

The most limiting factor to beautiful, healthy plants is applying the right amount of water, at the right times, without applying too much. (which can encourage pests and disease problems) Many North Texans use in-ground, automatic sprinkler systems. These sprinklers are designed to maintain soil moisture, ultimately protecting the overall health of a landscape. Switching off these systems in times of sufficient or excessive rainfall is the best way to avoid many disease issues and can also help to reduce your water bill.



Simply keep the controller OFF until you need to water, then turn it back ON when you do. It's that easy, and all your zones and settings will still be the same the next time you need to water!

Whether you have an automatic system or use a manual faucet-and-hose style sprinkler to irrigate your landscape, your sprinkler system should precisely deliver water to the plant's root zone where it can be effectively used. Accurately calculating your plants' water needs, taking soil type into consideration, as well as various slopes in the terrain (which might influence water flow) will help determine the best practices to avoid wasting water. Watering deeply but less frequently can also encourage a more robust root zone that is better adapted to the extreme heat and drought periods common in our area.

## TIPS FOR A HELATHY LANDSCAPE

If your sprinkler system is not working properly, no matter how much you water, the landscape suffers, and water is wasted. Follow these guidelines to ensure a properly watered landscape.

### Check your sprinkler system regularly for problems

Repair any major issues you see immediately (or as soon as you are able) to preserve the health of your landscape. Mark minor problem areas like misaligned heads or smaller leaks with an irrigation flag to easily locate them and to serve as a reminder. Schedule a licensed irrigator to address more severe problems as needed.

### Water when needed, not just because it's your day to water

If it has just rained or if rain is in the forecast, pause running your sprinklers. This can help prevent unnecessarily high water bills, as well as many pest and disease issues associated with overwatering. A soil moisture probe is an inexpensive tool that can measure soil moisture at a depth of 6"-8" which is the critical root zone for managing healthy plants.

### Water without creating runoff

For best results, use the cycle and soak method of irrigation for your lawn. Using 2-3 shorter intervals, (rather than one long cycle) allows for better absorption of water into the root zone. The goal is to keep all of the water applied on the lawn and prevent runoff into the street. (See Cycle and Soak)

### Water before 10:00 a.m. or after 6:00 p.m.

This will help minimize water loss due to evaporation during the active growing season, usually March through October. Watering in winter is not necessary unless unusually dry conditions exist.

## Consider hand watering new plants

There is no need to overwater an entire landscape if it's only a few new plants that need extra attention. After plants are established, adjust your sprinkler system's run time accordingly, tapering off to less frequent watering to help develop a deeper, healthier root system.

## Change your sprinkler heads' spray nozzles

Water efficiently by installing multi-stream nozzles, which apply water in heavier droplets over a longer timeframe. This reduces water loss due to wind, evaporation, or runoff.

## Install pressure regulating heads

Experiencing high pressure in your sprinkler system? Irrigation systems are designed to operate at around 40 psi. Pressure higher than this can cause excessive misting and overspray from your sprinkler heads. Installing pressure regulating heads can reduce pressure and ensure water hits the ground where intended.

## Replace old irrigation controllers

Select a newer model that has water-conserving settings like 'Cycle and Soak' and seasonal adjustment. Look for the EPA WaterSense™ label. There are also many wireless controllers that can connect to your smartphone and can easily be installed by homeowners or professionally licensed irrigators.

## Convert spray zones to drip irrigation

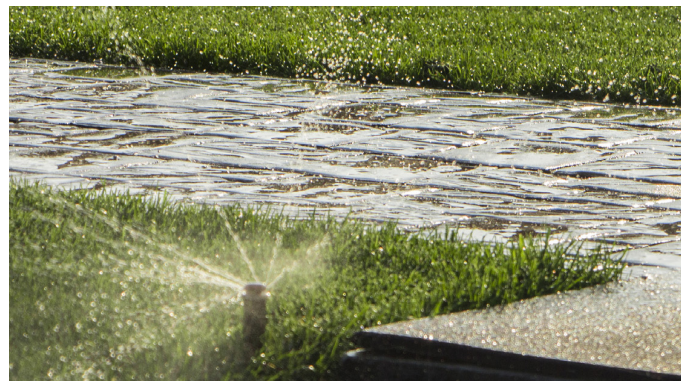
When properly designed, installed, and maintained drip irrigation is the most efficient method with up to 90% of the water delivered to the root zone in landscape beds. Sub-surface drip tubing is also available for lawns. In some cases, drip irrigation is also exempt from watering restrictions.

## Install a rain and freeze sensor

This sensor prevents your automatic sprinkler system from turning on and applying water during rain or freeze events which helps deter water waste and prevents hazards. They are now required in most applications.

## Mow at higher setting

During the summer, raise the blade setting height on your mower by one or two notches. Taller grass can help reduce evaporation of water from the soil--in addition to encouraging a deeper, healthier root system.



