

Title Model-based classification of tomato fruit development and ripening related to physiological maturity

Author B. Van de Poel, I. Bulens, M.L.A.T.M. Hertog, L. Van Gastel, M.P. De Proft, B.M. Nicolai and A.H. Geeraerd

Citation Postharvest Biology and Technology. Volume 67, May 2012, Pages 59–67

Keywords Tomato; Ripening; Physiological maturity; Biological age; Modeling; Classification

Abstract

Developing and ripening fruit are often classified according to subjective maturity classes or calendar time (e.g., days after anthesis). We propose a model-based approach that classifies tomato fruit during development and ripening according to their physiological maturity. The model uses only two non-destructive measurable parameters for classification: fruit color (expressed as hue) and mass. The model was calibrated against a dataset of tomato fruit (cv. Bonaparte) monitored in time during development and ripening. Next, the model-based classification was successfully implemented to classify individually harvested fruit at different stages of development. The model-based classification method was also verified for another cultivar ('Plaisance'). This approach allows the user to interpret other destructive physiological traits such as firmness decline or ethylene production in a more realistic time scale in accordance with the physiological maturity of the fruit. This can lead to an altered interpretation of such physiological data compared to more conventional classification methods.