

Title Postharvest regulated deficit irrigation in ‘Summit’ sweet cherry: fruit yield and quality in the following season

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Abstract

We examined, over the postharvest seasons of 2005–2007, regulated deficit irrigation (RDI) for its potential of saving water and maintaining fruit yield and quality in ‘Summit’ sweet cherry. The postharvest irrigation treatments were: full irrigation (Control), receiving 80% of water in Control (RDI-80%), and receiving 50% of water in Control (RDI-50%). Midday stem water potential (Ψ_{stem}) was used for assessing plant water status. In 2006, trees produced a large crop and commercial fruit thinning had to be applied, whereas 2007 was a low crop year. The RDI treatment, first applied in 2005, reduced fruit set in 2006 and also reduced root winter starch concentration. In 2006, fruit set was lower in RDI-50% than in Control. But fruit thinning had still to be done with the final yield being the same among treatments. In 2007, RDI-50% produced more fruit and higher yields than Control. Relationship between postharvest Ψ_{stem} and crop load in the following season varied according to the year. They were negatively correlated in 2006 and positively correlated in 2007. Fruit firmness did not vary with irrigation treatments in any of the years. Fruit soluble solid concentration (SSC) and fruit relative dry matter (RDM) for RDI-50% was the highest in 2006 when RDI-50% trees had the lowest fruit set. In 2007, SSC and RDM for RDI-50% were the lowest with the trees having the highest fruit set and crop load at harvest. This study indicates that RDI-50% firstly applied in an “off” year, after crop has been harvested, can maintain fruit yield at similar levels to fully irrigated trees while saving water by 45%. Correction of biennial bearing and partial saving of thinning costs are additional advantages of this treatment.

<http://www.springerlink.com/content/x8xw6k763467ph12/fulltext.pdf>