Title Deficit irrigation and reflective mulch effects on peach and nectarine fruit quality and storage ability

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Abstract

The effects of deficit irrigation and reflective mulch were studied as possible means to improve peach fruit quality and storage ability. Peach cv. Royal Glory and nectarine cv Caldesi 2000 trees were drip irrigated close to ETc (control) or with 75% of ETc (deficit) during the last two weeks before anticipated harvest of tree-ripe fruit. Reflective Extenday® mulch was also applied on the tree row for almost a month before anticipated harvest at control or deficit irrigated trees. Fruit quality from the upper and lower parts of the tree was evaluated at harvest and after 2, 4 and 6 weeks at 2°C plus 2 days shelf life. Fruit quality included skin color, flesh firmness, specific conductivity and dry matter (DM), juice soluble solids content (SSC), acidity and total phenols (TP) and subjective evaluation of chilling injury (CI) symptoms (flesh leatheriness and browning). With storage time and in both cvs, fruit skin only slightly changed, fruit flesh softened, specific conductivity, SSC, acidity and DM decreased and TP content and CI (mainly leatheriness) increased. With deficit irrigation or reflective mulch, the two cvs behaved differently. Peaches from deficit irrigated trees had similar quality to control fruit except of higher SSC (at the fruit from the lower part of the canopy), TP and CL Nectarines from deficit irrigated trees were harder and had higher SSC, acidity, DM, TP and leatheriness, i.e. improved quality but lower storage ability, than fruit from control trees. Peaches from reflective mulched trees had the most advanced maturity fruit at harvest compared to the other treatments, and higher quality fruit but also lower storage ability than control fruit. Nectarines from reflective mulched trees had better skin color, harder flesh, acidity and DM than fruit from control trees, but also similar SSC and TP and higher leatheriness incidence. In short, fruit from both cvs studied benefited as far as their quality is concerned from deficit irrigation and reflective mulching but their storage ability was reduced from these treatments.