



Partial root-zone drying and conventional deficit irrigation applied during the whole berry growth maintain yield and berry quality in 'Crimson Seedless' table grapes

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To compare the effects of partial root-zone drying and conventional deficit irrigation applied during post-veraison and the whole berry growth on water relations, yield and berry quality, one experiment was conducted in a commercial vineyard of 'Crimson Seedless' table grapes. Five irrigation treatments were imposed: (i) Control (CTL) irrigated to 110% of crop evapotranspiration (ET_c), (ii) regulated deficit irrigation (RDI) irrigated at 50% of CTL during the non-critical period of post-veraison, (iii) continuous deficit irrigation (DI_c), irrigated at 50% of CTL throughout the whole berry growing season, (iv) partial root-zone drying (PRD), irrigated similar to RDI, but alternating the irrigation applied in the dry side every 10-14 days; and (v) continuous partial root-zone drying (PRD_c), irrigated as DI_c but alternating the irrigation in the dry side every 10-14 days. RDI and PRD received 24% and 28% less water than CTL, respectively. These reductions were higher in DI_c and PRD_c (65% and 53%, respectively). Total yield was not affected by any DI strategy. Only significantly lower values were observed in the weight and height's berries in respect to CTL. However, the colour parameters evaluated increased in all DI treatments, being slightly higher in DI_c and PRD_c compared with RDI and PRD. In addition, total soluble solids (TSS) were significantly higher in DI_c, compared to other irrigated counterparts. Our findings showed that the application of water deficit during the whole berry growth through the use of DI_c and PRD_c, can be considered for irrigation scheduling in 'Crimson Seedless' table grapes.

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