



Drought Information

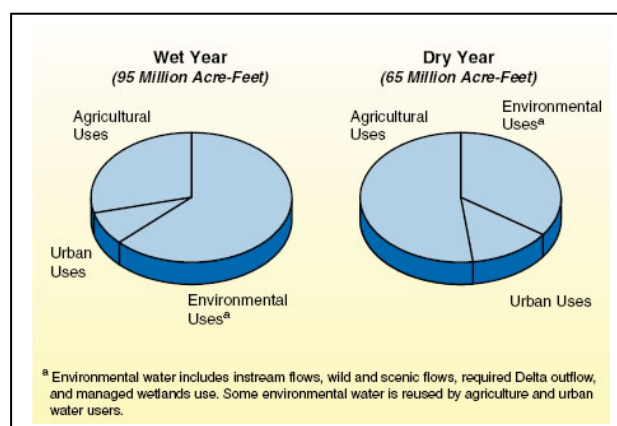
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Water Conserving Ideas for the Small Farm

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Water has become one of the most limiting factors in many ag situations. In a dry year agriculture accounts for a little over 50 percent of states total available water.

There are 4 general methods of irrigating including surface, sprinkler, micro-sprinkler and drip. Examples of surface irrigation include furrow, border, and basin while sprinkler irrigation methods include solid set, hand move, linear move, wheel line, hose pull, and other types including center pivot, gun-type systems. Drip can be surface run or buried. There has been a trend over the last 20 years toward increased applications with drip irrigation



Drip irrigation is the slow, deep and regular application of water directly to the root zone of your plants. Properly designed drip systems deliver water with very high uniformity which can lead to reductions in total applied water. Drip irrigation can use substantially less water than conventional sprinklers by providing water directly to the plants root system thereby reducing waste from runoff and evaporation. The water flows at a low pressure through polyethylene ("poly") pipes or soaker hoses laid in rows or serving groupings of plants. The water slowly enters the soil from emitters, pre-punched holes or porous pipe.

There are many advantages to using drip irrigation including water conservation, reduced soil erosion, reduced plant disease and weed growth, increased plant vigor and protection of our groundwater. It maintains a constant level of soil moisture, while not saturating the root zone. By reducing the amount of water splashed on plant foliage, drip irrigation discourages fungus and bacterial plant diseases.

The most critical component of any drip irrigation system is the emitter, sometimes called a dripper. In general, emitters deliver a regulated amount of water during a specified amount of time (flow rate). The most common flow rates are 0.5 gallons per hour (gph), 1 gph, and 2 gph. The flow rate is usually listed for a given pressure. Some drippers are pressure compensating. They maintain a relatively constant flow regardless of the pressure.

Plastic Mulch and Drip Irrigation

This method has become a common practice with most vegetable growers particularly organic farmers. The drip lines are either buried or left on surface under the plastic mulch. Its advantages and disadvantages are as follows:

Advantages:

Increased soil temperature	Reduced soil compaction
Reduced fertilizer leaching	Reduced drowning of crops
Reduced evaporation loss	Cleaner product
Less cultivation to control weed	Reduced weed problems
Earlier crops	Increased growth

Disadvantages:

Costly to remove	Greater initial cost
Increased management	Increased soil erosion
Increased crop/weed competition	

This practice of incorporating drip and plastic mulch is an environmentally sound farming practice since it conserves soil moisture and minimizes use of some agricultural chemicals that control weed. Plastic mulch often increases the soil temperature, with clear plastic having a greater heating effect than black plastic. This practice enables early planting that could give farmers the advantage of higher prices offered by early season markets. During summer months, the soil-heating effect of plastic mulches may be quite detrimental, inhibiting root growth in the upper soil layers and sometimes significantly decreasing yield. It is widely accepted practice by organic farmers. However, it is not environmental friendly practice if provisions are not made in terms of removing of the plastic mulch after harvest.

Q & A about Drip Tape (from T-Tape)

What do the numbers 504-08-670 mean?

The first number stands for the inside diameter of the hose.

3 = 3/8" (9.5mm) 7 = 7/8" (22mm)
5 = 5/8" (16mm) 9 = 9/8" or 1-1/8" (28.6mm)
11 = 1 1/8" or 1-3/8" (35mm)

The next 2 numbers are the thickness of the material in mils (1 mil = 0.001 inch).

04 = 4 mil (0.100mm) 08 = 8 mil (0.200mm)

05 = 5 mil (0.125mm) 10 = 10 mil (0.250mm)
06 = 6 mil (0.150mm) 15 = 15 mil (0.375mm)
07 = 7 mil (0.178mm) 20 = 20 mil (0.500mm)

The next 2 numbers stand for the emitter spacing (inches or cm).

		Metric
08 = 8"	18 = 18"	20 = (20cm) 45 = (45cm)
12 = 12"	24 = 24"	30 = (30cm) 60 = (60cm)
16 = 16"		40 = (40cm)

The last 3 numbers are the flow per 100 feet in gallons per minute or GPM (This is also referred to as the Q100.) In metric, the flow is measured in liters per hour per 100 meters.

		Metric
670 = 0.670 gpm per 100 feet		500 = (500 lph per 100 m)
450 = 0.450 gpm per 100 feet etc.		340 = (340 lph per 100 m)

Therefore, 504-08-670 has a 5/8" diameter, 4 mil wall thickness, an 8" emitter spacing and a flow rate of 0.670 gallons per minute per 100 feet.

What pressure do I run in my T-Tape?

For models 504, 505, 706 & 908 the pressure range is 4 to 8 psi (0.30 to 0.55 BAR).

For models 506, 708 & 910 the pressure range is 4 to 10 psi (0.30 to 0.70 BAR).

For model 912 the pressure range is 4 to 12 psi (0.30 to 1.05 BAR).

For all others it is 4 to 15 psi (0.30 to 1.05 BAR).

Should I install the tape with the emitters facing up or facing down?

The emitters should always be installed facing up. The words "This side up" as well as product identification are printed directly on the T-Tape. If the emitters are installed facing down there is a possibility of plugging due to the fact that any fine sand or silt will settle to the bottom of the tape plugging the inlets.

Should I install T-Tape on top of the ground or underground?

It depends on the type of crops and on the growing practices. T-Tape is commonly buried at depths of 1 to 24 inches (2.5 to 60 cm). This will result in the following advantages:

- * Reduced field damage from animals and workers in the field.
- * Maintains the T-Tape in the proper location so it is not moved by wind or temperature fluctuations.

Is it O.K. to install T-Tape under plastic mulch?

* Yes. Drip tape has been used under plastic mulch for many years. Certain precautions need to be taken.

* When using opaque plastic mulch one should be careful not to cut the tape when planting through the mulch.

* If using clear plastic mulch there exists the possibility of burning of the T-Tape by the sun's rays being focused by water droplets formed on the underside of the plastic. It is advisable to completely bury the tape when used under clear plastic.

References:

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<http://spokane-county.wsu.edu/spokane/eastside/Fact%20Sheets/C191%20Drip%20Irrigation%2005.pdf>

<http://marketingoutreach.usda.gov/info/99Manual/suppirr.html>

<http://www.t-tape.com/common-questions.aspx>

[Click here to link to the Small Farms and Specialty Crops website](#)