**Drip Irrigation: Why it Works**

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Drip irrigation is the irrigation practice that distributes low-flows of water directly to the soil above plant roots.

It is considered the most efficient way to irrigate because water is not sprayed in the air to evaporate and it is not applied at high pressure, which would result in water flow away from the roots.

The method is also desirable because water is not applied to leaf surfaces to encourage fungal activity, and there is no water flow to cause erosion.

Drip irrigation does have some limitations. Water is applied in small quantities to a specific area of the root system, which means that the root system in the area must be fully developed before drought conditions arrive and enough water must be applied to maintain the root system in the wetted area.

These requirements mean that drip irrigation must start early in the season so that the feeder roots are fully developed before drought conditions make the plant entirely dependent on the area wetted by the emitter. It also means that the drip irrigation must be applied frequently. It does not work to apply water to the plant every few weeks. Think of the drip system like one of the modern automobile parts supply systems. There is no large stored supply of parts (or water).

Enough parts are provided for the day’s production. Early in its history, drip irrigation was called daily-flow irrigation since just enough water was provided to meet the day’s demands. We have learned that it may not require daily application, but for a large plant watered by a limited number of emitters, irrigating every two or three days in hot, dry weather is the norm.

Another issue is clogging by calcium and other constituents of our “hard” water. It is true that regular emitters will clog just as faucets do. You can flush out drip irrigation lines and emitters every year with vinegar solution that is allowed to sit in the lines for a day or more (20% cheap vinegar). I have found, however, that the easiest solution to hard water clogging is to use self-cleaning lines and emitters. My system is 12 years old and has been chewed by squirrels, run over by tillers and tangled in deer antlers, but it has never been clogged by calcium deposits.

Drip irrigation is not a difficult technology. It is relatively easy for a gardener to put in a small system as a do-it-yourself project for container plants, a raised bed garden or a shrub border.

Begin your exploration of drip irrigation by obtaining a copy of Drip-line Gardening by Tom Harris and Ron Csehil from their website, thehillcoountrygardener.com. It is the best $15 investment (CD) you will make.

The publication is a comprehensive handbook for creating, using and maintaining a drip system.

The parts for the system are available at irrigation specialty shops, area garden nurseries and big box stores like Lowe’s and Home Depot.

You can use the Drip Gardening Guide, internet drip irrigation planning sites and the planning aides available at some of the suppliers to plan your system. One of the easiest ways to plan is to purchase one of the many kits that are available for an initial drip irrigation venture. They usually attach to a hose or spigot and you can put a simple mechanical or battery-operated timer at the origin.

The kits may not use self-cleaning technology, so you may have to flush the lines and emitters each year with the vinegar flush.

A permanent drip system is the most desirable option, but using a leaky hose can be nearly as efficient. They are inexpensive and a timer can be attached at the water connection. Because of the temporary nature of leaky hoses, the SAWS drought restrictions do not treat them as an official drip system.

Leaky hoses are hoses that emit water access the length of the hose. They can be attached to a regular hose and then laid out along a row of flowers or vegetables or from plant to plant in a shrub border.

The key to efficient leaky-hose usage is to limit the water pressure applied. For most locations in the SAWS, a quarter to half turn of the spigot leaks the water out of the hose at about the same rate as a permanent drip system. If you apply any more flow than that, the water will flow out at a rate that may result in runoff, and you lose the advantages of a low-flow system.

Leaky hoses last about two years, in my experience, after which they begin to clog and, more likely, they begin to crack and disintegrate.