

Efficient use of water can help:

- lower water bills
- minimize fungal diseases and insect pests
- reduce maintenance requirements
- conserve the water supply
- lessen water runoff that pollutes our waters

In this lesson we will examine some steps to good watering techniques.

Step 1: Match plants to the site. In planning new garden areas or replanting existing landscapes, try to match plants to the site based on water needs. If the area is poorly drained and often wet, select plants that can tolerate "wet feet". If the area is dry and well drained, select drought-tolerant plants. Drought-tolerant plants can usually survive on natural rainfall and do not require extra irrigation except during periods of extreme drought. Plants that are native to our area are often good choices. But keep in mind that not all native plants are drought tolerant.

Group plants according to their water and light needs. Turf grasses are always under stress during heavy droughts. However, turf is an important part in landscapes for many reasons. Turf is the best recreational surface for children and athletes because it can withstand wear from foot traffic. It ties landscapes together and is a very efficient filter for pollutants (heat,

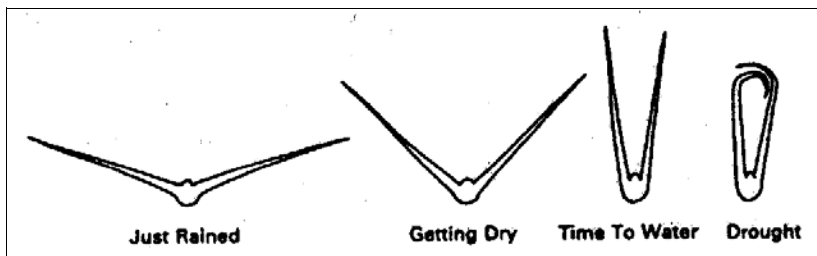
noise, water, air). Next to virgin forests, turf has the highest ability to harvest water and recharge groundwater resources. To reduce maintenance, many homeowners have chosen to reduce the amount of turf and replace it with ground covers and mulched beds.

Step 2: Use a sensing device to regulate irrigation. If you have an automatic sprinkling system, make sure it has a sensor that will turn off the system when 3/4 inch or more of rain has fallen. Test the sensor regularly to make sure it is operating correctly. If you don't have a sensor, during periods of heavy rain, turn the automatic timer to "off". Design or modify sprinkling systems so that lawn areas can be watered separately from other garden areas.

Step 3: Water only when needed. Let your lawn tell you when water is needed:

- lengthwise folding of grass blades
- bluish-gray color
- foot prints remain long after being made

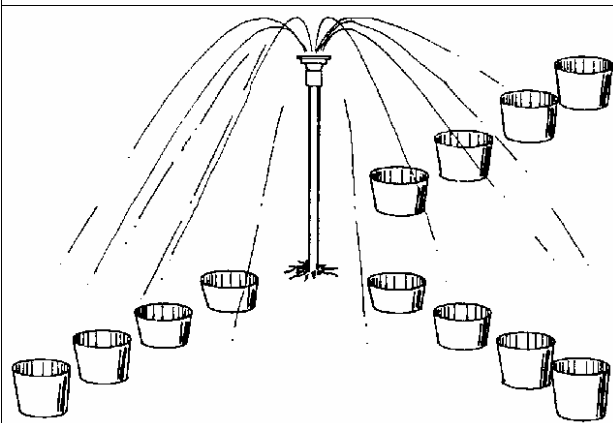
When 30-50 percent of the lawn shows these signs, apply 3/4 to 1 inch of water in one application. Don't water again until these symptoms reappear. During summer months, symptoms will usually occur 2-3 times per week. In winter months, watering



once every 10-14 days is usually sufficient. Use a rain gauge to help keep track of rainfall amounts and adjust irrigation as needed.

Step 4: Calibrate sprinklers. It is important to know how much water the irrigation system is applying. To determine this, use several flat-bottomed cans or cups placed around one watering area or zone. If the containers tend to tip over, hold them upright using a stick and rubber band. Turn on the sprinklers in this area for 15 minutes. Pour the water from all of the containers into a single container and use a ruler to measure the water depth to the nearest 1/8 inch. Divide this total by the number of containers used. This is the average amount of water delivered in 15 minutes. Adjust the watering time so that 3/4 to one inch of water is applied at each watering cycle. If you have more than one watering zone (on automatic sprinklers) or if you must move your hose-end sprinkler around to cover the entire yard, recalculate for each area. If you change automatic sprinkler heads, or purchase a new hose-end sprinkler, recalculate.

