

Abstract

The method of CO₂ control used during controlled-atmosphere (CA) storage may affect the volatile composition of the room atmosphere, which in turn may affect the volatile production of ripe fruit. 'Hayward' kiwifruits were CA-stored (2 kPa O₂/5 kPa CO₂) at 0 °C using one of three CO₂ scrubbing systems: activated carbon (AC) scrubber, hydrated lime scrubber or nitrogen purging. For further comparison, fruits were also stored in air. Fruit samples were removed from storage at intervals and allowed to soften in air at 20 °C until eating soft, whereupon they were sampled for volatiles with a headspace purge and trap system. Linear discriminant analysis (LDA) segregated the ripe fruits by their volatile profiles on the basis of both CO₂ scrubbing system and also time in storage. Ripe fruit volatile profiles differed between CA-stored and air-stored fruits, and also among fruits from the different CO₂ scrubbing systems. The work was repeated over two seasons with a large difference in alcohol and ester production of the fruit between the two seasons, despite storage under the same atmosphere of 2 kPa O₂ and 5 kPa CO₂. It is suggested that alcohol metabolism contributed significantly to the ripe fruit volatile profile, particularly ester production. While the CO₂ scrubbing systems did result in measurable differences in ripe fruit volatile profiles, it remains to be determined whether the differences are significant to consumers.