

**Title** Cell wall-modifying enzyme activities after controlled atmosphere storage of calcium-treated 'Fuji' apples

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**Citation** ISHS Acta Horticulturae 858:213-216. 2010.

**Keyword** *Malus ×domestica*; pectin; firmness; pectolytic enzymes; calcium

#### **Abstract**

In this work, 'Fuji Kiku-8' apples were treated with 2% (w/v) CaCl<sub>2</sub> and stored at 1°C and 92% RH under either air or two different controlled atmosphere (CA) regimes for 7 months. Different cell wall-modifying enzyme activities were determined 7 d after removal from storage in order to assess relationships, if any, to changes in fruit firmness and cell wall composition induced by CaCl<sub>2</sub> treatment and/or storage atmosphere. Applied calcium was effective in preserving firmness of air-stored fruit but no significant differences in this attribute were found for samples kept under CA regardless of calcium treatment. Results showed high correlation between firmness and covalently-bound pectin content. To a lesser extent, non covalently-bound pectin content was also related to firmness. Solubilisation of pectins, which leads to loss of fruit firmness, may require a previous release of neutral sugar residues from the side-chains of wall-bound pectins by the action of a number of glycosidases such as β-galactosidase (β-Gal) or β-xylosidase (β-Xyl), which in turn was partially inhibited by CA-conditions during cold storage.