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# DIGGING DEEPER

## Understanding Plant Water Needs

All plants are not created equal and not all plants require the same amount of water. Native or adapted, drought-tolerant plants typically require less water than turfgrass lawns. Likewise, perennial flower beds typically require less water than your edible gardens or turfgrass. When designing your home landscape or when scheduling your water needs take these factors into consideration. By hydro zoning your landscape (placing plants with like water needs together) you can use water efficiently and give your plants the best chance to thrive. This allows for each zone to be better tailored to the specific water needs of the plant and the time it takes to deliver adequate moisture.

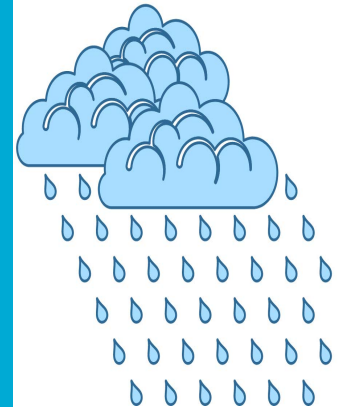


### Climate

Our typical irrigation season in North Texas is from March through October. During this time, we typically see higher temperatures and less rain, so our plants may need supplemental water. In the cooler months of November through February, supplemental irrigation is seldom needed. It's a good idea to have your automated sprinklers turned off during this time.

## Rainfall

Sprinkler systems are designed to provide supplemental water to your landscape during dry times. In North Texas, our rainfall patterns can be quite sporadic and weekly adjustments to your sprinkler system schedule is often needed. For this reason, we suggest operating your sprinkler system on manual for best results. If it has just rained or if rain is in the forecast, there's no need to run your system. Rainfall is the best quality water for plants. Running your system when the root zone is wet not only wastes water, but it can also lead to pest and disease problems, in addition to causing excess runoff and localized flooding.



### Topography

Most yards are not flat and do have a varying degree of slope to them. Gradual slopes are good as they prevent water from pooling around plant roots. Landscapes with excessive slope can be problematic when trying to irrigate. Water quickly runs off these areas. In that case, it's best to apply the water slowly and in short intervals to saturate the soil to the depth of 6 inches. (See Cycle and Soak Method)

## Sun vs Shade

Sunny areas of the landscape will likely require more water than the shaded areas. A zone located on the hotter west or southwest side of your home may require slightly longer run times. A zone entirely in the shade may need significantly less water, due to slower evaporation rates.



## Soil Type

Soil type plays a large role in how well water is absorbed and eventually drained from an area.

### CLAY

Clay soil can hold a lot of moisture. It is best to water clay soils at a slow rate to allow the water to soak in. Clay soil is prone to cracking when it dries out and can be difficult for roots to penetrate. To improve drainage the best amendments for clay soil are compost and other forms of organic matter.

### SANDY

Sandy soil allows water to soak straight down without holding onto much of it. Plants will need to be watered more often and in a wider arc to encourage roots to spread. The best amendments to help sandy soils hold moisture are compost or organic matter.

### LAOM

Loam soil is rich with nutrients and distributes water evenly, making it the best for plant growth. Unfortunately, this type of soil is rare in our area. In new landscapes, loam soil is often applied as a topdressing and incorporated into native soil before planting turf or landscape areas.

## TYPES OF SPRINKLER SYSTEMS

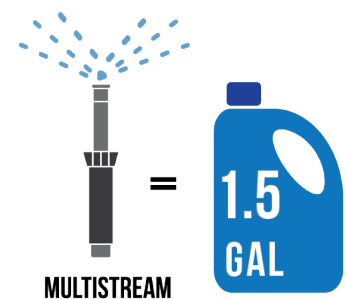
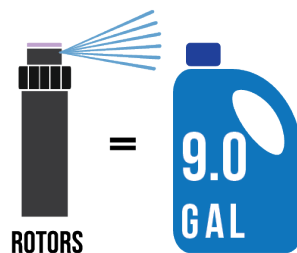
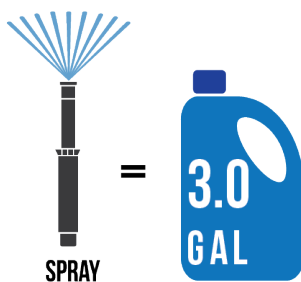
### Manual Faucet Run Systems

There are several manual irrigation system options that can be customized, connected to faucets and hose bibbs, and that are temporarily or semi-permanently used to irrigate lawns, landscape beds, tree areas or vegetable gardens. There are several types of hose-end sprayers and sprinklers including spray wands and nozzles, impact sprinklers, oscillating and traveling sprinklers and soaker hoses. These systems can also be converted to accommodate drip irrigation.

