Response of Crop Yield and Water Table to Subsurface Drip Irrigation of Processing Tomato Under Saline, Shallow Groundwater Conditions

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Executive Summary

The effect of subsurface drip irrigation on crop yield and subsurface drainage will be investigated using field-scale drip irrigation systems at three locations along the Westside of the San Joaquin Valley. The effect of drip irrigation will be determined by collecting data on crop yield and quality, irrigation system costs, applied water, crop evapotranspiration, soil salinity, irrigation and groundwater quality, soil moisture content, and depth to the water table. In addition, experiments will be conducted at each location consisting of five irrigation treatments of 30%, 45%, 60%, 75% and 90% of the potential crop evapotranspiration. These treatments will be used to determine the minimum amount of irrigation water that can be applied without reducing crop yield. The difference between applied amount and crop evapotranspiration is assumed to come from the shallow groundwater and changes in soil moisture. Crop evapotranspiration will be determined using a computer model developed by T. Hsaio of UC Davis.