

Title Accelerated fruit libraries: An alternate tool to predict the quality of different grower lines of 'Hayward' kiwifruit during storage

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Citation Abstracts of 7th International Postharvest Symposium 2012 (IPS2012). 25-29 June, 2012. Putra World Trade Centre (PWTC), Kuala Lumpur, Malaysia. 238 pages.

Keywords kiwifruit; storage

Abstract

Fruit quality of 'Hayward' kiwifruit (*Actinidia deliciosa* (A. Chev) C.F. Liang et A.R. Ferguson cv. 'Hayward') is an important determinant of value for industry. In kiwifruit, a large variation exists between different grower lines in terms of fruit quality during storage and at eating ripe firmness. Currently dry matter at the time of harvest is measured in order to indicate quality at eating ripe stage and hence used to distinguish between grower lines. Measuring dry matter can be costly and time consuming when large numbers of grower lines are being harvested every day. An Accelerated Fruit Library (AFL) involves taking a subsample of each batch of fruit that is allowed to ripen immediately after harvest and monitored regularly in order to obtain information about the storage performance of the batch. This research was designed to test how well the AFL predicts the storage quality of different grower lines. Fruit samples from 68 commercially packed grower lines were divided at harvest, with each subsample subjected to either accelerated conditions (20°C) or long term storage (0°C). At harvest dry matter (DM) and total soluble solids (TSS) were recorded. During AFL monitoring, TSS was monitored at 3 d intervals for a total of 21 d. TSS and firmness of fruit after storage (0°C) was recorded at 100 and 126 d. The results obtained indicate that TSS after 15 d at 20°C is correlated ($R^2 = 0.614$) with the TSS after storage at 0°C for 126 d, while TSS recorded during AFL monitoring has no correlation with firmness after storage at 0°C. This work demonstrates the potential for AFL TSS data of kiwifruit to reflect the quality of fruit after storage and hence provides an alternative tool to dry matter assessment to predict the final TSS of grower lines after storage.