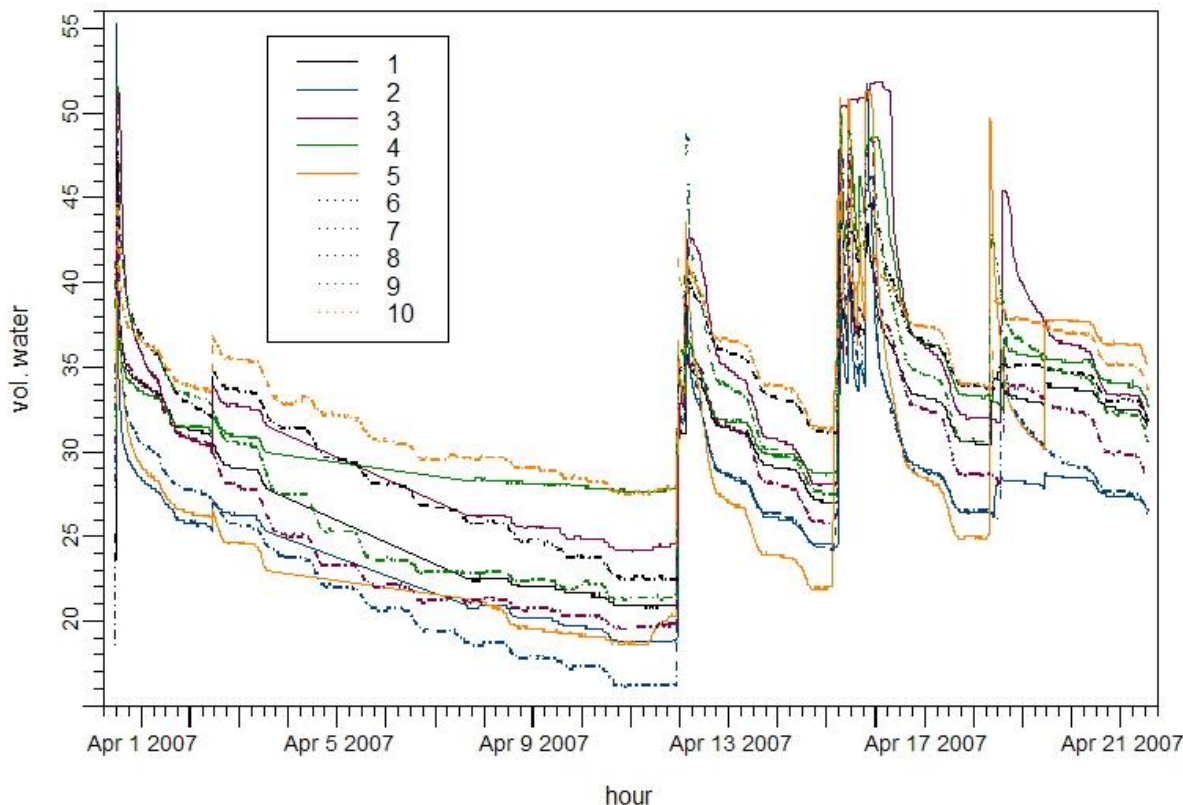


Field Day 2007 Turf Irrigation Water Management using Soil-Water Sensors



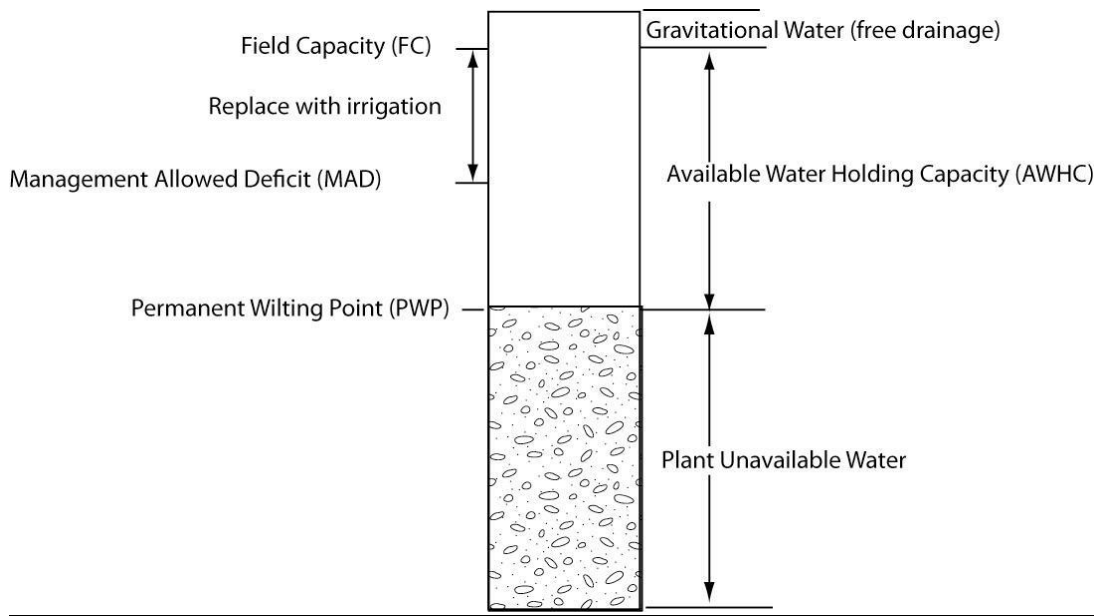
Field capacity (FC) is the term used to describe the amount of water soil can hold after gravity drainage. Field Capacity is generally taken to be the soil-water content after a soaking rain followed by 1-3 day drainage. (In some sandy soils, field capacity can be reached after just a few hours). In the graph above, a hose was used to soak the turf above all 10 sensors on March 30 (evidenced by peaks at left of graph).

