# Drip Irrigation

Drip irrigation is a controlled, slow application of water to soil over a long period of time, usually lasting several hours. The water flows under low pressure through plastic pipe/tubing laid along each row of plants. It reduces water loss by up to 60 percent. Flow rate needs to be adjusted so there is no flooding or runoff.

- Apply enough water to wet the soil to a depth of 4-6 inches
- Avoid frequent light applications of water
- Water in early daylight hours

**Planning a Drip System**:

- Source of clear water that flows at a rate of at least 2 to 5 gallons per minute with at least 30 to 40 pounds of pressure. If using a rain barrel, raise or elevate it to increase the pressure.
- Locate the area to be irrigated as close as possible to water source. Use a 5/8-inch or $\frac{3}{4}$-inch hose to get from house faucet to the header in the area to be irrigated
- Determine the layout of the area to be irrigated. Make a sketch using graph or grid paper draw the area and the tubing needs.
- Have a plan when you shop and take it with you.
- When buying irrigation equipment, avoid mixing brands of fittings, hoses and emitters unless they are compatible.
- Emitter selection and performance are keys to the success of all drip irrigation systems. Some emitters perform satisfactorily underground, while other tube is used only above ground. Emitter clogging is a major problem in drip irrigation. They clog easily.

**Operating a Drip System:**

- Operating a drip system is a matter of deciding how often to turn it on and how long to leave it on. The object is to maintain adequate soil moisture without wasting water.
- Bring the moisture level in the root zone up to a satisfactory level.

# Basic Part of a Drip System:

- **Valves**
  -Turns on or off the water flow through a pipe.

- **Backflow Preventer:**
  -Device that prevents dirt etc from being sucked back into your drinking water

- **Pressure Regulator:**
  -Reduces the water pressure and keeps it at a constant level.

- **Filter:**
  -Cleans the water.
  -Drip emitters have very small openings that are easily clogged.
  -A filter with a 150 or higher mesh screen is suggested.
  -A good quality filter (maximum pressure rating of 10,3 bars {150 PSI} or higher) may be installed before the pressure regulator, but inexpensive filters(usually do not list the pressure rating) often sold for drip systems should be installed after the pressure regulator.

- **Emitters:**
  -Controls how fast the water drips out onto the soil.
  - Most emitters are small plastic devices that either screw or snap onto a drip tube.
  -Common ones emit 4 liters/hour of water-about 1 gallon per hour.

- **Drip Tubing (Drip Hose):**
  -Special tubing used in most drip systems.
  -The tubing is laid on the ground surface between/or along side the plants
  -Emitter are installed on this drip tubing
  -Know what size and type you are buying. **Fittings can be different**
  -Do not bury drip tubing underground- gophers and moles love to chew these.
  -Hard-piped drip systems for high quality systems in commercial landscapes can be buried. This type require emitters installed onto the laterals and requires special emitters with threaded connections rather than barbs.

- **Drip Tube Fittings:**
  -Fittings ( includes tees, couplings and adapters) are the plastic connectors used to attach the drip tube to other tubes—make sure fittings are exact size for your tubing.
  **-Note:** both 15mm and 16mm tube are often labels as $\frac{1}{2}$ inch size in the USA

-Barb type fittings insert into the drip tube which sometimes split after a few years of sunlight exposure
-Goof plugs repair any holes made by mistake

- **Flush Valve or End Cap:**
  -Important: to be sure water does not run out the end of the drip tube.
  -Over time a layer of sediment develops inside the tube and needs to be flushed out
  -You can make a end cap/manual flush valve by just bending over the end of the drip tubing on itself to crimp off the flow.
  -6 inch double over will work fine
  -Use wire or a cable/zip tie to hold the tube in the crimped position.
  -Un-crimp and straighten the tube when you want to flush it.

- **Double Check System:**
  –Go back and check for leaks, directions of water flow, flooding

- **Big Drip Irrigation Mistake:**
  -Is not installing enough emitters
  -General rule: install at least 2 emitters for each plant
  -Spacing them 18" apart
  -Placing emitters right next to each other or installing a higher flow rate emitter will not help the plant!
  -A large tree might need 5 or more spaced uniformly under the drip line.
  -Typical drip system for a mature tree on a nice loam soil might have a drip tube that loops at least once around the tree trunk, for a big tree, it might make two or three loops around the trunk, spiraling out 36" further from the trunk with each loop and with emitters spaced about 36" apart on the tube.