

Title Storage temperature and high relative humidity affect the ethanol content and physico-chemical properties of 'Queen' pineapple fruit

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Abstract

Temperature and relative humidity are the main factors affecting pineapple properties after harvesting. The 'Queen' pineapple in Ninh Binh province, Vietnam was collected during the main seasons, from April 2010 to July 2011. Effect of storage temperature conditions (9, 12, 15 and 20°C ± 1°C) at high relative humidity (85 ± 2% RH) on weight loss, total soluble solids (TSS), titratable acidity (TA), firmness, pH and ethanol content of the pineapple during 25 days storage was investigated. The significant change of these properties was showed at temperature higher than 12°C after 5 days storage. Weight loss of the pineapple fruit increased while the firmness decreased with increasing storage temperature. After 25 days storage, the weight loss of pineapple increased dramatically from 17.89% to 20.68% at 9 to 20°C, 85% RH. In contrast, the firmness of fruits decreased from 16.33 (N) to 6.68 and 5.94 (N) at 9 and 20°C, respectively. With increasing storage temperature conditions, TSS, TA and pH values of the 'Queen' pineapple fruits increased during 10-15 days storage and decreased slightly at the end of storage time. The temperatures and high relative humidity also affected the ethanol content of the pineapple fruit. At 25th day storage, the ethanol content of the fruits increased 0.03 to 1.36 and 3.07 µL/g at 9°C and 20°C, respectively. Besides, the 'Queen' pineapple fruit was evaluated for its morphological characteristics (fruit weight, size, fruitlets and shape) and some physico-chemical properties (TSS, TA and pH). The results showed that the mean fruit weight was 990.28 g. The fruit width and length were 142.07 mm and 105.39 mm, respectively. The numbers of fruitlets (eyes) were between 99 - 156 fruitlets/fruit. The ripening stages of the pineapple were 3 - 4 days after harvest. Our results pointed out that at 9 and 12°C storage conditions, there was no significant difference in the pH, TA and TSS values but there was significant difference in the weight loss and firmness values. Lower weight loss and higher firmness were found in pineapple fruit preserved at 12°C. Therefore, shelflife of 'Queen' pineapple can be extended to 20 days at 12°C ± 1°C and 85 ± 2% RH with the good quality.