

Title Kiwifruit respiration rates, storage temperatures and harvest maturity
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Abstract

Kiwifruit (*Actinidia deliciosa* var. *deliciosa* 'Hayward' (A. Chev.) C.F. Liang et A.R. Ferguson) are stored commercially at ca. 0°C for extended periods prior to commercial sale and there is a slow decline in their respiration rate during storage. Respiration rates are being considered by the postharvest sector of the kiwifruit industry as one of a number of possible indicators of storage potential. Fruit respiration rates are known to be strongly dependent on temperature but the precise relationship for kiwifruit from different growing regions and at different times of the season have not been previously studied. 'Hayward' kiwifruit were picked from orchards in the Nelson, Bay of Plenty and Northland growing regions of New Zealand at three times during the harvest season in 2009: mid-April, mid-May and late May (the end of the commercial season). Eighty fruits per grower were couriered to Massey University within 24 h of sampling, and equilibrated for 2-4 d at 1, 5, 10 or 20°C. Respiration rates were then measured at those temperatures. Fruit weights were recorded and soluble solids were measured. The mean fruit weights in the samples were ca. 120 g and there were no consistent differences in mean weight between the regions. The mean soluble solids content increased during the season (6.8, 8.7 and 10.8 °Brix from early, mid and late season fruit respectively). Respiration rates were closely correlated with equilibration temperature. In addition there was a significant positive correlation between respiration rate and soluble solids content at 10 or 20°C but not at lower temperatures. There were no consistent differences in respiration rate that were attributable to growing region. One batch of fruit was affected by a late season hail event a week before harvest which left small corky scars on the fruit surface but this did not affect fruit respiration at the time of measurement.