

The effect of surface color on palm oil quality during the ripening process of fresh fruits

ABSTRACT

This research was done to determine the effect of oil palm fruit surface color on oil development and fatty acids in mesocarp and kernel during the ripening process of Tenera oil palm (*Elaeis guineensis*) variety (a cross between Dura and Pisifera). Eight-year-old palms were planted in Malaysian Palm Oil Board (MPOB) Research Station. Fresh fruit bunches (FFB) were harvested and divided into three regions (top, middle and bottom) where fruits were removed randomly from outer and inner layers during the ripening process during 8, 12, 16 and 20 weeks after anthesis. The oil palm fruit surface color measurement was done as a fruit maturity monitoring using Ultra Scan Spectrophotometer to determine a^* (red-green) and b^* (blueyellow) in the CIE $L^*a^*b^*$ color model with standard illuminant (D65) from 400 to 700 nm and spectral CV as an indicator of ripeness. The Soxhlet extraction tubes and gas chromatography were used to the oil content extraction and fatty acids at each three regions of bunch during the ripening process. Data analysis related to ripening time, oil content, fatty acids and surface color was done by MSTAT-C and Microsoft Excel computer programs. This research showed a positive correlation with a^* (0.975*) and oil percent (0.987*). Also there was a positive significant correlation of b^* (0.247 and 0.943*) and a^* (0.911* and 0.999***) with oil yields. Over the four sampling times maximum percent and maximum changes in the mesocarp oil components were observed with palmitic, oleic and linoleic acids. The kernel oil fatty acids did not follow a similar pattern.

Keyword: FFB; Fruit surface color; Oil extraction and fatty acids; Oil palm