Abstract

Postharvest life of tomatoes is limited by colour and firmness when unripe and by firmness when over-ripe. Up till now, little effort has been devoted to develop quality models that deal with both the colour and firmness development. Here, tomato colour and firmness models are presented as a function of the biological age. Data are analysed using non-linear regression analysis. The colour model focuses on the red components synthesis and describes postharvest colour behaviour as a function of the amount of colour precursor present at the time of harvest, the colour at harvest and the storage time. The colour model includes the effect of the colour precursor on the final (red) colour as a function of the (colour) biological age at harvest. The firmness model describes postharvest firmness behaviour for tomatoes as a function of the firmness at harvest, the storage time and the (firmness) biological age at harvest.

Applying the firmness and colour model on colour and firmness data of the same tomatoes enabled the comparison of the colour and firmness biological age at harvest. The average firmness and colour biological age at harvest expressed per batch showed a linear relation that varies per grower, but not per season. The remarkable difference in the synchronisation between firmness and colour for the two growers may be caused by differences in greenhouse design. In practice, knowledge of the synchronisation between colour and firmness biological age per grower might help growers to adapt their growing conditions to their greenhouse design so as to produce tomatoes with a predefined colour–firmness relation. Also, colour measurements of tomatoes should suffice to assess the quality once the synchronisation is known.