

Drought Proofing Your Landscape

Many cities are implementing drought plans and beginning mandatory water restrictions which limit landscape irrigation to 2 days a week or less. Visit your city's website to review and learn drought plans and make preparations to comply by acclimating your landscape to the recommended or mandatory conservation practices. Many drought plans have stages and each stage adds more requirements to conserve water. No matter what stage of restriction your city is in, there are numerous things you can do to prepare and help your landscape survive a drought.

Drought is simply defined as less than normal precipitation based on a 30-year average. Droughts are classified as long term, lasting for several months/years, or short term, lasting several weeks.

Since water use increases anywhere from 30 to 60% during the summer, there are many opportunities to conserve water in a landscape with efficient irrigation. Study your city's drought plan and make immediate and long-range plans to conserve outdoor water. New irrigation technologies and other water-conserving landscape practices allow landscape water conservation to be easy, affordable and rewarding.

Properly designed water efficient landscapes need one inch of water per week. Many homeowners water their landscape two or more times a week which can actually damage the landscape by supporting a shallow root system. Frequent watering produces shallow roots whereas infrequent deep watering will produce deeper roots. Deep roots have water available for an extended period of time. The conservation and landscape practices outlined below will provide guidance to keep your landscape alive during a drought.

Immediate Actions to Prepare for Drought

- **Mulch All Planted Areas**
Mulch is like icing on a cake because mulch keeps the soil moist the same way icing keeps a cake moist. Mulch slows evaporation of water from the soil, allowing water to infiltrate the soil efficiently; moderates the soil temperature; and breaks down into nutrients for the plants. Maintain a 2 to 4 inch mulch layer in all planted beds and containers.
- **Efficient Irrigation is Essential**
If your irrigation system is not working properly, no matter how much you water, the landscape suffers and water is wasted. Check for pipe and valve leaks (indicated by greener faster growing grass), breaks, clogged heads, sprinkler heads not working, misaligned heads, misting versus spraying due to too much pressure, water spraying onto hard surfaces and runoff into the street. See the 'Irrigation Checkup' list below for ideas on how to fix these problems. Some cities have an irrigation professional on staff that will check your system and make recommendations for repairs and efficiency.
- **Judge Irrigation Requirements in the Morning**
High afternoon summer temperatures cause plants to wilt, be off color, drop leaves and/or shrink even if there is significant moisture in the soil. Once the sun sets, the lawn and plants look normal; if in the morning the lawn and plants look like water is required, irrigation is justified. If in doubt, use a long screw driver to test for moisture in the soil. Push the screw driver into the soil (like a toothpick into a cake) to see how much moisture is in the soil. The screwdriver will push easily into moist soil and will not push easily into dry soil.

- **Catch Can Test**

A catch can test is used to determine how long to run an irrigation system or hose-end sprinkler and how well the water is distributed over the landscape. The root zone (where water and nutrient absorbing roots grow) is typically 6 inches deep in clay soil and 8 to 10 inches in sandy soil. Usually 1 inch of water will fill this root zone but in many cases irrigation systems apply water faster than the ground can absorb. During a summer drought with high temperatures, the water requirement may be higher. 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. To determine the runtime of your irrigation system:

1. Place 5 to 9 catch cans (tuna or cat food cans work great) in each irrigation zone or station.
2. Run each zone for 3 minutes to determine how much water is applied in each zone by measuring the amount of water in each catch can.
3. To determine run time (time each station should run) use this example: if there is $\frac{1}{4}$ inch of water in each catch can after running for 3 minutes, to apply 1 inch of water set the run time for 12 minutes (**This is just an example, your measurements could vary greatly**). Some irrigation systems apply water faster than the ground will absorb 1 inch of the water. To avoid water running off the landscape into the street, you may need to run these stations several short times instead of one long time. With this example, set the controller to run 6 minutes 2 times. See 'Soak and Cycle' and 'Aerate Lawn Area' for more ideas.
4. If the water levels in the catch cans are equal or near equal, your irrigation system is working efficiently (distributing water evenly). If the water level in each catch can vary greatly, go through the 'Irrigation Checkup' below to improve distribution of water in that zone.
5. Test each zone. Water application and distribution can vary by zone.

- **Soak and Cycle of Irrigation Method**

Some irrigation systems apply water faster than the ground will absorb 1 inch of the water. This is especially true in lawn areas. Mulched areas absorb water more efficiently. To avoid water running off the landscape into the street, you may need to run these stations several short times instead of one long time. Use soak and cycle method by:

1. Determine how long to run each zone. (see 'Catch Can Test')
2. Water these areas in 2 or 3 short cycles or 4 cycles if on a slope instead of 1 long cycle.
3. Wait 20 to 30 minutes between cycles.

