

Drip / Micro Sprinkler Irrigation Systems

Installation and Maintenance Costs

Drip/micro sprinkler systems use an engineered network of plastic components to precisely deliver water to each plant. Drip/micro sprinkler systems are designed so application rate is less than the soil infiltration rate, minimizing or eliminating irrigation water runoff. With drip/micro sprinklers, frequent irrigations of low volumes of water are applied to a portion of the available surface or subsurface area. The volume of soil wetted by drip/micro sprinkler systems varies from 10% to over 80% depending on crop type, soil type, cost of system, type of emitter, emitter flow rate, and other factors.

Drip/micro sprinkler systems are custom designed and engineered. The system designer takes into consideration soil, crop water requirements, plant spacing, water source and quality, field shape, elevation changes, electrical or power supply availability and locations, cultivation and farming practices. Also considered is cost of plastic pipe and hardware, the quality of components (both initial, and long term), the owner's ability to manage and maintain a system effectively and the intended lifespan of the system.

A system application rate must be high enough to meet daily plant water requirements in an 18-hour (or less) period of run time (to take advantage of off-peak time-of-use energy rates). Orchard root diseases are minimized when run time is limited to 24 to 48 hours. Application rates of drip/micro systems vary from 0.02 in/hr to 0.10 in/hr.

Maintenance and Management

Drip/micro sprinkler systems are typically designed to achieve a system distribution uniformity (DU) of 85% to 95%. DU is a measure of how uniformly water is spread throughout a field. DU values decline with time due to clogging of emitters, emitter wear, increased pressure differences between emitters, and other factors. A drop in DU results in increased operating hours to accommodate the driest field areas. Increased operating time, assuming accurate irrigation scheduling, can result in over watering the wettest portions of a field. Deep percolation of excess water, and any nutrients, salts, or mobile components in the irrigation water, will degrade in transport, runoff to surface drains or leach to aquifers.

Costs for Grower/Contractor Installed Drip or Micro Irrigation System

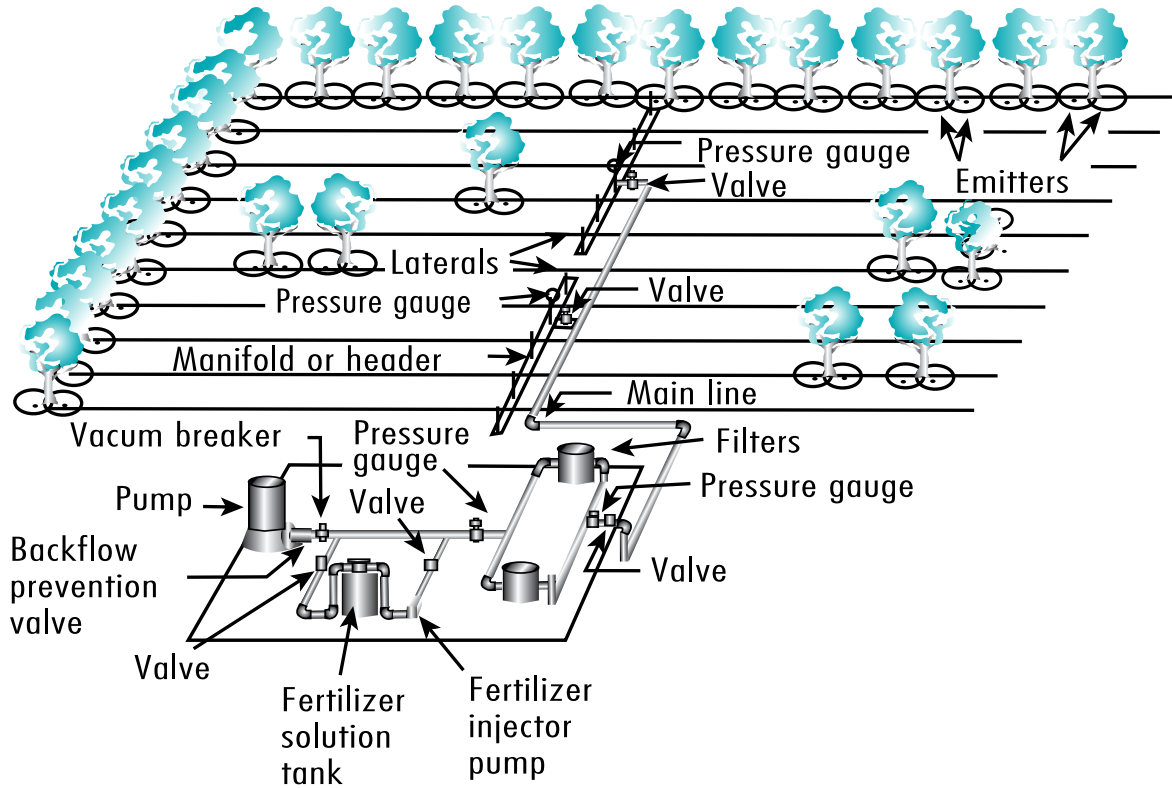
Item	Costs per Acre	
	Low	High
Installation and maintenance for the life of the system*	\$800	\$1,800

* Includes cost of new pump at \$100/A



DRIP / MICRO SPRINKLER IRRIGATION SYSTEMS Central Valley Installation and Maintenance Costs

Typical Irrigation system layout (USDA-NRDA, 1997a; Turner, 1980)



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