

Title Stiffness-temperature coefficient for 'Hort16A' kiwifruit measured by acoustic firmness
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Abstract

A fruit's textural properties are influenced by its temperature at the time of measurement. Texture assessment therefore requires either equilibrating the fruit to a constant temperature, or recalibrating the measurement to account for the temperature effect. In this work the firmness of kiwifruit flesh (*Actinidia chinensis*, cv. 'Hort16A') measured as acoustic stiffness was characterised as a function of storage time and fruit temperature at measurement. Seven grower lines of fruit (5 conventional and 2 organic) were stored for 12 weeks at 1.5°C. At two week intervals fruit stiffness within each grower line was assessed at the storage temperature (f1), then at 20°C (f2) and on return to storage at 1.5°C (f3) allowing 24 hours after each temperature change for the fruit temperature to equilibrate. The initial measurement (f1) indicated changes in stiffness due to ripening in storage, while the difference (f2 – f1) represented the change in texture as a result of both the temperature change and the more rapid ripening at the higher temperature. The differences (f2 – f3) and (f1 – f3) provided further information on these dual effects of temperature. The data obtained permitted the formulation of a temperature correction model to estimate stiffness measurement at 1.5°C as a function of fruit temperature at the time of measurement. Fruit measured at temperatures intermediate to 1.5 and 20°C were used to validate the correction model.