

Title Postharvest assessment of fruit quality parameters in apple using both instruments and an expert panel

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Abstract

Most apple breeding programs use a small number of well-experienced assessors, or experts, to organoleptically score the quality of fruit from a large number of genotypes. Although instrumental readings are available for some traits, only those for weight, firmness, soluble solids and acidity are generally considered practical for most breeding purposes, at least in the early stages. However, heritabilities for instrumentally measured traits are typically higher than those for scored traits. This is likely to be partly because the use of scores introduces a new source of variation, *viz.* that attributable to differences in perception, which inflates the environmental variance component. We report on a trial, undertaken in the 2003 fruiting season, which was designed to measure the various sources of expert perception error in order to help devise an optimal strategy for postharvest fruit quality assessment. Four experts each independently assessed two fruit from each of 126 genotypes taken from 15 crosses which were part of a half diallel originally made to study powdery mildew genetics. Traits assessed were: firmness, acidity, sweetness, juiciness and crispness. Each fruit was assessed by two experts who did not know the identity of fruit they were assessing, although they were aware of the purpose of the trial. Fruit were presented to the experts in a random order and this order was recorded. We found no evidence of fatigue despite the experts assessing up to 34 fruit in a session. However, there were differences between the experts, and a weak evidence of contrast effect for sweetness and acidity. The instrumental–sensory relationships obtained with the expert panel were similar to those reported for trained panelists. The use of expert panels for routine postharvest fruit quality assessment particularly for programs with limited budget is recommended.