CONTROLLER BASICS

TEXAS A&M AGRILIFE RESEARCH | EXTENSION

Understanding your irrigation controller is key to a healthy and properly watered home landscape. Don't let your irrigation controller intimidate you. It is easy to operate once you know the terms and understand what each function controls. In fact, if you can program the alarm clock on your smart phone, you'll have no problem "soaking" up the skills to master your controller.

VALVE

The part of the system that receives electronic signals from the controller telling it to open and close. When the valve is open, water can run through the valve, pipes and out through your irrigation heads. Valves are often located in a circular green valve box in the ground.

STATION

On the controller itself, the term "station" refers to the valve that is being controlled. In most situations, one station controls one valve.

ZONE

The area that receives water is typically referred to as the “station” on the controller but as the “zone” in your landscape. For instance, a flower bed might be considered one zone, while a section of turfgrass in your back yard might be considered a separate zone. When programming your controller, map out your irrigation zones in advance. Your controller box should have a listing of each zone for reference. If this information has not already been written in, take a few moments to manually “test” each zone and fill in a short description for future reference. This easy step will save time and prevent future headaches.

PROGRAM

Most timers have three to four programs available, and they are typically named “Program A”, “Program B”, “Program C” and sometimes “Program D”. These programs hold the settings that dictate which days and how long each station is watered. Each Program (A, B, C, D) has its own start time, run time and days of operation. You can use the programs to separate the zones that need different watering days or multiple start times. For example: Program A could be programmed to water all lawn zones one day per week while Program B could be programmed to water native plant material in your landscape bed zones every other week.

START TIME

The “**Start Time**” feature on a controller allows you to specify a time of day for each program (A, B, C or D) to start. Once the cycle starts, it will begin irrigating the stations that are associated with that start time. When the controller works its way through all the stations that are associated with the program, it stops watering. You can schedule multiple start times in a single program to reduce runoff. See “Cycle and Soak Irrigation Method”.

RUN TIME

Run time refers to the time, in minutes, that a valve will remain open. If you set this for 10 minutes, the valve will stay open and water a zone for 10 minutes. If you have a run time of 10 minutes and two start times, that zone will be watered twice, for a total of 20 minutes. You can conduct a catch can test to determine your zone run times.

CYCLE

An irrigation cycle is a period of time when the sprinkler system is operating to supply water to the landscape.

AUTO

This is the automated start setting, meaning that when in “auto” the system will run your programmed “schedule”.

OFF

We recommend leaving you controller in this default setting, especially when it has rained or when rain is in the forecast. Turning your system “off” does not undo your stored program. It simply tells the system not to come on or operate while in this setting. Keeping your system in the “off” position and then turning it on manually gives you the most control over how much water you’re applying and can help to ensure that the system only runs at the most beneficial or appropriate times.

MANUAL

The manual operation button allows you to run an individual zone for a specified amount of time. It can be used to provide supplemental irrigation to areas that may need additional water. It can also be used to conduct a system checkup. Some controllers have both a “manual” and an “all system manual” setting.

SEASONAL ADJUST

The seasonal adjust button allows you to increase or decrease the amount of water being applied by your irrigation system in 10-percent increments. This function can alter your watering time without having to change your station run times. For example: During extremely hot weeks of the year, you could increase the seasonal adjust from 100% to 120% IF your lawn shows signs of wilt or stress. It is important to note, this feature adjusts the watering time for EACH zone (not just one) and you will be applying 20% more water to your entire landscape at 120% seasonal adjustment. Many established native and adapted plants may not need additional irrigation, however, so use this feature with discretion. During most winters in North Texas, regular irrigation is not necessary, so consider turning irrigation controllers off for that period (November – March).

RAIN AND FREEZE SENSORS

These inexpensive add-on components prevent the irrigation system from running during rain events or when temperatures fall below freezing. Freeze sensors can also aid in preventing damage to irrigation systems and causing safety hazards. It is important to note that rain and freeze sensors may be a requirement for a particular area or application.

CYCLE AND SOAK IRRIGATION METHOD

This simple technique is generally the most effective way to run your irrigation system. Some systems apply water faster than the ground can absorb. This is especially true in lawn areas with heavily sloped or compacted clay soils. No one likes to see water running off into the street. To help prevent this, you can irrigate these areas in several short intervals instead of one long run time. This allows you to “pulse” water into your landscape more gradually to improve absorption.

The first cycle **breaks the surface tension** and saturates the top layer of soil. The second cycle **infiltrates the soil** more efficiently and deeply after the first cycle. A third, and sometimes a fourth cycle, is beneficial if a **slope** is involved or if **runoff** occurs after the sprinklers run for just a few minutes.

TO USE THE CYCLE AND SOAK METHOD:

Step 1. Determine how long to run each zone.

*Example: From my catch can test **(see video link on how to conduct a catch can test)**, I have determined that I need to run my zones with multi-stream rotors for 50 minutes to put out my desired 0.5 inches of water.*

Step 2. Determine how you are going to break up your total run time into 2, 3, or 4 shorter cycles. This may require some experimentation to see what seems to work best for your particular landscape.

