

Title Temperature and respiration rate of three chilli cultivars

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Abstract

Respiration rate is an important factor related to rates of quality change of fresh produce. In this study, three chilli cultivars, 'Paprika' (*Capsicum annuum*), 'Jalapeno' (*Capsicum annuum*) and Habanero (*Capsicum chinense*) sourced from a commercial grower in NZ were used to study the relationship between temperature and respiration rate. After harvest, fruit were stored at 0, 4, 8, 12, and 20°C and respiration rate was measured as carbon dioxide (CO₂) production at 7 day intervals until the end of storage. Respiration rate increased exponentially with increased storage temperature for all three cultivars although each cultivar was influenced differently by temperature. The highest respiration rates of 762, 124 and 287 nmol (CO₂) kg⁻¹ s⁻¹ for 'Paprika', 'Jalapeno', and 'Habanero' respectively were measured for fruit stored at 20°C for 14 days. Ethylene production was not detected for all three cultivars during storage. An Arrhenius-based respiration model was developed to describe the dependence of respiration rate on temperature and could be used to predict changes in respiration rate of fresh chillies under different conditions encountered in commercial distribution chains.