



## Ripening homogeneity of Avocados remains a challenge

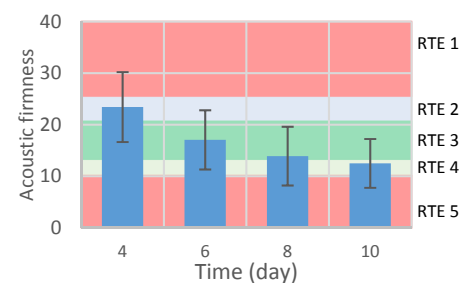
Avocados are an important tropical fruit in Europe. Companies that ripen avocados have introduced the ready-to-eat (RTE) concept to ensure that consumers get the highest possible quality. Within the GreenCHAINge project, Wageningen University and Research has investigated ways to achieve more homogeneous ripening of commercial batches of fruit.

Ripening protocols often consist of storing unripe fruits at high temperature for several days with simultaneous application of ethylene to trigger and synchronise the ripening process. Despite these ripening protocols, not all avocados within a commercial batch reach the RTE stage at the same time. This phenomenon, called ripening heterogeneity, is a major issue for ripening companies and retail outlets as it makes it impossible to guarantee that all fruits in a batch are at the RTE stage. Firmness, which determines the texture and juiciness of the fruit, is an important indicator of ripening stage.

### Ripening heterogeneity occurs at different levels in chain

While the moment of harvest for avocados is determined based on dry matter content, a large variability in fruit firmness is already apparent at harvest. This firmness heterogeneity remains both during the ripening period and afterwards in supermarkets. The firmness bandwidths for each ripeness stage are quite narrow (see figure). This means that, although the average firmness of fruit in a batch corresponds to the ripeness stage, the batch also contains unripe and overripe fruit. Decreasing heterogeneity necessitates frequent sorting based on firmness.

Several ways to reduce ripening heterogeneity have been investigated in the GreenCHAINge project. Sorting avocados before ripening on the basis of their initial firmness values was not found to reduce the firmness heterogeneity of a given batch. Pre-ripening heat treatments were also ineffective. Applying ethylene during ripening protocol slightly reduced the ripening heterogeneity but may have also slightly shortened the shelf life of RTE avocados. Sorting avocados after ripening remains nowadays the best option to reduce the firmness heterogeneity of the batch.



Firmness heterogeneity over time and bandwidth of ripeness classes. Only fruit in ripeness classes 2, 3 and 4 are considered RTE.



Colour heterogeneity on the first day following ripening.

For detailed information about this project result please visit [www.wur.eu/greenchainge](http://www.wur.eu/greenchainge).





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