firmer faster playing surface.

Shane commented that thresholds will be different for each course. Knowledge and experience will still be very important for water management.

Measuring Salinity

Soluble salts can have negative effects on turf growth. In highly saline soils it is harder for the plant roots to extract water from the soil. Soluble salts can accumulate in irrigation water sources, from frequent fertilizer applications and effluent water use.

(EC) electro conductivity is the unit of measurement for salinity. After measuring salinity in irrigation water, it can be specifically treated.

Measuring Light and Shade

Light is of major importance for photosynthesis. Plants grown in decreased light will have much less vigor and perform poorly. Light intensity is measured by (DLI) daily light integrals.

By measuring light intensity pruning documentation can be established to promote pruning decisions, create landscape designs, select specific turf species for establishment and compare light from green to green.

The light meter can be a hand held device that gives instant feedback or a unit that will record long term exposure.

Measuring pH

pH meters are used to measure alkalinity or acidity. Acidic or alkaline soils can reduce microorganism populations and reduce plant tolerances. Alkalinity can also be very important when mixing plant protectant products in spray tanks. Effectiveness of pesticides can be reduced from alkaline hydrolysis. A small inexpensive meter can save thousands of dollars to ensure product effectiveness.

Measuring Firmness

A tool can be used to measure green firmness. This tool sometimes goes by the name of a "thump meter." It measures turf penetration by mimicking ball impact with a hammer dropping type motion.

This tool helps establish baseline data that can then be used to measure overall green conditions and help adjust cultural practices for a more consistent playing surface or to provide better tournament conditions.

All these tools help us to quantify many of the circumstances we already manage. Placing a number to these conditions helps us to create a benchmark and track changes. We still have to correlate the fluctuations as we manage our inputs and tune our turfgrass from there. @

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