

Title Total phenol content and chilling injury of normally- or deficit-irrigated fresh green olives during storage

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Abstract

The effect of deficit irrigation of olive trees on fruit total phenol content and chilling injury during storage was examined. Olive trees from cvs Konservolea and Chondrolia Chalkidikis were irrigated based on the farmer's decision (control, exceeding 100% evapotranspiration) or deficit irrigated during stone hardening and final flesh swelling (irrigation water <20% of control). Green olive fruit quality was evaluated at harvest and every week plus 1 day shelf life during 4 or 5 weeks storage at 5°C and inclu skin color, flesh firmness, % flesh dry matter, total phenol content and chilling injury (CI) symptoms. CI was subjectively evaluated as discoloration of flesh and skin due to injury and not due to ripening. In Konservolea olives, skin color darkened after long storage due to internal CI (flesh browning), while there were no significant differences in total phenol content and CI during most of the measurements between the two treatments. In contrast, total phenol content in deficit irrigated Chondrolia olives was higher at harvest and until the development of significant CI than control irrigated fruit, while similar trend was found in CI early in storage between the two treatments. In the same cultivar, fruit total phenol content decreased with time in cold storage as severe CI symptoms appeared. Konservolea green olives had lower total phenol content and sensitivity to low temperature storage compared to Chondrolia green olives. These data could relate olive fruit total phenol content to CI sensitivity during cold storage.