



Thesis Abstract

Physiological and Biochemical Bases of Blackheart Disorder Alleviation in Waxed “Queen” Pineapple (*Ananas comosus* L. Merr.) Fruits

by Soe Soe Aung, PhD in Horticulture, University of the Philippines Los Baños

The study investigated the mechanism of alleviation of blackheart (BH) disorder by waxing in "Queen" pineapple fruits. To determine the critical temperature at which BH disorder will develop, fruits were stored at 5, 10, 15, 20°C or at ambient (28-30°C) temperature. Various wax formulations were used to identify the concentration that will effectively alleviate BH disorder.

The critical temperature at which BH disorder developed was at 20°C, while severe BH was observed in fruits stored at 15°C. Waxing, using with 20.58% mineral oil formulation, significantly alleviated BH disorder during four weeks storage at 15°C and additional two days holding at ambient temperature. Significantly high internal carbon dioxide (CO₂) and low oxygen (O₂) levels during the first and third weeks of storage period were consistently noted in waxed fruits compared with unwaxed fruits. Associated with BH alleviation by waxing were reduced ion leakage, respiration rate, ethylene production, total phenolics, and reduced activities of polyphenol oxidase (PPO) and ascorbate oxidase (AAO) concomitant with insignificant changes in the levels of ascorbic acid (AA). Waxing also delayed changes in peel color and pulp quality. On the other hand, weight loss, changes in pH, TSS, TA and internal ethylene level were not significantly influenced by waxing. High sensory ratings in terms of flavor, aroma, firmness, and good blend of sweetness and sourness were obtained in waxed fruits stored at 15°C and in both waxed and unwaxed fruits stored at ambient temperature for three weeks.