

Title Effects of controlled atmosphere storage on differently harvested kiwifruits ethylene production

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Abstract

The objective of this study was to evaluate the effects of storage condition air and controlled atmospheres (CA) (2% O₂+5% CO₂) on differently harvest kiwifruit ethylene production, fruit fresh firmness (FFF) and total soluble solid (TSS) during storage time. And to determine best harvest time according to fruit quality change.

For this purpose 'Hayward' kiwifruits harvested periodically according to their soluble solid contents at 4.5-5.5%, 5.6-6.5% and 6.6-7.5% 'Hayward' kiwifruits were stored 5 months at 0°C and 85-90% RH under air and CA (5% CO₂+2% O₂) atmospheric storage condition. The parameters checked monthly were FFF (N), TSS (%) and ethylene production ($\mu\text{IC}_2\text{H}_4/\text{kg.h}$) during long-term CA and air storage. Storage conditions were the main factors affecting FFF, TSS content and ethylene production at 0°C during 5 month of storage. The main effect of reduced O₂ levels was better effected the fruit firmness and whereas elevated CO₂ levels led to a reduction in ethylene production. FFF were negatively correlated during storage and ripening of fruits in air than CA. On the other hand fruits TSS were increased. CA nearly kept harvest FFF in all picks during the storage. Ethylene production increased in all picks during the first month of storage. However rate of ethylene production was critically suppressed by CA storage. Moreover fruits harvested at 4.5-5.5% (first harvest) and 5.6-6.5% (second harvest) of TSS showed less ethylene production at harvest time and also more firm at the end of storage than the fruits harvested later on. These results suggest that 2nd harvest period where TSS was between 5.5-6.5% gave the best results considering ethylene biosynthesis and other quality parameters in CA.