

Title Assessment of changes in optical properties of fresh-cut tomato using video image analysis
Author M.M. Lana, L.M.M. Tijsskens, A. de Theije, M. Hogenkamp and O. van Kooten
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Abstract

Tomato fruit (*Lycopersicon esculentum* cv. Belissimo) at different stages of maturity were sliced in 7-mm thick transverse slices and stored at 5 °C. In a second experiment, slices obtained from fruit at the light-red stage were stored at temperatures from 5 to 13 °C. Intact control fruit were stored under the same conditions. Digital images were taken immediately after processing, before cooling, and at regular intervals during storage, after placing the slice in a double (half white, half black) background. The data were expressed as the average intensities per pixel of red (*R*), green (*G*) and blue (*B*) separately for the white background and for the black background. Additional indices were obtained by algebraic calculations from the original *RGB* values and through the conversion of *RGB* into $L^*a^*b^*$ values. The development of translucency in the pericarp was the main change in appearance of cut tomato. This process was strongly affected by the stage of maturity of the fruit and independent of storage temperature. The more mature the fruit the faster and more intense was the development of translucency. Using video image analysis, an increase in translucency could be assessed by a decrease in the amount of red pixels when the sample was measured against a black background. Changes in colour due to maturation could be measured both by a decrease in the amount of green pixels or by an increase in the proportion of red pixels ($R/(R + G + B)$), when the sample was placed on a white background. Using the $L^*a^*b^*$ colour space, an increase in translucency corresponded to a decrease in lightness and changes in colour due to maturation resulted in an increase in a^* -value.