Example: I know that I get runoff after 25 minutes to my zone, so I need to program my controller for 2 cycles for 25 minutes each to reach my total run time of 50 minutes.

Step 3. Set multiple start times, 30 to 60 minutes apart, to allow water time to soak into the soil between cycles.

Example: I may set my start times for 4:00 am, 5:00 am and 6:00 am so that there is sufficient time between cycles but all of my cycles will finish before it becomes too hot to effectively run my irrigation system..

Most irrigation controllers have a way to set different start times. If you have the cycle and soak feature on your controller, then you can set your cycle or run time in minutes (for this example: 25) and your soak time (30 to 60 min). With this feature, you do not have to set different start times for a zone.
If you have trouble programming your controller, visit the irrigation controller company's web site or contact their customer service for instructions for cycle and soak. Some newer controllers have a cycle and soak setting, and additional water saving features, which might warrant upgrading your irrigation controller. When purchasing a new controller make sure it is it is labeled by the EPA's WaterSense program denoting the highest efficiency products!

PROGRAMING YOUR CONTROLLER

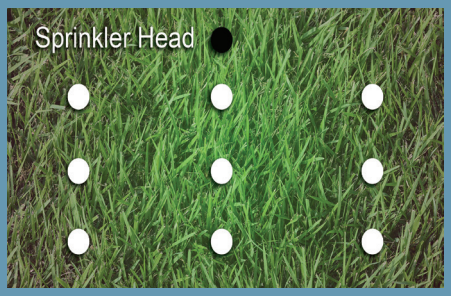
Understanding your irrigation controller is key to a healthy and properly watered home landscape. Don't let your irrigation controller intimidate you. It is easy to operate once you know the terms and understand what each function controls. In fact, if you can program the alarm clock on your smart phone, you'll have no problem "soaking" up the skills to master your controller.

Watch our How to Program your Irrigation Controller instructional on YouTube

https://tinyurl.com/y3kqo7xx

FIGURING OUT HOW LONG TO WATER: THE CATCH CAN TEST

A catch can test is used to determine how long to run an irrigation system or hose-end sprinkler and to verify how well the water is distributed over the landscape. The root zone (where water and nutrient absorbing roots grow) is typically 6-8 inches deep. In many cases, irrigation systems apply water faster than the ground can absorb. Each type of sprinkler (spray, rotors, multi-stream rotor, drip) applies water at different rates; therefore, a catch can test is essential to determine the run time and efficiency of the system.



Watch our catch can test instructional on YouTube

https://www.youtube.com/watch?v=1nIwZ_imn9w

SAMPLE CONTROLLER SETTING

Data collected by Texas A&M AgriLife over the past few years shows that, on average, most lawns only require around 0.5 inches of water per week during the hotter months of the year (July – September). This means that even on weeks with no natural precipitation, you generally will not need to provide more than 0.5 inches of water from your irrigation system.

For established lawns, deep and infrequent irrigation is best to encourage healthy root growth. For this reason, it is recommended that you only water around once per week, as watering too frequently may lead to shallow roots.

The table below shows a sample runtime by irrigation technology to apply 0.5 inches of water to your lawn without causing runoff. Take special notice of the column with the recommended number of cycles per zone. These incremental cycles, paired with breaks in between, allow more moisture to infiltrate the root zone where it can be utilized by the plant. If water is applied in a single cycle, the ground can quickly reach a saturation point where excess water runs off the landscape and is wasted. This is especially problematic in areas with heavy clay soils or steeper slopes.

IRRIGATION CONTROLLER SETTINGS: APPLICATION OF .5 INCHES OF WATER

SPRINKLER TIME	RUNTIME	NO. OF CYCLES PER ZONE	TOTAL RUNTIME PER ZONE	GALLONS PER MIN	TOTAL GALLONS PER HEADS
Spray	6 min	4	24 min	3	72
Rotor	13 min	4	52 min	9	468
Multi-Stream	25 min	2	50 min	1.5	75
Drip	25 min	3	75 min	--	--

WATER MY YARD

The Water My Yard program utilizes local weather data collected by an extensive network of weather stations and rain gauges in your area. This information, along with research-based understanding of plant water needs, allows experts to send tailored weekly watering advice for your specific lawn! Don't just set your controller and forget it. To be the most water efficient you can be, operate your irrigation system manually! What does that mean? Leave your irrigation system in the off position and turn it on only as-needed.

TAKE THE GUESS WORK OUT OF KNOWING WHEN, AND HOW MUCH TO WATER!
SIGN UP FOR HTTPS://WATERMYYARD.ORG

This is a general guide to provide you with a basic overview of irrigation controllers and how they function. Manufacturers provide online resources which provide further detail on their specific controller. The easiest way to access these resources is to simply search for the brand and model number of the controller using your favorite web browser. Then, look for the online version of the user manual and videos which detail additional features.

TEXAS A&M AGRILIFE
RESEARCH | EXTENSION

17360 Coit Rd., Dallas, TX 75252

Subject matter currently
under review