Step 5: Water early in the day. The best time to water is between 4 A.M. and



7 A.M. During these hours, temperature and wind speed are lower resulting in reduced water loss to evaporation. In addition, plant leaves will have time to dry as the day progresses. Watering later in the day, when temperatures are higher, can actually damage plants as evaporation rates are higher. Watering in late afternoon and evening is not recommended because leaves of plants and grass stay wet for extended periods of time and this can increase the occurrence of plant fungus.

If you do not have an automatic sprinkler system, consider using hose-end timers to come on between 4 A.M. and 7 A.M. Another alternative is to put hose-end sprinklers in place the afternoon or evening before and turn them on manually when you get up the following morning.

Frequent light watering cycles (less than 3/4 to 1 inch), are not recommended because they do not promote deep roots. Over-watering wastes water that penetrates below the root zone, and encourages the growth of fungus and dollar weed.

Central Florida is governed by watering regulations set up by the St. Johns River Water Management District. These restrictions prohibit watering between the hours of 10 A.M. and 4 P.M. daily. During periods of severe drought, these restrictions can be further increased. Current water restriction guidelines can be obtained from the local newspaper or from the Extension Office.

Step 6: Mow grass high. Recommended mowing heights for local turf grasses are:

- Bahia 3-4 inches
- St. Augustine 2 ½ (dwarf)
4 inches (standard)
- Centipede 1 ½- 2 inches
- Bermuda ¾-1 ½ inches

Grass root depth is directly related to blade height. The higher the grass, the deeper the root system. Deeper roots are better at absorbing water and less likely to be damaged by drought and freezing temperatures.

Plan to mow often enough so that only one-third of the grass blades are removed with the cut. Waiting too long between mowing intervals stresses the grass.

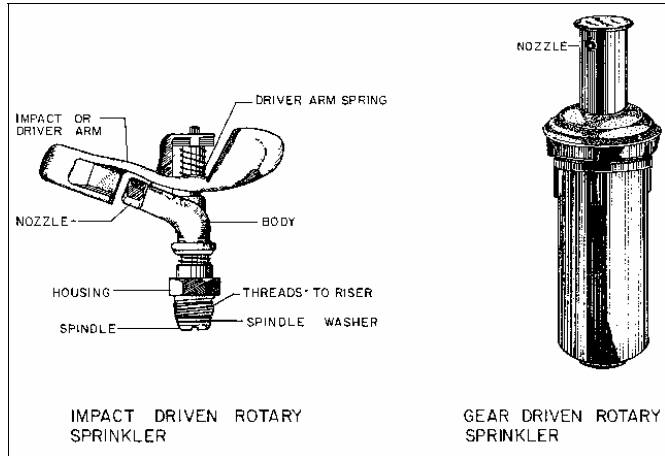
Step 7: Use low volume irrigation when possible. Consider using drip or micro spray irrigation systems to more efficiently water plant and flower beds. Drip lines and small spray jets are available. These applications are more efficient because they place water directly on each plant root area without water loss due to over spraying and wind drift. Additionally, a minimum of water is lost through evaporation. Micro systems usually operate very quietly so they are desirable around outdoor patio, pool and porch areas.

Irrigation Design Tips: Designing an irrigation system involves a lot of work and may be best done by a professional. If you are considering installing an irrigation system, follow these design tips.

- Create a detailed landscape plan showing existing lawn beds, trees, plant beds, driveways, walkways, etc.