Most irrigation controllers have a way to set different start times. If you have trouble programming your controller, visit the irrigation controller company's web site or contact their customer service for instructions for soak and cycle. Some newer controllers have a soak and cycle setting, so this may be a good time to upgrade your irrigation controller.

- **Always water after 6:00 pm and before 10:00 am**

- **Mow at Higher Setting**

Adjust the height setting on your mower up one or two notches. Taller grass will create shade which will reduce evaporation of water from the soil and protect the roots from excessive heat.

- **Do not Fertilize**

Plant growth naturally slows down and/or plants go dormant during a lengthy drought. Do not encourage new growth by fertilizing.

Conducting an Irrigation Checkup

Most of the time checking each sprinkler head for proper function and distribution will identify problems before the landscape starts suffering. A major problem with most irrigation systems is poor distribution and maintenance. Use this checklist to identify and fix problems yourself or call a licensed irrigator.

- Sprinkler head spraying water onto the sidewalk, driveway, or road
 - Fix: redirect pop up nozzles so that water is applied only on the landscape, if your spray pattern is greater than your landscaped area you may need to replace the nozzle with a different spray pattern;
- Spray nozzle missing, not operating, or reduced water flow
 - Fix: replace nozzle and filter; check nozzle and filter for damage or blockage;
- Poor distribution pattern
 - Fix: check nozzle for damage or blockage; replace nozzle with proper pattern; increase or decrease throw by turning screw on top of nozzle. Tighten the screw to decrease the throw or loosen the screw to lengthen the throw;
- Sprinkler head bubbling or gushing water out the top
 - Fix: cracked or broken nozzle; replace nozzle;
- Sprinkler head no longer straight up and down
 - Fix: reset pipe to perpendicular; this may require you to loosen the soil around the irrigation head and riser, pull the head perpendicular and then tamp the soil back in place or re-install tee;
- Sprinkler creates a cloud of mist
 - Fix: usually caused by too much pressure; install pressure regulator either at meter or use pressure regulating heads ;
- Grass, shrubbery or tree blocking distribution pattern
 - Fix: raise or lower riser; move sprinkler head;
- Dry landscape areas or poor coverage
 - Fix: Correct distribution; maintain a mulch layer on all planted beds; aerate and add about ½ inch of compost to lawn area;
- Water bubbling, dripping or gushing all the time
 - Fix: broken or leaking pipe or valve;
- Runoff occurs before adequate water applied
 - Fix: soak and cycle – on your irrigation controller set the station to run for two or three short intervals instead of one longer time;
- Area along road, driveway or sidewalk stays too dry
 - Fix: correct poor distribution; run this station for several short periods with about 30 minutes in between cycles; aerate and add about ½ inch of compost. The best alternative for this area may be to hand water or utilize soaker hoses.

Long Term Plans for Landscape Water Conservation

- **Change Nozzles**
Change sprinkler head spray nozzles to water conserving multi-stream nozzles which apply water in heavier droplets, so less water is lost due to displacement by wind and evaporation.
- **Replace Controller**
Replace an older irrigation controller with new models with water conserving settings (soak and cycle; seasonal adjustment) or with a smart controller which use evapotranspiration or moisture sensors to determine runtime.
- **Install a Rain and Freeze Sensor**
This sensor prevents an automatic system from applying water while raining or during freezing conditions to avoid loss of water and prevent hazardous ice conditions.
- **Drip Irrigation**
Install drip irrigation (many existing irrigation systems can be converted to drip irrigation). Drip irrigation is 90% efficient compared to spray irrigation which is about 65% efficient if designed, installed and maintained properly. There is now sub-surface drip tubing available for lawn areas. Drip irrigation tubing is available for you to do it yourself or hire a licensed irrigator. In some cases drip irrigation is exempt from drought restrictions.
- **Plant Drought Tolerant Plants**
Utilizing native and adaptive drought tolerant plants reduces the amount of landscape water needed. However changes should not be made to your landscape during a drought. Wait until drought conditions and watering restrictions have lifted before making any changes. The best time to plant is during the fall, winter or early spring. Texas A&M University Horticulture Department also has an Earth Kind website full of information and a plant search database at <http://aggie-horticulture.tamu.edu/earthkind/>.
- **Plant Trees**
Shade trees cool the landscape therefore lower the evapotranspiration rate. Evapotranspiration is the loss of water from the soil due to evaporation and from plants due to transpiration. Plant trees on the western side of your landscape to receive the most benefit from shading (this will also save electricity). Select trees from your cities' recommended plants list or go to <http://aggie-horticulture.tamu.edu/earthkind/>.
- **Aerate Lawn Area**
Clay soil becomes compacted over time from activities, rain and irrigation. To increase the soil's ability to absorb water, aerate the lawn area in the spring and apply about ¼ inch of compost. Do not however, aerate your lawn during a drought it will cause undue stress to the root zone.