

Title Effect of CaCl₂ sprays, heat, and combined CaCl₂-heat treatments on the quality of apples (*Malus domestica* Borkh.)

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Abstract

'Lobo' apple fruits were subjected to preharvest CaCl₂ spraying treatment, pre-storage heat treatment, and CaCl₂+heat treatment and were held at 2 deg C and 90-95% RH for six months. Respiration and ethylene production rates were monitored and soluble solids, juice pH, firmness, total dry matter and macronutrient (P, K, Ca, Mg, and N) contents were determined. Additionally, the incidence of physiological disorder and pathological disease were recorded. Respiration and ethylene production rates slightly decreased in heat-treated apples and increased in CaCl₂-treated apples. CaCl₂ treatment did not increase fruit firmness or Ca concentration. Combined CaCl₂+heat treatment and heat treatment increased pH. At the beginning of storage, the firmness of heat- and CaCl₂+heat-treated fruits was lower but greater than that of the control fruits at the end of the storage period. After 6 months of storage, the lowest incidence of disorder and disease symptoms was observed in the CaCl₂+heat treatment.