

**Title** Prediction of water loss from pears (*Pyrus communis* cv. Conference) during controlled atmosphere storage as affected by relative humidity

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### **Abstract**

This article demonstrates that accurate control of air moisture is required during storage of pears. The effect of relative humidity on water loss was calculated for the long term storage of pears. A water transport model that distinguishes the different pear tissues (inner cortex, outer cortex and cuticle) was used to simulate water transport in intact pears at CA storage conditions (2.5% O<sub>2</sub>, 0.7% CO<sub>2</sub> at -1 °C and ±95% RH). The finite element method was used to discretise the governing differential equations over the actual 3D pear geometry. In addition to water loss, the model provided the water content profiles inside the pears. Validation of the model was established by predicting the water loss for pears of different shape and size, during long term storage of 9 months at 95% RH and -1 °C. The 3D model predicted well the weight loss over time within the observation period. A decrease in percentage water loss of about 3% over 9 months was observed when the relative humidity in the storage room was increased from 95% to 97% RH.