

## *Perspective*

# Brief note on drip irrigation system

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## INTRODUCTION

Drop irrigation, also known as trickling irrigation, is a sort of micro-irrigation system that allows water to drip gently to the roots of plants from above or below the soil surface, potentially saving water and nutrients. Water should be delivered directly to the root zone to reduce evaporation. Drip irrigation systems use a network of valves, pipes, tubing, and emitters to transfer water. A drip irrigation system can be more efficient than other types of irrigation systems, such as surface irrigation or sprinkler irrigation, depending on how effectively it is planned, installed, maintained, and managed.

To establish the most appropriate drip irrigation system and components to be utilized in a certain installation, a thorough examination of all essential parameters such as land topography, soil, water, crop, and agro-climatic conditions is required.

## DESCRIPTION

### Micro-spray heads

Instead of dripping emitters, drip irrigation may employ micro-spray heads, which spray water in a limited area. These are typically employed on tree and vine crops that have a larger root zone.

### Subsurface drip irrigation

Subsurface Drip Irrigation (SDI) involves burying a dripper line or drip tape at or below the plant roots, either permanently or temporarily. It's becoming increasingly popular for row crop irrigation, particularly in locations where water resources are scarce or recycled water is employed. Pumps and valves in drip irrigation systems can be controlled manually or automatically by a controller.

To prevent tiny waterborne particles from obstructing the small

emitter flow route, most big drip irrigation systems include a filter. New technologies that reduce clogging are currently available (when?). Because potable water is already filtered at the water treatment plant, some residential systems are installed without extra filters. Filters are recommended by almost all drip irrigation equipment manufacturers, and many will not fulfill warranties unless this is done. Due to fine particle settling and unintentional particle insertion in the intermediate lines, last line filters right before the final delivery pipe are strongly suggested in addition to any other filtering system.

When employing recycled municipal wastewater, drip and subsurface drip irrigation is nearly often employed. Water that has not been sufficiently treated to meet potable water requirements is normally not allowed to be sprayed into the air. Traditional surface applications of timed-release fertiliser are sometimes unsuccessful in drip systems due to the manner the water is administered, thus liquid fertiliser is frequently mixed with the irrigation water. Fertigation and chemigation (the injection of insecticides and other chemicals to clean out the system on a regular basis, such as chlorine or sulfuric acid) both require chemical injectors such as diaphragm pumps, piston pumps, or aspirators. The chemicals can be applied continuously or at intervals while the system is irrigating. Recent university field testing employing drip Fertigation and slow water delivery have revealed fertiliser savings of up to 95% when compared to timed-release and irrigation by micro spray heads.

Drip irrigation, when properly designed, installed, and managed, may aid with water conservation by minimizing evaporation and deep drainage when compared to other methods of irrigation like flood or overhead sprinklers since water can be distributed more precisely to the plant roots. Drip irrigation can also remove several illnesses carried by water contact with vegetation. Finally, in areas where water resources are scarce, there may be no true water savings, but rather an increase in productivity while consuming the same quantity of

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water. The preferable strategy in highly dry places or on sandy soils is to apply irrigation water as slowly as possible.

Pulsed irrigation is occasionally used to reduce runoff or deep percolation by lowering the quantity of water fed to the plant at any given moment. Pulsed systems are often costly and require a lot of upkeep. As a result, emitter manufacturers are concentrating their efforts on creating new technologies that distribute irrigation water at ultra-low flow rates, such as less than 1.0 L (2.1 US pints; 1.8 imperial pints) per hour. Slow-and-even distribution enhances water efficiency even more without the cost and complexity of pulsed delivery systems.

An emitting pipe is a form of drip irrigation tube with pre-installed emitters that have a set distance and flow per hour based on the crop distance. An emitter inhibits water flow

through it, resulting in the head loss necessary to emit water in the form of droplets (to the extent of atmospheric pressure). Friction/turbulence within the emitter causes this head loss.

## CONCLUSION

Farms, business greenhouses, and household gardens all employ drip irrigation. Coconuts, containerized landscape trees, grapes, bananas, ber, eggplant, citrus, strawberries, sugarcane, cotton, maize, and tomatoes are among the crops and trees that benefit from drip irrigation in locations where water is scarce. Drip irrigation kits for home gardens, which include a timer, hose, and emitter, are becoming increasingly popular among homeowners. Irrigating flower pots is done with 4 mm (0.16 in) diameter hoses.