**Title** Prediction of change in stiffness of 'Cripps Pink'™ apples during regular air storage

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**Citation** Program and Abstract. 2007 Australasian Postharvest Conference. Crowne Plaza Terrigal, NSW, Australia. 12 September 2007. 87 p.

**Keywords** apple; stiffness

**Abstract**

A range from 0°C to 3°C is recommended as the optimal temperature for cold storage of apples; however, practically, it seems to be impossible to maintain a consistent temperature throughout the supply chain after harvest Sub-optimal temperatures during handling stages can cause unpredictable loss of quality. The aims of the study were to investigate responses of the stiffness in "Cripps Pink" (*Malus pumila* Mill.) apples under a wide range of temperatures, including the optimum temperature and establish the best mathematical model to characterize the softening process and predict change in stiffness of the apples during storage. 'Cripps Pink' apples were stored under regular air at six temperatures from 0°C to 30°C over 9 months from May, 2005. Stiffness of the apples was recorded periodically by the acoustic firmness sensor (AWETA, Nootdorp, Netherlands) during storage time. Data analysis was carried out using the GenStat statistical software, version 8.2, 2005 and modelling the change in stiffness was conducted using the GraphPad Prism software, version 4.03, 2005. The results indicated that stiffness of the apples was strongly dependent on temperature, with the exponential decay model best describing and predicting the flesh softening process occurring in 'Cripps Pink' apples during storage.