



NEWSPAPER ARTICLES

Drip Irrigation 101: Drip Irrigation for Landscapes (April 16, 2022)

by Nancy Hawkins, UCCE Master Gardener

In this age of on-going drought and water rationing, drip irrigation can help homeowners meet the water requirements of their landscapes. Drip irrigation is the slow, frequent application of water through emitters. Emitters are built in or attached to 1/2" or 5/8" inch flexible tubing to carry water to each plant, tree, or garden pot. A basic drip system has three basic parts: a control system, a distribution system, and the emitters.

Before talking about the parts of a drip irrigation system, a few words on water. Since water in a drip system passes through very small openings, it is essential the water be clean and free of algae or sediment, has low hardness, and has a pressure of 20-30 psi (pounds per square inch). Most municipal water supplies meet or exceed these requirements. Well water needs to be checked for cleanliness, pressure and hardness before installing a drip irrigation system.

Ready for a deep dive into drip irrigation basics and terms? Read on!

1. Control System The main components of the control system are a controller with valves, a filter, and a pressure regulator. There are several types of **controllers**. The simplest is a mechanical valve that connects to a faucet that can be set for a certain amount of time.

Next in complexity is a controller with a single valve. It is battery operated, mounted on a single faucet or pipeline. Start times and run days can be set as needed.

A more complex controller has several stations. Each can be connected to an anti-siphon style solenoid valve to prevent back flow. Four to six stations are the most common, but more are available. Each station's run time can be set separately.

This type of controller is first set up by inputting the current time and day of the week. A program is then created by selecting the time of day to start (early mornings are best), days of the week to run, and each station's run time. If a controller has multiple programs, follow the same steps for each program being used. Once the controller is set on Auto Run, it will begin the program at the start time on day of the week selected and will operate the selected valves one after another with the selected run times.

To protect your drip system from becoming contaminated and to prevent possible clogging or reduced flow from emitters or spray heads, a filter is needed. There are three basic types: a hose washer screen, a finger screen and a Y-Strainer. The hose washer screen has very small capacity and may clog easily, reducing the flow to the irrigation system. A finger screen has good capacity but requires disassembly from the hose connection to clean. The Y-strainer filter has a large capacity. It is easy to take apart and clean without disassembly from the piping.

A **pressure regulator** maintains a constant system pressure: 20, 25 or 30 psi are good choices. Position the regulator in line after the filter. If the filter is partially clogged, the regulator will still deliver the set pressure if it exceeds the regulator pressure.



2. Distribution System A drip irrigation distribution system consists of hose and tubing. Poly hose is either 1/2" or 5/8" in diameter. Poly hose connects to the controller, filter, and pressure regulator and is spread throughout the landscape area. 1/4" tubing is used to connect the larger diameter poly hose to individual plants or landscape areas.

There are several types of connectors and fittings. For poly hose, the connectors are either insert, compression, or insert with a tightening ring. Check the diameter of the poly hose to use the proper size connectors. Compression connectors are permanent (not easy to remove) and very difficult to install. Plain insert connectors are easier to install but care is needed to get the right size for the hose or they can come off under pressure. Insert connectors with tightening rings are easy to install, fail safe, removable, and reusable.

Types of hose fittings include hose swivel adapter, swivel tee, swivel 90-degree ell, three-way tee, coupling, end cap, figure-8 end.

Fittings for 1/4" poly tubing fittings are all the insert type (barbs). These include couplings, tees, elbows, and end plugs.

3. Emitters The last major components of a drip irrigation system are the emitters, which can be either separate emitters or tubing with emitters inserted every 6-12 inches. These devices are designed to deliver water at a certain flow rate to a small area. Emitter flow rates are commonly 0.5, 1 or 2 gph (gallons/hour). Emission devices are connected by 1/4" barb fittings directly to the poly hose by punching a hole in the hose wall and popping the device in. (Note the flow direction, the sharp barb always goes into the hose). As an alternative, the device can be attached indirectly to poly hose via a 1/4" tubing.



Emitter-line tubing flow rate is always 0.5 gph per outlet when operated at system pressure. Emitter-line is useful for vegetables, raised beds and pots. For example, 1/4" emitter-line with emitters spaced 6" apart can be connected directly to a drip hose and run for up to 19' with even distribution of water.

Finally, maintenance and system design are key for the successful operation of a drip irrigation system. Maintenance is important for any irrigation system, but even more so for a drip system. Periodically, check the system while running for hose or tubing damage, leaks, and emission device clogging. (One disadvantage to drip irrigation systems is their susceptibility to hoe or clipper blight!) Clean filter screens before each irrigation season. Open hose ends seasonally to flush out any contaminants or mineral build up. Check soil under emitters often, especially in the summer months, for moisture distribution and depth.

An efficient drip irrigation system depends on a System Design that is planned in advance of installation and planting. Ideally, each valve on a controller is dedicated to a different hydrozone--an area based on each plant's water need and sun exposure. Trees in the landscape will take more water and need to be zoned together for longer irrigation times, or with multiple higher flow rate emitters for each tree. Judgment and a good knowledge of plants and their water use requirements are essential.

Plan drip irrigation programs to run a minimum of one hour or more 2-3 days a week during the peak of summer. Using drip irrigation, less frequent, longer irrigation periods will help to establish a wider, deeper root zone. With longer irrigation times, there is no need to water daily. Check water distribution and depth often by using a water probe, a long wooden or metal stick, or even your finger.

Drip irrigation offers several advantages to home gardeners. Water is placed more accurately and efficiently in the root zone. Water is applied at a slow rate, reducing water loss from run off or evaporation. Some best

management practices apply to all irrigation systems. These include creating hydrozones, applying the right amount of water, watering deeply and less frequently, applying mulch, avoiding runoff, providing regular maintenance, and adjusting irrigation and controller as weather and seasons change.

You have completed your course on Drip Irrigation 101! Now, it is time for you to plan, install, and maintain your own drip irrigation system.

The Master Gardeners will be available to answer your questions at a few select locations in the next few months!

Visalia Farmer's Market- 1st & 3rd Saturdays, 8-11 am, 2100 W. Caldwell Ave (behind Sears)

Ace Hardware, Visalia - 1st Sat./every month, 10 am-1 pm

Luis Nursery, Visalia - 2nd Sat./every month, 10 am-2 pm

Questions? Call us:

Call us: Master Gardeners in Tulare County: (559) 684-3325, Tues & Thurs, 9:30-11:30;

Kings County: (559) 852-2736, Thursday Only, 9:30-11:30 a.m

Visit our website to search past articles, find links to UC gardening information, or to email us with your questions:

http://ucanr.edu/sites/UC_Master_Gardeners/

Visit us on Facebook at: <https://www.facebook.com/mgtularekings14/>

Instagram at: @mgtularekings