

Abstract:

The effect of two levels of humidity (LH with $RH \leq 65\%$; HH with $RH \geq 95\%$) on the physiology and quality of satsumas cv Miho, tangelos cv Nova and lemons cv Monachello stored at 20°C for 4, 8 and 12 weeks respectively was studied. LH fruit exhibited higher transpiration rates, earlier ageing and degradation of visual appearance than fruit stored at HH. The three cultivars behaved differently. LH satsumas and LH tangelos lost about 23-26% of the initial weight after the 4 weeks of storage against 4-6% of HH fruit of the same cultivars. LH lemons lost 16,8% of the initial weight after 4 weeks of storage and 33% after 12 weeks, whereas in the same periods in HH lemons weight loss were respectively 9% and 18%. After three weeks of storage, the total amount of satsuma LH fruit was unmarketable and only 8% of the tangelos were marketable; 100% of HH fruit of both cultivars were still saleable after 4 weeks of storage and free of decay. The level in humidity less affected visual appearance of lemons. In fact, after 4 weeks of storage more than 90% of LH fruit were marketable even when the degree of freshness was less compared to HH fruit. HH lemons maintained freshness sufficient for sale up to 12 weeks. Respiration activity decreased in both experimental conditions. Internal CO_2 showed an increasing trend, and a decreasing trend in internal O_2 partial pressure. All these changes were pronounced at LH conditions, while only moderate at HH conditions. In particular, the highest differences in respiration activity between HH fruit and LH were detected in satsumas; while the least differences were detected in lemons. The results show that: 1) the response at different hygrometric conditions differs greatly between cultivars; 2) elevated hygrometric conditions can prolong postharvest life markedly; 3) storage of citrus fruit can be done at temperatures between 5 and 10°C higher than those normally used if elevated levels of humidity are applied and fruit are adequately protected against decay with an effective fungicide, with the advantage of saving energy and reducing the risk of physiological alterations caused by prolonged exposure to low temperatures.