

# Earth Kind:

## Environmental Stewardship Program

### Low Volume Irrigation:

Efficient irrigation is one of the key Earth Kind practices for conserving water in the landscape. Low volume irrigation systems (sometimes referred to as drip or trickle irrigation) are among the most effective means of achieving significant water savings. Despite the tremendous potential for water conservation, these systems are not widely used in residential landscapes.



Like conventional overhead irrigation systems, low volume systems require proper design, installation, maintenance and operation for optimum water savings and plant performance.

**Design:** Unlike overhead irrigation systems, the primary design goal of a low volume system is to apply water to a uniform soil depth, either directly to the plant root zone or in a limited area. Water is delivered at or below the surface of the planted area versus to the surface of the planted area.

**Installation:** Most low volume irrigation systems are installed at or near the surface of the landscape area and covered with 2-3 inches of mulch. Typically, this type of installation requires less time and cost than a conventional overhead system. In some commercial applications, the system is installed in an underground trench and exposure of any drip tubing is minimal. These types of sub-irrigation systems are becoming increasingly popular for turfgrass applications.



**Maintenance:** Maintaining a low volume system requires careful attention because problems may be less noticeable than a conventional overhead irrigation system. A clogged emitter, leak or other breakdown in the system can be difficult to detect since components are often not visible. However, most problems can be repaired faster and more easily than conventional systems.

**Operation:** Like all types of irrigation systems, if not operated properly, low volume systems can be wasteful and ineffective. A thorough understanding of the landscape's soil/plant/water relationship is critically important in determining how much water should be applied at each irrigation. Low volume systems must operate within hydraulic specifications and operating pressures for optimum performance.

Earth Kind uses research-proven techniques to provide maximum gardening and landscape enjoyment while preserving and protecting our environment.

The objective of Earth Kind is to combine the best of organic and traditional gardening and landscaping principles to create a new horticultural system based on real-world effectiveness and environmental responsibility.

The principal goals of Earth Kind include:

- Water conservation
- The safe use and handling of fertilizers & pesticides
- Reduction of yard wastes entering urban landfills

As your interest and knowledge in these areas grows you will have an increased awareness of the many programs, practices and activities that are Earth Kind. Working together we can make a difference in conserving and protecting our valuable natural resources.

*For more information  
see our Web site:*

**EarthKind.tamu.edu**



### Benefits of Low-Volume Irrigation:

**Improved Water Management:** One of the most important benefits of low-volume irrigation is the potential to reduce or eliminate water waste. Low-volume systems do an excellent job of applying water to meet specific plant needs. The rate of application also more closely matches the soil's infiltration rate, and water is directly applied to the plant root system/zone to maximize water use efficiency and reduce losses through evaporation. Since water is directed exactly where it is needed most, very little is wasted on the areas between widely spaced plants, OR on streets, walks and gutters.



**Lower Maintenance Costs:** A conventional sprinkler system can spray water onto windows, erode paving, wash away paint and plaster, and rot wood. A low-volume irrigation system keeps water off windows, streets, walls and fences, which helps reduce the maintenance costs associated with replastering, repaving, repainting and rebuilding.



**Plant Health:** Numerous studies have shown that low-volume irrigation is more effective at maintaining optimum plant health than conventional, overhead systems. The top half of a plant's root system absorbs up to 70 percent of the plant's water and nutrient intake. Because low volume systems apply water at or below the soil surface, these systems do an excellent job of meeting plant water needs, reducing stress and enhancing plant health.

Low volume systems also assist in reducing significant fluctuations in soil wetting and drying. When properly managed, low-volume systems optimize soil moisture levels between irrigations. This also enables landscape plants to tolerate higher levels of salinity in the irrigation water. Since low volume irrigation limits the amount of water on the plant's foliage, these systems can greatly assist in avoiding plant diseases.

### Common Low Volume Irrigation Systems:

**Soaker Hose:** A soaker hose is one of the most basic means of applying supplemental irrigation to the landscape. Small holes in the hose provide a low volume of water which "soaks" in to the soil. A soaker hose can be moved to various locations within the landscape or it can be left in a more permanent location and pressurized by a regular garden hose as needed. Most soaker hoses are used in conjunction with an automated system .

**Porous Hose:** A porous hose is very similar to a soaker hose. However, its unique construction material enables the entire hose to deliver irrigation water. These systems are frequently used in landscape beds and are also used in sub-irrigation systems for turfgrass. A porous hose can be an effective means of providing water to the landscape, however, the delivery rate can be somewhat variable in areas that are not level.



**Drip:** Drip systems typically use polyethylene pipe to deliver water to a small drip emitter. Emitters come in a variety of sizes, shapes and specifications. Most are rated in gallons/hour, making it relatively easy to determine how much water is being applied at each irrigation. Drip emitters can be spaced evenly along the delivery pipe or clustered at specific locations within the landscape area. Drip emitters with pressure compensation and backflow prevention provide optimum control over the volume of irrigation water supplied.

**Water Quality:** Carbonates and Bicarbonates in the water (hardness) can affect both porous hose and drip systems. Successive wetting and drying cycles can cause these salts to form deposits which limit flow rate or render the system inoperable (clogged or blocked emitters). A pre-filter can help address this potential problem but long term use usually results in some system breakdowns. That's why a good maintenance program is critical for optimum performance.

The use of a "good" low-volume irrigation system is one of the most valuable Earth Kind practices available for conserving water in the landscape. These systems are typically low cost, easy to operate and relatively maintenance free. Despite these advantages, Low volume irrigation is not widely used in residential landscapes.