The Science of Irrigation: Boost your Smart Irrigation I.Q.
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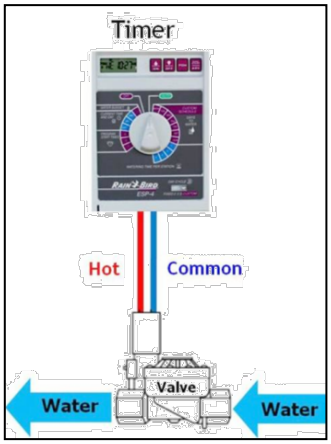
The new generations of "smart" irrigation systems have the capability to monitor weather, soil moisture, evaporation, and plant water use. They also have the ability to automatically adjust the watering schedule so the sprinklers apply just the right amount to each zone of your yard, while improved sprinkler spray patterns of new generation pop-ups, reduce runoff. Smart irrigation systems have been shown to reduce customers annual water bills by 30%. And, with available rebates for many Smart devices and nozzles, it's a winning opportunity to save water, save money, and save time.

But just what makes these Smart systems so Smart? It is no secret that the irrigation controller holds great water savings potential. SmarTimers use weather and/or site data to determine when and how long to water. But, a SmarTimer is only as smart as its user. The site parameters, input during installation, are critical to efficient irrigation when using a SmarTimer. So let's test your Smart Irrigation I.Q.!

How does a basic timer work?
A standard irrigation time clock (controller) stores your irrigation schedule and runs the irrigation based on that schedule. You use the controller to program specific run times, in minutes, for each zone on specified days of the week. You can also set the controller to automatically "turn-on" at specific start times. Some newer controllers also have a percent adjust feature. The percent adjust or water budget feature allows you to easily change (up or down by %) the amount of water your lawn receives monthly or seasonally.

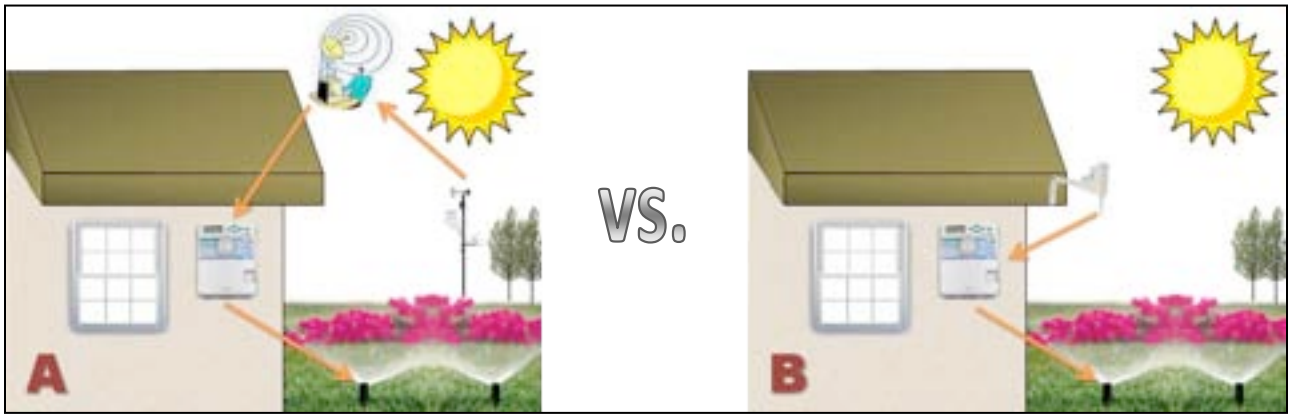


When it's time for the controller to "turn-on" the irrigation system, a signal is sent to a solenoid valve that allows the valve to open and water to enter the system.

How does a weather-based SmarTimer work?
A weather-based irrigation controller determines how much irrigation to apply based on weather conditions such as temperature and humidity. The weather data is either sent to the controller as part of a subscription service (some are free while others charge a fee) or collected on site with a mini weather station. Basically, there are two types of systems: signal-based and sensor-based.

A signal-based system (A) uses wired (phone) or wireless (cellular or paging) communication to receive weather data from a remote weather station. A sensor-based system (B) is a stand-alone controller with an onsite measurement device(s) to calculate irrigation need based on the local weather conditions. Onsite sensors could include: temperature, solar radiation, or even a full weather station. Some

irrigation controller manufacturers have even developed add-on devices to turn a conventional irrigation timer into a “smart” timer.



Your watering schedule
It is important to adjust your watering schedule regularly to account for seasonal weather conditions, plant size, and other factors. Monthly (or even weekly) adjustments keep plants healthy without overwatering.

Which of the following factors is NOT needed when programming the length of time (duration) to water each zone?:

- Soil type
- The plant root zone depth
- Local weather conditions
- Property size

When programming the run times for each zone of the irrigation system (also known as irrigation scheduling), a factor that need not be considered is property size. Although a larger lawn may consume a greater amount of water during the total irrigation event, each zone run time is set no differently than that for a small yard. Factors that are important to irrigation scheduling are: soil type, root zone, and local weather conditions.

When is the best time of day to water?
Watering when the sun is low, winds are calm, and temperatures are cooler minimizes evaporation by as much as 30%. The best times to water are late afternoon, evening, and just before sunrise.

Know your pop-up sprinkler heads

There is a new sprinkler on the block and it is packing a punch in terms of water savings. Chances are that you have seen flooded sidewalks or runoff streaming down the curb from excessive irrigation. The rotating nozzle (B) can use 20% less water than a conventional spray head (A), when properly directed. Multi-trajectory, rotating streams apply water more slowly and uniformly. The uniform distribution of water will encourage healthy plant growth and reduce the need for increased runtimes because of dry spots.

Know your yard

How well you know where and what you are watering is as key component. Some typical parameters necessary to set up a SmarTimer include:

- Sun and shade pattern
- Soil type
- Sprinkle type
- Sprinkler uniformity
- Slope
- Plant type

Something as easy as taking a walk around your yard can help you boost you Smart Irrigation I.Q.

Now, Save some Money

Finally, if you are considering upgrading your irrigation controller or you are planning to install a new irrigation system with a timer, remember that the Metropolitan Water District of Southern California has a Weather Based Irrigation Controller Rebate Program for residential and commercial customers. For more information about the program, the devices that qualify for a rebate, the customer application process, and to estimate your rebate, visit www.socalwatersmart.com.

This completes the third lesson in our Science of Irrigation series. In the next installment of this series, we will continue to examine the principals of irrigation.

For more information about smart irrigation, please contact Melissa Baum-Haley at (714) 593-5016.