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LIMITED IRRIGATION STRATEGIES FOR PEPPER PRODUCTION

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Increased regulations restricting use of underground and surface water resources has placed a large risk on the agriculture sector, and on the livelihood of the farming communities in southwest Texas. Drought and extreme temperatures in the region can cause severe plant stress and fruit physiological disorders reducing marketable yields up to 50%. There is an urgent need to develop water conservation strategies and define optimum irrigation management for vegetable crops. Specialty colored peppers (*Capsicum annuum* L.) are very popular in the Texas markets and consumer demand is increasing rapidly. They bring a higher price than similar-sized green bell peppers. However, most specialty peppers are produced out-of state, thus decreasing the Texas market share. The ultimate goal of this research is to save water, maximize production efficiency, and improve product quality for specialty colored peppers. Field studies are being conducted to examine the effects of irrigation rates applied through subsurface drip (SDI) and Center pivot system. Three irrigation treatments, a well watered level (100% PET) and two limited irrigation rates (80% PET and 60% PET) were applied using either an adjusted crop coefficients (kc) of a kc obtained from FAO. Multiple infrared thermometers (IRT) directly attached to the Center pivot recorder real time canopy temperature to assess plant stress conditions which will be correlated with plant water status. Growth, yield, and fruit quality responses will be discussed. New remote sensing technologies useful to analyze the spatial distribution of biotic and abiotic stress will be presented.