

IRRIGATION METHODS IN THE GARDEN AND LANDSCAPE



The IDEA Garden is a joint project of
Smith County Master Gardeners,
Smith County Extension Service and
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IRRIGATION METHODS

Four distinct methods of irrigating are sprinkling, flooding, furrow irrigation and drip irrigation. Consider the equipment and technique involved in each method before selecting the "right" system. Select a system that will give plants sufficient moisture without wasting water.

HOSE-END SPRINKLING

Sprinkler irrigation, or "hose-end overhead sprinkling" as it is sometimes called, is the most popular and most common watering method. Sprinkler units can be set up and moved about quickly and easily. Although they are inexpensive to buy, they can be extremely wasteful of water if used incorrectly.

Sprinkler equipment varies in cost from a few dollars for a small stationary unit to \$50 or more for units that move themselves. The best investment is an impact-driving sprinkler that can be set to water either a full or partial circle. **ADVANTAGES:** The system can be used on sloping as well as level areas. Salt does not accumulate because water percolates downward from the surface carrying salts with it. Different amounts of water can be applied to separate plantings to match plant requirements.

DISADVANTAGES: Irrigation in a wind of more than 5 mph distributes the water unevenly. Water is wasted by trying to cover a square or rectangular area with a circular pattern.

FLOOD IRRIGATION

Flooding is one of the oldest irrigation methods. It is often used in areas with extreme summer heat, especially in large farming operations. It can also be used in the home garden.

First, a shallow dam is raised the entire perimeter of the area to be watered. Water is then allowed to flow over the soil until the dammed area is completely covered. This should be used only if the area is level and the soil contains enough clay to cause the water to spread out over the surface and penetrate slowly and evenly. The soil must not remain flooded with water for more than a few hours.

ADVANTAGES: Useful where alkaline water causes a buildup of salts to toxic levels in the soil. Flooding flushes down the excess salts out of the soil.

DISADVANTAGES: Flooding can waste water because it is easy to apply much more water than is required to meet plant needs. Runoff is hard to avoid. Also, rapidly growing plants are injured by the low oxygen levels present and fruits resting on flooded soil stay wet, often resulting in rot.

FURROW IRRIGATION

This method is mainly used in vegetable gardens. Water flows along shallow ditches between the rows of plants and sinks in slowly. The water must reach the low end of the rows before much has soaked in at the high end. Most gardens can be irrigated easily with the furrow method by using a hoe or shovel to make shallow ditches. To test furrow irrigation, make one shallow ditch from end to end and run water down it. If the water runs 20 to 30 feet in a few minutes, that's fine. If the water sinks in too fast at the high end, divide the garden lengthwise into two or more runs and irrigate each run separately. Make a serpentine ditch to guide the water up and down short rows in small gardens on level ground.

ADVANTAGES: Leaves and fruit of erect plants such as beans and peppers stay dry. New seedlings can be watered as often as necessary to keep the seed bed moist. The surface soil does not pack as with sprinkler irrigation so there is less crusting.

DISADVANTAGES: Fruits of vine and tomato crops rest on the soil. Some will become affected with a soil rot after repeated wetting. In areas with salty water, salts accumulate near the center of the row and can injure plants. Wasting water at the ends of the rows can be a problem.

DRIP IRRIGATION

Trickle or drip irrigation is an improvement over all the above as a watering technique. It applies a small amount of water over a long period of time, usually several hours. The water flows under low pressure through plastic pipe or hose laid along each row of plants. The water drops out into the soil from tiny holes called orifices which are either precisely formed in the hose wall or in fittings called emitters that are plugged into the hose wall at a proper spacing.

ADVANTAGES: Drip irrigation can be used for vegetables, ornamental and fruit trees, shrubs, vines and container-grown plants outdoors. Soil moisture remains relatively constant, and air, as essential as water to the plant root system, is always available. Prevents extreme temperature fluctuations which result from wet/dry cycles of other watering methods. Reduces water loss by up to 60%. Requires little or no time for changing irrigation sets and only about half as much water as furrow or sprinkler irrigation because water is delivered drop by drop at the base of the plants.

DISADVANTAGES: Is not well suited for solid plantings of shallow-rooted plants such as grass and some ground covers.

For more in depth information on irrigation systems, pick up the publication "*Efficient Use of Water in the Garden and Landscape*" from your local Texas Agriculture Extension Service Office. In Tyler, this office is located at: 1517 W. Front Street, Suite 116, Tyler, Texas 75702

Check the Smith County Master Gardener web site for information about the IDEA Garden and upcoming gardening events:

<http://aggie-horticulture.tamu.edu/county/smith/mg/mg.html>

Educational programs conducted by the Texas Agricultural Extension Service and the Master Gardeners of Smith County serve people of all ages regardless of socio-economic level, race color, sex, religion, handicap or national origin.