



# Cost-effective routine measurements of tomato flavour

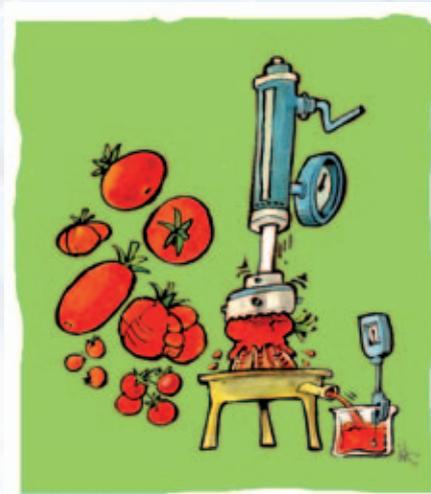
Wageningen UR Greenhouse Horticulture



**Tomato flavour** is determined by a combination of aromatic compounds, sugars and acids. But fruit texture plays a role in the perception of these substances during eating. Texture attributes have proven to be useful to characterise tomato flavour.

**A sensory model** with the flavour attribute sweetness and the texture attribute mealiness explains 80% of the variation in tomato flavour. These results of our panels indicate that the flavour compounds should not only be present in the fruit tissue but that these should also be released during chewing. Because sensorial assessment of tomato flavour with panels is not suitable for routine quality control, we constructed a multiple linear regression model with instrumental parameters for sensory attributes that predicts tomato flavour with an accuracy of 4 points on a scale of 0 - 100.

**The instrumental flavour model** predicts that flavour is best in fruits with a high Brix value, a high acidity and a high juice percentage. The fruit wall may be firm, but only in combination with a certain bite. The model is now used by different parties on a regular basis for routine measurements of tomato flavour.



**Seed companies** now use the model to screen new lines on their flavour level. Breeders used to consume many individual fruits from their breeding programme. Today our model measurements quickly results in an objective measure of flavour.

**Growers** producing for a single brand use the model in combination with factor analysis of growing conditions to fine tune their blueprint for tomato production. Thus the model is used as a tool for achieving homogeneity within a brand.

For more information:

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**Research on organic tomato fruit quality** with the model showed large differences between growers producing the same tomato variety. This information creates a basis for discussion between growers how to improve product quality and maintain a constant quality level.

**Wholesalers** use the model to choose when to change from one sourcing country to another or to select growers on flavour homogeneity throughout the year.

**The model** offers a straightforward scale of flavour, which allows chain partners to make clear agreements on quality levels. The model is now in use in our laboratory for routine measurements of flavour throughout the year. Various customers send in their samples - after which they receive an e-mail with the flavour results.



**The set up** of the measurements is tailor-made for our customers and the results are strictly confidential. All these applications, which would have been impossible with conventional taste panels, can be realised both cost-effectively and quickly with the instrumental model for tomato flavour.



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