Abstract

The study on growth and development of mango (*Mangifera indica* L.) cv. Mahajanaka was conducted by measuring and analysing the physical, chemical and physiological changes of fruits. The results showed that the growth pettern of fruit and seed followed the single sigmoidal curve. The fruit was stable in size and became mature 98 days after full bloom (DAFB). The fruit developed until 133 DAFB while the seed was fully developed 77 DAFB. The endocarp became hard when the fruit was 77 DAFB. The specific gravity of fruit was 1.0 98 DAFB and was more than 1.0 when the fruit was more mature. Fruit firmness decreased with maturity and markedly decreased during 98 and 133 DAFB. Peel colour changed to olive green with more red blush colour when the fruit was more mature. Chlorophyll a, cholrophyll b and total chlorophyll contents of peel were slightly changed while anthocyanin decreased. The β- carotene content of peel and pulp during 91 and 133 DAFB increased. The dry weight of pulp increased while the moisture decreased with maturity. Titratable acidity (TA) was high at the early stage of fruit development and decreased rapidly from 98 to 133 DAFB. The total soluble solids (TSS) content of fruit slightly changed during 35–119 DAFB but increased with fruit maturity. The TSS:TA ratio of fruit at 98-133 DAFB markedly increased. Starch content increased when the fruit was more mature while the reducing sugar decreased with fruit

development. Respiration rate and ethylene production rate were high during the immature stage and decreased when the fruit was more mature. It was therefore concluded that Mahajanaka mango fruit reached the physiological maturity stage when the fruit was 98 DAFB onwards.

Analyses of the physical, chemical and physiological changes suggested the following harvesting indices for Mahajanaka mango: specific gravity of 1.005 or more , firmness 23.0-24.2 kg/cm^2 ,dry matter and moisture content 18.8-19.4 and 80.6-81.2 % respectively, titratable acidity 1.66-1.67 %, TSS:TA 4.56-4.90, starch content 21.0-23.0%, β-carotene content in pulp 0.34-0.38 mg/100 g fresh weight and respiration rate of 85.5 mg CO_2/kg.hr or less. However, the use of any one of the indices only may not be justified. All of the above data should be used together to obtain a suitable harvesting index . It was concluded that Mahajanaka mango could be harvested from 98 to 133 DAFB depending on the purposes of its utilization.