Abstract

Storage life of 'Hayward' kiwifruit (*Actinidia deliciosa* (A.Chev) C.F. Liang et A.R. Ferguson) is limited by excessive fruit softening. Discriminating fruit batches at harvest for fruit softening rate (k) would allow the industry to sell fruit batches with short storage life before they become over-soft. Stepwise discriminant analysis on four softening-rate groups (KG_1 to KG_4 with k values from 0.001 to 0.01) indicated that harvest maturity (i.e. the percentage of dry matter solubilized at harvest), fruit magnesium concentration (Mg), harvest date (days from 1st April), the ratio of calcium and nitrogen (Ca/N), pre-storage delay (days from harvest to the start of cool storage, ranged from 0–8 d), and skin lightness measured at harvest had significant roles in fruit batch discrimination. Canonical discriminant analysis on two-thirds of the fruit batches (model building dataset) using the selected variables indicated that the first two canonical discriminant functions (CDF_1 and CDF_2) accounted for 95% variation of the four softening-rate groups were able to classify over 50% of the fruit batches to the correct group compared with 25% correct classification without the discriminant model. The standardized canonical coefficients indicate that fruit batches harvested late at advanced maturity with high Ca/N, high Mg, low skin lightness and short pre-storage delay are likely to soften slowly, consequently having good storage potential. For fruit batches harvested early at less mature stage, extending pre-storage delay may improve their storage potential. However, the delay could be detrimental to other fruit batches harvested late at advanced maturity. The discriminant model can be used to select premium fruit batches for long-term storage and to identify high-risk fruit batches that need immediate attention. The model may also help growers to identify limitations of their fruit.