

Effect of low oxygen on quality attributes of 'Barton' pecan nuts after long-term storage at different temperatures

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Abstract

The aim of this work was to evaluate the effect of different temperatures and partial oxygen pressures (pO_2) during the storage of 'Barton' pecans in shell. Changes in pecan color, respiration ratio, and other markers of oxidation, such as peroxide index (PI), acidity index (AI), and volatile compounds (VC) were evaluated. The temperatures 10 and 1.5 °C better preserved the initial characteristics of the pecan color than 20 °C and resulted in lower AI and PI values and VC of oxidation. At 20 °C, these alterations were minimized by reducing pO_2 . Moreover, regardless of the pO_2 , adopting a higher temperature (20 °C) increased the main VCs. However, the reduced pO_2 presented an important contribution at 20 °C by reducing oxidative processes and maintaining quality. Thus, this study is a step forward in pecan nut storage techniques showing alternative that require reduced energy costs with refrigeration.