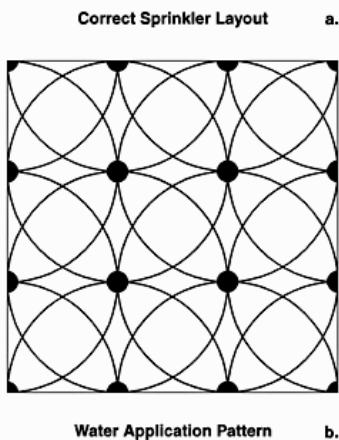
- Group plants based on water needs. Never put woody landscape plants and lawn areas on the same zone because the water requirements are different.

- Don't mix spray heads on the same zone. **Impact and gear driven rotary**



heads require a pressure of 30 to 80 psi and cover a 40' to 100' radius. Water application rates vary from 0.2" to 0.5" per hour. These are commonly used for large areas of lawn. **Spray heads** require pressure of 15 to 35 psi, cover a 10' to 20' radius, and are typically used in ornamental beds. Water is applied at the rate of 1" to 2" per hour. Never put spray heads and rotary heads in the same zone because of the different application rates.

- Design for overlap. To get uniform application, sprinklers must overlap because the amount of water applied decreases as the distance from the spray head increases. Plan for a 50% overlap of wetting patterns.
- Select a time clock that has a water



budgeting feature. With these, run time can be increased to go over 90 minutes per zone if needed.

- Get water away from

the base of the house. Based on the new Florida building code that took effect March 1, 2001, irrigation heads cannot discharge water within 1 foot of a structure. Water breaks down the termiticide and can wash away soil from the foundation creating gaps in treatment.

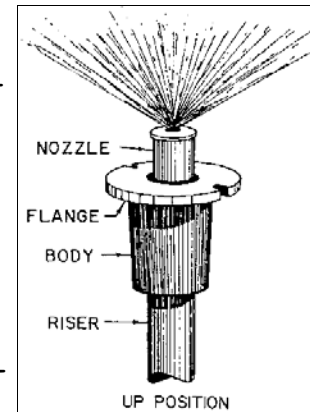
- Use micro irrigation in ornamental beds. Although more labor intensive, they are great water savers. Because they are efficient water users, they are normally exempt from mandatory water restrictions. When using micro irrigation, pressure regulators and filters are required.
- A backflow prevention device is required if using city water and is a good idea with any water source. This will prevent contaminating the water supply if chemicals are injected into the system. In addition to the backflow prevention system, add a fitting in the pipe to enable the injection of chemicals and fertilizers. This will allow you to clean out the system, which is especially good for micro irrigation systems.

Once the system is installed, it should still be managed. But design is the first step to an efficient system. For more information on irrigation, check out the following web-sites: <http://waterconservation.ifas.ufl.edu>; <http://rainbird.com>; <http://www.lrnelson.com>; and <http://toro.com>.

Management of Irrigation Systems:

- Because sprinklers are often running when we're asleep, perform a visual inspection weekly to identify leaks, broken sprinkler head, sprinkler coverage, and other system problems.

- Micro irrigation systems clog due to poor water quality and should be cleaned once per year by injecting chlorine at the rate of 1 to 4 cups chlorine per gallon of water. The concentration at the end of the line should be 2 parts per million chlorine. A pool kit can be used to verify the amount.



- Adjust sprinkler times to correspond to the season and weather conditions. An automatic sensor device will do this for you but it should be monitored to make sure it's working properly.

Acknowledgments

The Florida Yardstick Workbook; ed. Billie Lofland. University of Florida Cooperative Extension Service, Bulletin 325.

A Guide to Environmentally Friendly Landscaping, Florida Yards and Neighborhoods Handbook; Allen Garner, John Stevely, et.al. University of Florida Cooperative Extension Service, 1996.

Documents from the Florida Cooperative Extension Service:

Let Your Lawn Tell You When to Water. Fact Sheet ENH-63, 2000.

Watering Your Florida Lawn. Fact Sheet ENH-9, 1995.

Microirrigation in the Landscape. Fact Sheet AE-254, 1996.

Irrigation of Lawns and Gardens. Circular 825, 1989.

Web site for the University of Florida, Institute of Food and Agricultural Sciences

<http://edis.ifas.ufl.edu>

Web site for the Texas Agricultural Extension Service

<http://aggie-horticulture.tamu.edu/plantanswers/drought/drought2.html>