Title Controlled atmosphere storage of pomegranate

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Abstract

The export of pomegranate fruit from Israel to Europe requires maintenance of quality for four to five months from harvest to consumer, to cover handling, transport and marketing during the profitable season. The limiting factors in the case of the 'Wonderful' pomegranate are husk scald, decay, shriveling and internal browning. During two seasons (2003-2004), pomegranates were harvested from orchards in three different growing regions. In the first year, half of the fruit were dipped in Sportak 0.2% and half in Zivdar wax plus Sportak 0.2%. The non-waxed fruit, were covered with polyethylene (LDPE 40 μm) bags after the fruit had cooled to 6°C, prior to 5 months' storage at this temperature in regular air (RA) or controlled atmosphere (CA) conditions of 2% O_2 and 0.6% CO_2 or 2% O_2 and 3% CO_2. In 2004, the fruit were stored in CA consisting of 2% O_2 and 3% or 6% CO_2 for 4 months. After storage, half of the fruit were waxed before transfer to shelf life at 20°C and 65% RH for 7 days. After 5 months' storage in 2003, weight loss of the waxed fruit was higher than that of the non-waxed, bagged fruit. However, after shelf life the situation was reversed. In CA weight loss was lower than in RA, resulting in a reduction of shrivel. CA also reduced the incidence and severity of husk scald and internal chilling injury. These effects were enhanced at the higher CO_2 level. In 2004, CA improved fruit quality upon removal from storage, even after 4 months' storage, but after a week of shelf life husk scald increased, albeit at a low intensity. In spite of this, the incidence of marketable fruit was 75% following CA compared to 54% after RA. Post-storage waxing improved fruit appearance due to the shine and a mold-free crown, whereas 22% of the non waxed fruit suffered from crown mold.