

# Effects of UV-C on bioactive compounds and quality changes during shelf life of sweet cherry grown under conventional or regulated deficit irrigation

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## Abstract

The effect of a UV-C postharvest treatment ( $4 \text{ kJ m}^{-2}$ ) on physicochemical quality, phenolic contents and total antioxidant capacity of 'Prime Giant' sweet cherry throughout 20 d at 2 °C (simulated cold storage during transportation period) plus 5 d at 15 °C (additional shelf life period) was studied. Furthermore, the effect of two regulated deficit irrigation strategies, with 36–39 % water savings, was also studied on such quality parameters. In general, physicochemical quality at harvest (soluble solids content: 16–18 %; titratable acidity:  $11.2\text{--}12.4 \text{ g L}^{-1}$ ) was unaffected throughout the storage periods, independently on storage time, regulated deficit irrigation or postharvest treatments. As observed from the darker red colour, cherry skin showed  $\approx 9\text{--}10$ -fold higher phenolic contents and total antioxidant capacity than cherry flesh. Cyanidin-3-rutinoside was the major anthocyanin. Generally, phenolic compounds of cherry skin decreased during storage. However, UV-C treatment lowered such reductions, even increasing total phenolic content by 21–36 % after shelf life in fruit grown under regulated deficit irrigation. Conclusively, a UV-C pre-treatment can be considered as an excellent postharvest tool to increase sweet cherry phenolic compounds. Furthermore, a UV-C pre-treatment can be even combined with regulated deficit irrigation strategies to reduce natural resources consumption without affecting fruit quality, which is particularly interesting in Regions with scarce water availability.