International Workshop on Food Safety
in a Sustainable Postharvest System of Agricultural Products
October 16-18, 2007 Kahramanmaras Sütçü Imam University
Kahramanmaras/TURKEY

EFFECTS OF CONTROLLED AND NORMAL ATMOSPHERE STORAGE ON FRUITS FIRMNESS AND SENSOR QUALITY OF DIFFERENTLY HARVESTED HAYWARD KIWIFRUITS

Ayse Tülin ÖZ[1] and Atilla ERIS[2]

[1]*Kahramanmaras Agricultural Research Institute, K.Maras, Turkey,*
[2]*Uludag University, Faculty of Agriculture, Horticulture Department, Bursa, Turkey*

E-mail: aysetulinoz@yahoo.com

The objective of this study was to determine best harvest time and effects of storage conditions (controlled (CA) (2% O_2 + 5% CO_2) and normal atmospheres (NA) on differently harvested kiwifruit quality changes in fruit firmness (N), fruit flesh color (Lab), fruits taste and looking index during storage. Hayward kiwifruits were harvested periodically according to their soluble solid contents at 4.5-5.5%, 5.6-6.5%, 6.6-7.5%, and 8.5-9.5%. They were stored for 5 months at 0ºC and 85-90% RH under normal (NA) and CA (5% CO_2 + 2%O_2) atmospheric storage. Measurements of fruit flesh firmness were made with (Effegi type penetrometer 8 mm tip). The fruits flesh color values was measured L(lightness), *a(+red-green),* b(+yellow-blue) using a Minolta Chroma Meter (CR-300 Minolta, Ramsey, NJ) with a 1 cm diameter area. The taste and looking index of differently harvested fruit during CA and NA storage were assessed by a 5 person taster panel. This evaluation was done every months of storage. A scale 1-5 was used for the taste panel. Storage conditions were the main factors affecting fruit firmness, fruit flesh skin color changes, fruits taste and looking index at 0ºC during 5 month of storage. Results indicated that NA fruits softened faster during the first 2 months of storage. This effect was reduced in CA storage. Fruit flesh color changed during CA and NA storage. L*(lightness), b*(+yellow-blue) were decreased during degradation of the green color to yellow but a* value of kiwifruit flesh color and fruits taste were increased. The main effect of reduced O_2 levels was a better effect of the yellow color of the fruit flesh, as reflected in higher final chroma values, whereas elevated CO_2 levels led to a reduction in L values. Color changes of fruit stored in CA storage enabled better conservation without undesirable changes in quality of fruit flesh color, than in NA storage. Fruit taste and looking index and fruit firmness of the Hayward kiwifruit were negatively correlated with ripening and storage. In conclusion, our data indicate that both fruit flesh firmness, and sensory quality examined so far, a second picking was found to be perfect for harvest maturity if it is between 5.6-6.5% soluble solid content, for long storage under CA and NA. Fruits harvested at these values can be stored without important quality losses for 5 months under CA condition.

Key words: Kiwifruit, controlled atmosphere storage, fruits firmness, sensory quality