What is field capacity (FC) from the graph above? (assume 1 day drainage) _____ % by volume

About $\frac{1}{2}$ of the water at FC is available to the turf. The amount available to the turf at field capacity is called the available water holding capacity (AWHC) of the soil. What is the AWHC for this soil?

_____ % by volume

Irrigation is normally initiated when $\frac{1}{2}$ of the AWHC is depleted, sometimes called the "management allowed deficit" or MAD.



Add-on “1 setpoint system”

When the moisture level is above the setpoint in this system, the add-on device disables any pre-programmed irrigation. The manufacturer of the add-on system we are looking at today recommends **not** irrigating when the soil-water content is above the management allowed deficit (MAD).

What should the setpoint be? _____ % by volume

“Stand alone 2-setpoint system”

The “2-wire system with sensors has the ability to both initiate and terminate irrigation, so 2 setpoints must be programmed. If we choose to initiate irrigation when 50% of plant available water is used (MAD = 50%), what should the lower setpoint be?

_____ % by volume

The upper setpoint (terminate irrigation) should not be set above field capacity. If we set the upper setpoint at field capacity, what should the setpoint be?

_____ % by volume

(note: This system’s upper setpoint allows for some rain storage, so is set 2% lower than field capacity, and the lower setpoint is set at a MAD of 67%)

How much net irrigation is applied to raise the soil-water content from the soil-water content at MAD to FC?

$$net\ irr(in) = \frac{\text{_____ \% FC} - \text{_____ \% at MAD}}{100} \times \text{_____ Root zone depth(inches)}$$

Net irrigation applied _____ inches

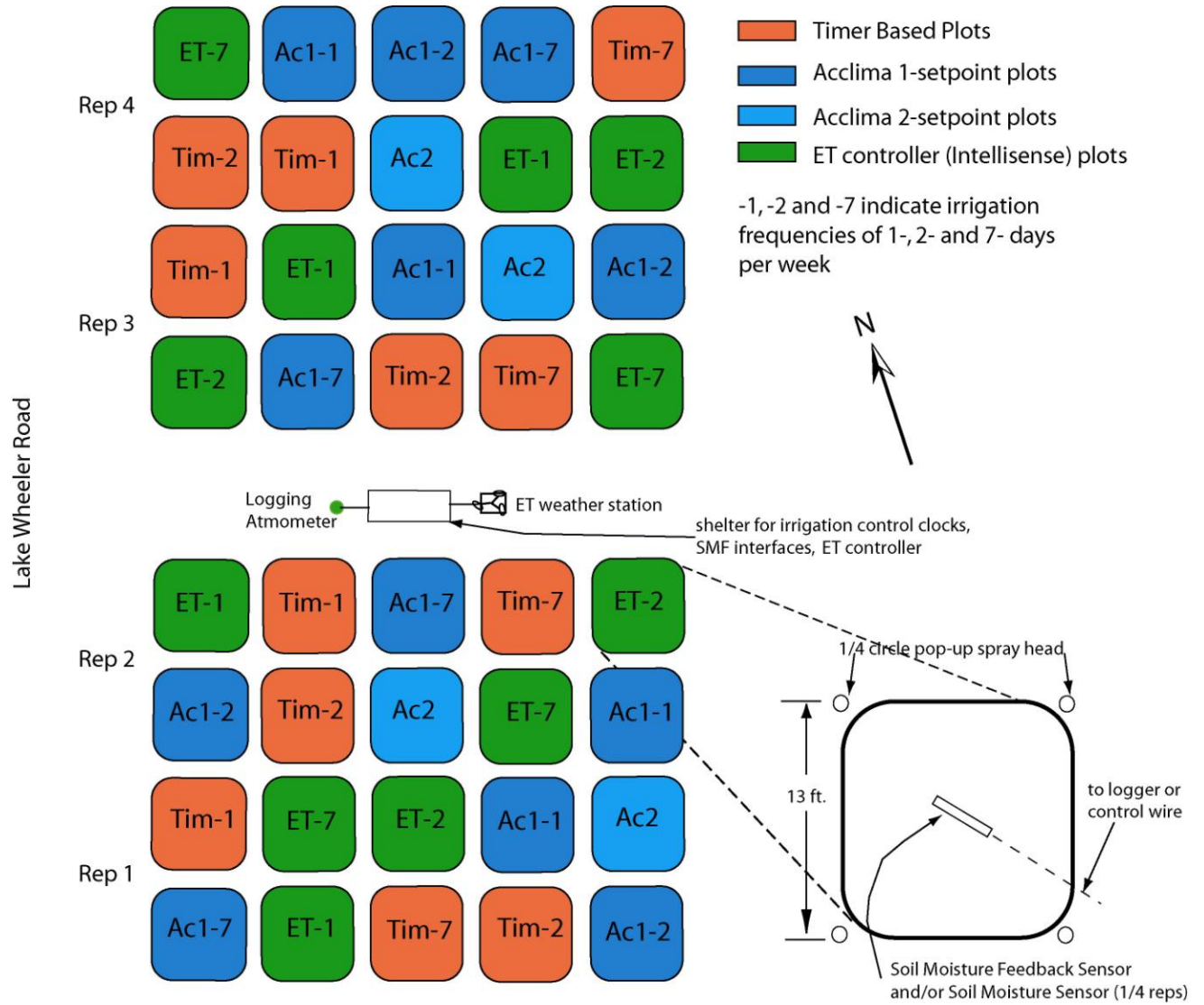


Figure 1. Turfgrass plot treatments for irrigation control study. Like colors receive like treatment.