

Wichuda Somsuan 2010: Effects of Low Temperature on Storage Life, Physiological and Biochemical Changes of Java Apple (*Syzygium samarangense* (Blume) Merr. & Perry) cv. Thabthimchan after Harvest. Master of Science (Agriculture), Major Field: Horticulture, Department of Horticulture. Thesis Advisor: Miss Wachiraya Imsabai, Ph.D. 115 pages.

A study on the postharvest physiological and biochemical changes of java apple cv. Thabthimchan. Java apple fruits were stored at $25\pm 1^{\circ}\text{C}$ ($66.1\pm 3\%\text{RH}$) for 7 days. The results showed that peel color almost did not change after harvest. An increase in weight loss of java apple fruit coincided with a decrease in fruit firmness, at the stem-end. The respiration rate and ethylene production of java apple fruits had low levels and stable during storage. Java apple fruits were stored at 6, 12 or 18°C ($91.5\pm 2\%\text{RH}$) for 14 days. The results showed that java apple fruits stored at 6°C showed surface pitting on day 4 after storage coincided with an increase in electrolyte leakage. Java apple fruits stored at 18°C did not show chilling injury symptom. Fruits stored at 6 and 18°C , their fruit firmness, peel color and anthocyanin content did not change during storage. The respiration rate, ethylene production and total antioxidant capacity of fruits stored at 6°C were lower than those fruits stored at 18°C . Lipoxygenase (LOX) activity of fruit stored at 18°C was constant during storage. On the other hand, fruit stored at 6°C found high LOX activity on day 2 of storage time, while superoxide dismutase (SOD) activities of fruit stored at 6 or 18°C increased during storage. The activity of catalase (CAT) higher in fruit stored at 18°C than 6°C . Hydrogen peroxide content was higher in fruit stored at 6°C than those fruits 18°C . Java apple fruits were nonwrapped, fumigated with 500 nl/l 1-methylcyclopropene (1-MCP) or wrapped with linear low density polyethylene (LLDPE) film before storage at 6°C for 14 days. Java apple fruit wrapped with LLDPE film reduced chilling injury. Wrapped fruit had lower weight loss, electrolyte leakage, hydrogen peroxide content and LOX activity than nonwrapped fruit and fumigated with 1-MCP. The activities of SOD and CAT of wrapped fruit increased at the end of storage. Wrapped java apple fruit extended storage life for 14 days at 6°C .

Student's signature

Thesis Advisor's signature