



## DRIP IRRIGATION

For many landscapes, drip irrigation is a better way to water. This method is superior to sprinkling or hand watering because it:

- ⓐ Doesn't waste water on weeds and unplanted areas.
- ⓐ Improves plant growth by keeping roots moist but leaving the surface dry so the soil can breathe.
- ⓐ Reduces plant diseases caused by splashing soil and wetting foliage.
- ⓐ Saves time otherwise spent moving hoses, adjusting sprinklers, weeding, and controlling diseases.
- ⓐ Prevents erosion and runoff that wastes water resources and pollutes our waterways.

Drip irrigation can be used for trees, shrubs, vegetable and flowerbeds, and even container plants. It is not commonly used for lawns.

### The Drip Difference

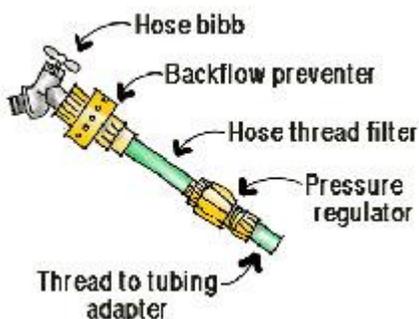
A drip system works very differently than a sprinkler. It employs flexible plastic tubing, which can be shallowly buried or lay on the soil surface. Water is applied directly to the soil through tiny outlets called "emitters," "mistifiers," and "micro-sprays," which vary depending on the garden layout, terrain, soil types, and maintenance needs. A drip system allows you to maintain an ideal moisture level in your soil, which promotes stronger, healthier plants. It's easy to use and adaptable to most garden situations.

With conventional irrigation, water is lost to evaporation and run-off. It is also distributed unevenly to the root zone.

With drip irrigation, dry mulch on top of the soil stops evaporation, and water is distributed evenly to the root zone.

### How to Plan and Select a Drip System

- ⓐ Draw a map of your garden showing the sizes and locations of your plants and beds.
- ⓐ Using the information below, identify the emitters, mistifiers, and micro-sprays you need for each situation.
- ⓐ Sketch a layout of tubing lines to deliver water where needed.
- ⓐ Count the parts and measure the tubing needed.
- ⓐ Purchase components and install the system.



### Choosing the Right Parts—

#### **For Faucet Assembly**

Three essential parts should be installed in every drip system:

- ⓐ A backflow preventer keeps dirty water or fertilizers from entering drinking water.
- ⓐ A filter removes debris, which can clog emitters.
- ⓐ A pressure reducer helps deliver water evenly and prevents damage to the system.

**For Containers:**

Misters or closely spaced emitters are needed to spread water through quick draining potting mixes. Containers need frequent but brief watering. They should be watered separately from other garden zones.

**For Ground Covers and Leafy Crops:**

Micro-sprays are used to water closely planted ground covers and plants that prefer moist foliage. Sprays are sometimes used to soak the entire root zones of trees.

**For Annual and Perennial Beds:**

Emitter lines and drip tape are used to thoroughly water closely planted beds. Both have emitters pre-installed at regular spacings (usually 6", 12", or 18" apart). Emitter spacings and flow rates are selected depending on the plant layout and soil type.

**For Shrubs and Trees:**

Emitters are placed near the base of each plant. As plants grow, emitters are added to water the larger root zones.



How to Use Drip Systems Effectively

Used properly, drip irrigation allows you to water just enough to keep the soil around the roots moist. How often and how long you water depends on the soil type and system flow rates. For instance, sandy soils need more frequent, shorter irrigation than clay soils. To check what your garden needs, dig in the soil before and after watering to see when irrigation is required and how long the system should run.

Examples of Weekly Drip Irrigation Schedules			
Planting Type	Emitter Layout	Water Use	Total Weekly Run Time
Shrubs and trees	One emitter (1 gallon/hour) per 4 square feet of canopy	1/2" per week	Two 40 minute applications
Annual and Perennials	One emitter (1 gallon/hour) per square foot of planted bed	3/4" - 1" per week	Two 20 minute or three 15 minute applications

Emitters: How Many and Where?		
Plant spread	Emitters*	Placement
under 2'	1	2-6" from plant
2-4'	2	1' on either side
4-6'	3	2-3' from plant
over 6'	1 per 2.5' diam.	2' apart in diam. around plant
*Emitters can be spaced 50% further apart on clay soils.		

## How Proper Care Makes Drip Systems Trouble-Free

Most common problems with drip irrigation can be avoided with proper maintenance. Drip irrigation may not be appropriate for gardens where this level of care is not possible:

- Hoeing, transplanting, and other activities that can damage parts should be done by someone who is aware of the drip system and careful to avoid damaging lines.
- Check and clean filters regularly.
- Each autumn, drain lines that do not empty naturally through emitters, to prevent fittings from freeze damage.
- Each spring, open the ends of the tubing, and run water through the system to flush out debris.
- Check the system regularly while it is running. Listen for leaks and look for sprays or wet areas caused by broken emitters or fittings.

Use electric timers to turn the system on and off. Battery operated units that screw onto outdoor faucets are inexpensive and simple to use. Plug-in timers that control electric valves are more economical for multiple zone systems.

Common questions:

### ***Can I install my own drip system?***

Yes. It's easy. The system parts fit together without special tools and can be hooked up to any outdoor faucet.

### ***Are soaker hoses considered a drip system?***

Not exactly. Soaker hoses use the same concept, but they are generally much less efficient. Their flow rates vary widely and result in uneven watering.

### ***Is clogging a problem with drip systems?***

Not if you use inexpensive filters and new types of emitters that flush out debris and resist plugging.

### ***Are drip lines damaged by garden maintenance?***

Not if the system is well planned and the garden tended by someone who knows about the system.

### ***Is drip irrigation expensive?***

Since a drip system can be installed above ground, it's cheaper to put in than sprinkler systems. Once installed, it can pay for itself in time and water savings.

### ***Can a sprinkler system be converted to a drip system?***

Easily. Sprinkler heads can be replaced with connections to drip tubing.