

Abstract

“Hayward” kiwifruits were picked at four different periods according to their soluble solids (%) (SS) which were 4.5-5.5; 5.6-6.5; 6.6-7.5 and 9.5-10.5, then stored at 0°C, RH 90% in normal atmosphere (NA) and CA condition (2% O₂; 5% CO₂) for 5 months. The quality parameters checked monthly were fruit flesh firmness (FFF) (N), soluble solids (SS) (%), fruit flesh color changes (CC) (L*a*b), titratable acidity (TA) (% citric acid) and the ethylene synthesis during long-term CA storage. Ethylene production rates were measured monthly using Agilent 6890N gas chromatograph (GC), equipped with flame ionization detector (FID). Fruits were also transferred to 20°C for one week to be allowed to ripen and evaluated all parameters again. FFF decreased very quickly, during first 30 days of NA storage, specially in the fruits harvested 3rd and 4th periods. On the other hand, CA nearly kept harvest flesh firmness in all picks during the storage. Fruits harvested at 4.5-5.5 and 5.6-6.5 SS were harder at the harvest period and also more firm at the end of the storage than later harvest periods. SS content of the storage than later harvest period. SS content of the fruits in NA rapidly increased during first month of the storage in four different harvest periods then remained almost constant. CA storage reduced the rate of increased SS content during 5 months. Ethylene production started to increase in fruits harvested at 1st, 2nd, and 4th periods during the first month of storage then started to decrease till fourth month of storage at 1st period. However, ethylene production of 4th harvest period continues to increase till fourth month of storage in NA. On the other hand the 3rd harvest period where SS was 6.6-7.5 showed the highest ethylene production, at the beginning but later on the ethylene production started to decrease from 20ml/kg.h to 10 ml/kg.h. Same trend was also observed in the second month of storage. Ethylene production rate of ‘Hayward’ kiwi fruit in CA storage showed similar trend in all harvest periods during cold storage. However rate of ethylene production was critically suppressed. Fruits harvested at 4.5-5.5 and 5.6-6.5 of SS however, showed less ethylene production at harvest time and also more firm at the end of storage than harvested later on. These results suggest that 2nd harvest period where SS was between 5.5-6.5 gave the best results considering ethylene biosynthesis and other quality parameters in CA.