### In-ground Automated Sprinkler Systems

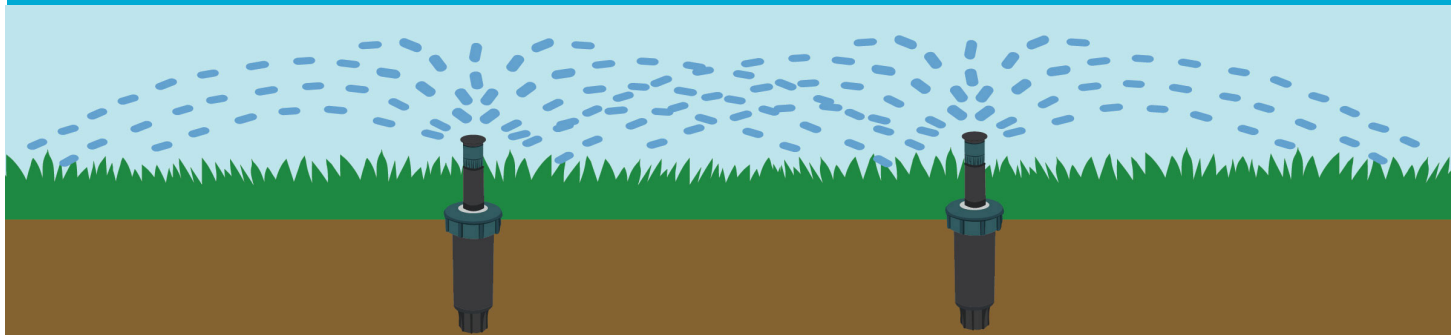
In-ground sprinkler systems use a series of sprinkler heads installed at fixed locations in the yard. When properly designed, installed, and maintained, in-ground systems deliver water efficiently to your plant's root zone. The most common type is constructed of a network of interconnected PVC pipes installed in trenches dug into the lawn. There are many different types of sprinkler heads to serve various watering needs. Some spray in 360 degrees, or 180 and 90 degrees for edges and corners.

## SPRINKLER SYSTEM OUTPUT PER MINUTE



## Proper Application of Water

Sprinkler systems must be designed so that water from one sprinkler overlaps with the next sprinkler heads. This is called head-to-head coverage. Head-to-head coverage increases the irrigation system's efficiency and helps prevent excessively dry or wet spots in the landscape. Distribution uniformity is the measurement of how evenly water is distributed in a sprinkler system. The higher the DU, the better the coverage of the area, leading to healthier and more efficiently watered zones. The spacing and adjustment of your sprinklers, the type of sprinkler head used, as well as water pressure and wind affect DU. Many cities and water providers offer free irrigation audits, which, in addition to assessing DU, help to identify areas where repairs are needed.



## Programming 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. If you have any trouble programming your controller, visit the company's web site for instructional manuals and video tutorials. Most newer controllers have additional water-saving features, which might warrant upgrading your irrigation controller.

## Figuring Out How Long to Water: The Catch Can Test

An initial catch can test is a quick and easy way to determine how long to run a sprinkler system or hose-end sprinkler. It can also help verify how well the water is distributed over the landscape. 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.

1. Place 5 to 9 catch cans (tuna or cat food cans) in each irrigation zone or station.
2. Run each zone for 5 minutes to determine how much water is applied in each zone by measuring the amount of water in each catch can. The goal is to estimate how long it takes to water 1 inch. If at any time you see water running off the landscape, down the sidewalk or driveway you should also adopt the Cycle and Soak method explained below.

*Example: if there is 1/4 inch of water in each catch can after running for 5 minutes, to apply 1 inch of water set the run time for 20 minutes.*

## Cycle and Soak Irrigation

The cycle and soak method of applying water to the landscape drastically reduces and, in some cases, eliminates runoff. This method of applying water to the landscape is made up of multiple cycles for each station, allowing 30 to 60 minutes between cycles for the water to soak into the soil.

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 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

For example: if you have determined you need to run a sprinkler station for 12 minutes, schedule your controller to run the station for two 6-minute cycles, or three 4-minute cycles. If a slope or runoff is involved, run the station for four 3-minute cycles.

For the cycle and soak method to be effective, set multiple start times with short runtimes for each station. Take some time to determine just how long each zone can run before runoff occurs. Remember every zone of your irrigation system may be different, so spend a little time “testing” each zone and calculate the maximum number of minutes the zone may run until you see runoff. Use this information to set a short runtime for each station. Then, set two, three, or even four start times. Each start time will run a short cycle, allowing water to enter the soil more efficiently. If you do not have time for this research, divide the normal runtime into multiple short runtimes. Allow 30 to 60 minutes between each station’s start time.

Some new irrigation controllers have a cycle and soak setting. For these controllers, set the maximum runtime for each station and number of cycles. The controller will automatically divide the runtime into the number of cycles you select. If your controller does not have multiple start times, then it may be time to upgrade to a new controller. The replacement cost is quickly returned in water savings!

## Irrigation Controller Settings: Application of .5 inches of Water

SPRINKLER TYPE	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	--	--