Abstract

The Musa AAB group of bananas contains many plantains and cooking bananas that are major staple foods in many countries, particularly those located in the tropics. While the postharvest behaviour of dessert bananas such as Cavendish (Musa AAA group) have been extensively studied, there are few reports on Musa group AAB. This thesis examined the postharvest behaviour of Musa AAB. Lady Finger and Corne plantain (Pacific plantain) were the two cultivars investigated. In some experiments "Williams" a cultivar of the Cavendish type was included for comparison purposes. The studies included the measurement of respiration, ethylene production and the changes in peel colour during ripening. The pulp tissues were analysed (at six stages of ripeness) for firmness, water content, soluble solids, organic acids, protein, sugar, starch, soluble tannins, vitamin C and also for free and bound calcium. Changes in the ratio of pulp to peel during ripening were also calculated. Storage studies, including effects of low temperature and modified atmosphere were also conducted.

The composition of Lady Finger was generally similar to that of Cavendish however higher levels of sugars, starch, organic acid and soluble tannin were found in this cultivar. The results are in accordance with consumers perceptions that Lady Finger has a sweeter and more astringent flavour than Cavendish. Corne fruit had a significantly lower respiration rate during ripening and took a significantly longer time to ripen at 20°C than Cavendish and Lady Finger bananas. Oxalic acid was the major organic acid in unripe Corne but this disappeared when the fruit reached the climacteric.

Studies with modified atmosphere showed that storage in low density polyethylene bags increased the storage life of Lady Finger banana and Corne plantain by one or two weeks over similar fruit stored in air. The addition of calcium hydroxide did not give any further benefit but the inclusion of potassium permanganate extended the storage life by another week.

Low temperature studies showed that chilling injury occurred at 12.5°C or lower in both Lady Finger and Corne. The incidence of the chilling injury in Lady Finger was significantly reduced by storage in low density polyethylene bags with or without potassium permanganate.

The time to ripen of Cavendish, Lady Finger and Corne fruit at controlled levels of low ethylene was significantly extended with the extent of the effect correlating well with the concentration of ethylene.

Studies on the application of calcium chloride solution at ambient or reduced pressure showed that added calcium did not delay ripening.