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Alternative Irrigation Systems

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As of this writing, microirrigation is exempt from most local water restrictions. Microirrigation is the universal term for drip, trickle or microspray irrigation systems. Microirrigation systems apply water at a low pressure right where the plant roots can absorb it. Less water is lost through evaporation, misplacement (i.e. sprinklers that water the sidewalk), runoff and leaching. Agriculture and wholesale nurseries have utilized microirrigation for many years.

Microspray head

Until recently microirrigation systems were not practical for home landscapes. While these systems are not yet in wide landscape use, the current drought situation, and the increasing costs of water are forcing many contractors and homeowners to take a second look. Even now, microirrigation of turf is not yet practical. Depending upon location, lawns need 20 to 35 inches of waterfromirrigation per year while most woody plants in mulched areas require approximately 10 inches of water. Microirrigation systems can save money, water, and energy and can reduce the possibility of ground water pollution.

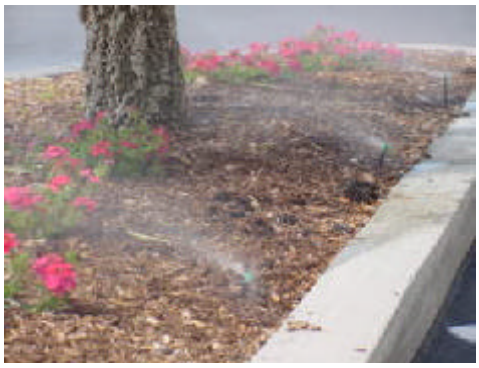
Drip and trickle systems

Drip products are well suited for narrow strip plantings, such as along hedge rows or in commercial landscaped or garden areas where wind drift of water from sprayers would be a problem. Emitters may be placed under mulch or buried in the soil to minimize exposure for either aesthetic purposes or to minimize damage through plant maintenance activities. However, such positioning does not provide for easy access for inspection of operation or replacement of damaged items and places the emitter in a location susceptible to root intrusion. This problem has been addressed by some manufacturers who have incorporated root deterrent chemicals into the emitters to control root intrusion. The quiet action of emitters is also an advantage for many indoor garden locations. Yet, it is difficult for the homeowner to know when these systems are operating and excessive irrigation is possible without proper use of timers, control clocks, and water meters. Similarly, the homeowner could leave the house or go to sleep while system is running, and without the aid of a time-clock, a large loss of water could

Water supply lines

result. Sprinklers and spray-jets can be seen and heard. Lateral water movement on sands from point-source drip emitters is generally limited to 10 to 12 inches. In addition, many landscape plants are shallow - rooted and are planted on relatively close spacings. Combining the soil and plant characteristics can result in the need for close drip emitter spacings.

Micro sprays



Microsprays in action

Spray-jets cover greater areas with water (diameters of coverage from 3 to 20 feet). Thus, fewer emission devices may be required to irrigate certain landscaped areas by using spray-jets rather than drippers. Various spray patterns are also available depending on the type of spray-jet used to accommodate the different landscape designs. In addition, flow rates of spray-jets are greater than drippers, 10 to 20 gallons per hour (gph) versus 0.25 to 2.0 gph. This results in larger flow paths which are less susceptible to clogging, the primary problem associated with microirrigation in Florida. Spray jets can also be easily observed while operating, thus allowing inspection for clogging, misting, proper spray orientation, or some other distortion of the discharge. However, plant branches and foliage can easily distort spray patterns, possibly necessitating placement of the sprayer above the canopy on a stationary or pop-up riser. Micro-sprayers emit water from an orifice onto a deflector plate and creates a fan type of water distribution pattern (fan-jet) with fine water droplets. In general, fan-jets have performed well when used for directional sprays and confined area applications. The addition of shaping vanes (spokes) to the deflection area creates streams of water which are less susceptible to distortion, and result in spoke-shaped application patterns (spoke-jets). These work well as single tree emitters and can be fitted with deflection caps to confine the application to smaller diameter areas (2 to 5 feet) limiting use in the landscape to large trees and shrubs. Applications to sandy soils result in dry areas between "spokes" which could result in poor growth of small plants in those areas. Some manufacturers have added spinner devices to create a sprinkler effect. These "micro-sprinklers" have more uniform water distribution than the fan-jets or spoke-jets and can provide excellent water coverage. Regular inspection and maintenance are not difficult for the homeowner or landscape manager.

Water treatment and filtration are necessary to ensure continued operation of any microirrigation device. It is not wise for homeowners to consider injecting any treatment chemical into their system for maintenance or cleaning. In general, an appropriately sized water filter in addition to the water treatment provided by the municipal water supply should be sufficient to keep most homeowner microirrigation systems in proper operational condition. Water from private wells may require some chemical treatment to eliminate or at least minimize biological or chemical clogging. However, chemical treatment of the water may be avoided by maintaining a small supply of back-up emitters (whether emitters or spray-jets) to be used in a safe and easy maintenance program for homeowners and commercial businesses. Clogged devices could be easily replaced with clean units and then placed into a small container of acid or chlorine for cleaning, depending on the nature of the clogging problem. Periodic flushes of poly pipe laterals should remove accumulated precipitates and biological growths.

However, proper selection, placement, and operation of microirrigation irrigation equipment is essential for successful use and water conservation. *(Source: IFAS Fact Sheet AE-254 - Microirrigation in the Landscape by G. A, Clark)*