

**Title** Effect of delayed storage on chilling injury incidence and postharvest quality attributes of peaches and nectarines

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### **Abstract**

Chilling injury or internal breakdown is an important disorder of peaches and nectarines which can lead to considerable economic losses, especially when disordered fruit cannot be externally distinguished from sound fruit. This research was conducted to evaluate the effect of delayed storage on chilling injury incidence and postharvest quality attributes evolution of ‘Plagol 25’ and ‘Diamond Princess’ peaches and ‘Lara Bigi’ and ‘Honey’ nectarines. Fruit were stored at 0 °C and 95 % relative humidity (control) or held at 20°C for 2 days before cooling them for 1-5 weeks (delayed storage). Then, fruit were transferred to 20°C, 2 days for peaches and 1 day for nectarines, and chilling injury incidence, ethylene production, flesh firmness, flesh colour (a\* value), soluble solids content and titratable acidity were assessed. Results showed that delayed storage markedly reduced chilling injury incidence and gave, at least, an extra week of storage before this disorder appeared. ‘Honey’ nectarines and ‘Plagol 25’ peaches were less sensitive to chilling injury than ‘Lara Bigi’ nectarines and ‘Diamond Princess’ peaches. Regarding to the more sensitive cultivars, after four weeks of storage, dry texture developed extensively in control, while flesh browning was the main internal disorder in delayed storage. Delayed storage maintained the ability of the fruit to produce ethylene. Control fruit were significantly firmer than delay stored fruit throughout 1-5 weeks storage period. Fruit rapidly soften when held 2 days at 20°C, which could increase damages during transportation and marketing. Delay stored fruit showed slightly higher acidity values than control. On the other hand, soluble solids content and flesh colour (a\*) were rather unaffected by the postharvest treatment. In conclusion, delayed storage reduced the incidence of chilling injury but a high rate of fruit softening was obtained. Therefore, delayed conditions should be strictly controlled for reducing distribution losses and for supplying quality fruit to consumers.