Southern University Agricultural Research and Extension Center

Enhancing Capacity of Louisiana's Small Farms and Businesses

Sustsainable Urban Agriculture Certification Program

Supplementary Irrigation for the Urban Gardener

WHAT IS IT & HOW DOES IT APPLY TO YOU?

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Louisiana is blessed with adequate rainfall—annual average of 67 inches—and warm weather. However, there are dry periods where supplementary irrigation is needed. Supplementary irrigation is water application when natural precipitation is not adequate to secure crop production.

There are several factors that one has to consider in planning an irrigation system. It is important to ensure there is an adequate water supply and of good quality. Some of the questions that need to be addressed before investing in an irrigation system are: is sufficient labor available to operate the irrigation system; is capital available to purchase the necessary irrigation equipment; and will irrigation significantly increase yield over a period of years to justify cost.

Proper irrigation has several benefits, such as securing crop production, increasing yield, improving crop quality, allowing controlled time of planting, and increasing efficiency of fertigation (application of irrigation and fertilization).

The major irrigation methods are subsurface and surface irrigation. Water application methods depend on farm or garden size and land topography. Some of the methods include watering can, garden hose, drip irrigation, sprinkler irrigation, furrow irrigation, and flood irrigation. Based on irrigation research conducted at the Southern University farm, drip irrigation is recommended for Southern Louisiana or for areas of flat topography, 0-3% slope.

Drip irrigation is the slow application of a small amount of water through emitters or tiny holes spaced along polyethylene tubing or tape (Fig. 1). It is also called trickle or micro-irrigation. It is generally used for high value crops, such as tomatoes, peppers, eggplants, squash, greens, and strawberries.

There are many advantages of drip irrigation, including high water use efficiency; less weed population; no runoff or soil erosion; reduced crop contact with crop leaves, stem and fruit; improved seed germination; efficient application of fertilizers and agricultural chemicals; maximum use of available water and crop yield; and low labor and relatively low operation costs.

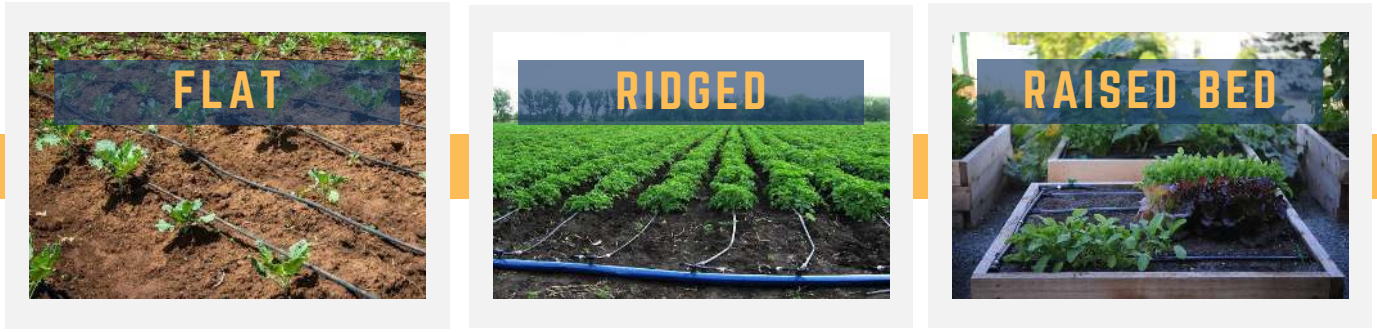

Figure 1: Drip irrigation for vegetable production for flat, ridged and raised beds.

DRIP IRRIGATION COMPONENTS

The important components of a drip irrigation system include a water source, pump or city water, backflow preventer, injector, filter, pressure regulator, valves, a distribution system of pipes or laterals, and drip tape or tubes (Fig. 2). An injector is needed for fertigation.

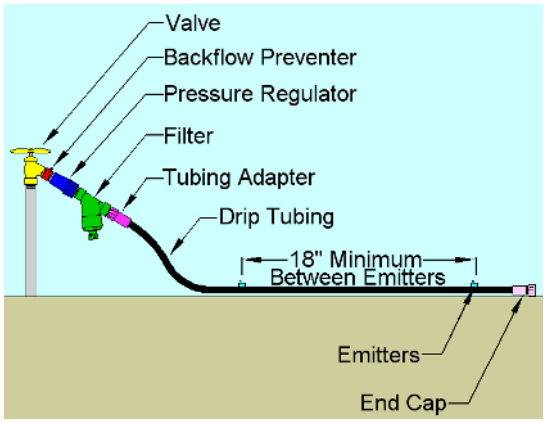

Figure 2: Drip irrigation components and assembly for ½" tubing.

SOURCES OF DRIP PARTS

Irrigation supplies are available online and in almost all hardware stores in the State. Call Southern University Ag Center for more information about local vendors. The biggest supplier in Louisiana is Irrigation-Mart, located in Baton Rouge and Ruston. An example drip irrigation kit is shown in Fig. 3.

DRIP IRRIGATION INSTALLATION PROCEDURES

When properly designed, installed and managed, drip irrigation may achieve water conservation by reducing evaporation and deep drainage, compared to sprinkler or flood irrigation. Drip irrigation can eliminate many diseases that are spread through water contact with the foliage.

Drip irrigation can be installed in flat, ridged rows or raised beds. Drip irrigation assembly is shown in Fig. 2. Follow the arrow on the drip fittings when connecting the parts. The arrow indicates the direction of the water.

Screw the backflow preventer to the valve (faucet) or end of garden hose, followed by the pressure regulator, filter, and tubing adapter as show in Fig. 2. Place the lateral hose across rows to be watered and use fittings such as tees, elbows and ball valves to arrange and operate system as desired. Cut drip tape (to desired length) and place along rows. The drip tape may be buried.

Figure 3: Drip tape irrigation kit.

At each row, punch a hole in the lateral hose and connect it to the drip tape using an adapter. Flush the system two times by turning on water before closing ends. Close ends of the hose using a valve or figure 8 hose end (Fig. 3). Close ends of drip tape with loc-sleeve male ends or auto-drain valves to make tight closures. Ends can also be closed by cutting a 2 - 3 inch piece of drip tape, folding the end of the drip line and inserting it into the small piece of tape.

Use clean water and pass it through the filter. A water timer and controller can be used to control the system. Fertilizers and other chemicals may be applied with the system by using chemical injectors. Before planting, run the drip system for about 10 minutes to locate the emitters and wet zone areas in order to place the seed right at the emitters for efficient use of water.

WHEN TO IRRIGATE

For the best response, irrigate as frequently as possible depending on the soil texture. Always keep the soil moist and avoid flooding. Use a soil auger or trowel and feel the soil between your fingers to determine wet, moist or dry soil conditions. Heavy soils high in clay should not be irrigated frequently because clay soils have greater water holding capacity. The irrigation interval could be greater than 5 days. On the other hand, light, sandy soils like sandy loam are irrigated frequently, every 4 to 5 days. The outcome of proper irrigation system is high yield and quality produce (Fig.4).

Figure 4: The result of drip irrigation at the Lighthouse Mission garden in Opelousas, LA .

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