

## Sprinkler Irrigation: Potential micro irrigation system for horticultural crops

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Irrigation is essential to get high yield from the horticultural crops, because uneven distribution of rainfall throughout the year, especially during critical growth periods. Irregular precipitation can originate plant stress during critical growth periods, which would affect together crop productivity as well as produce quality. Most of the horticultural crops necessitate irrigation to diminish plant stress. Application of irrigation water in proper way during appropriate periods can increase the yield and quality of most horticultural crops in most years. Four irrigation methods such as surface, sprinkler, drip/trickle and subsurface are followed by the farmers to fetch high produce from field crops as well as horticultural crops. For watering big areas of farmland, drip and sprinkler irrigation are the most efficient irrigation systems for minimizing water and fertilizer losses. By filtering the water down through the soil and into the root system, some amount of the water after percolation meets into the groundwater system to be recycled for irrigating in future years. In drip and sprinkler system of irrigation water is delivered at or near the root zone of plants, drop by drop. This type of system can be the most water-efficient method of irrigation, if managed appropriately, since evaporation and runoff are minimized.

### Drip Irrigation Vs Sprinkler: Top Comparison



Fig. Drip irrigation Vs Sprinkler irrigation

Sprinklers waters big area. They are mostly useful in irrigating ground covers as well as horticultural crops to enhance water use efficiency.



**Fig. Sprinkler irrigation system**

Different types of sprinklers are used like impact sprinklers, oscillating sprinklers, drip sprinklers, underground sprinkler systems, and portable sprinklers. The main objective in designing a greater landscape irrigation system is to apply the same volume of water over the area being irrigated within the same window of time; this perception is known as distribution uniformity. It is a key point for high quality irrigation design and to irrigate huge area by least amount of water. Poor standardization results in over watering in some areas and under watering in other areas. The quantity of water is supplied in terms of depth per unit area and time to the farmland. The amount of water supplied does not exceed the 'infiltration rate' of the soil and will differ significantly based on soil type and degree of compaction. Diverse areas of the landscape may well have varied infiltration rates and water holding capabilities, hence will have differing water requirements.



**Fig. Sprinkler irrigation system in horticultural crops**

Sprinklers are efficient for sandy soils with high infiltration rates although they are adjustable to most of the soils. The average application rate from the sprinklers (in mm/hour) is constantly selected to be less than the basic infiltration rate of the soil so that surface water logging and runoff can be avoided. Sprinklers are not good for the soils which have the problem of crust formation. If sprinkler irrigation is the only method accessible, then light fine sprays could be used. The larger sprinklers producing big water droplets are to be avoided. A good clean supply of water, free of suspended sediments, is required to avoid problems of sprinkler nozzle blockage and spoiling the crop by coating it with sediment.

