



A Flavour Model for Sweet Pepper

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Flavour as added value

A good flavour is a chance for added value creation in sweet pepper. However, flavour is a complex multifactorial trait and until now has been difficult to measure in a high-throughput and quantitative way. These technical limitations made it difficult to improve flavour in breeding programmes of sweet pepper. To break this circle, breeders need new tools for an early screening of good flavoured lines.

Transfer of technology

In tomato an instrumental flavour model exist as a tool to predict the output of a hedonic consumer panel. This model has set the standard for all flavour measurements by the seed companies and wholesale traders in the fresh tomato chain in The Netherlands. The applicability of this tool is faster and cheaper than a panel. It allows for the collection of larger datasets of new lines, so more information on flavour can be collected and compared, within a season and between seasons.

Aim

To develop a tool to predict flavour of sweet pepper, to enable industry like seed companies, growers and wholesale traders to improve flavour of sweet pepper.



Methodology

To develop a similar flavour model for sweet pepper, data were collected of 60 cultivars, which were selected on a wide variation in flavour. Data were collected on consumer preference, sensory attributes, selected instrumental parameters and aromatic compounds. Analysis of these data will lead to the construction of an instrumental model for the prediction of flavour levels in sweet pepper.

First results hedonic and sensory panels

First results already indicate which attributes mainly explain flavour of sweet pepper. Figure 1 shows a high score on consumer preference often relates to a high score on one of the sensory attributes. Although this attribute only explains 46% of the variation in consumer preference. Another sensory attribute explains 43% of the variation in consumer preference. Further analysis of all data of different sensory attributes will lead to a sensory model, to estimate importance of the different sensory attributes.

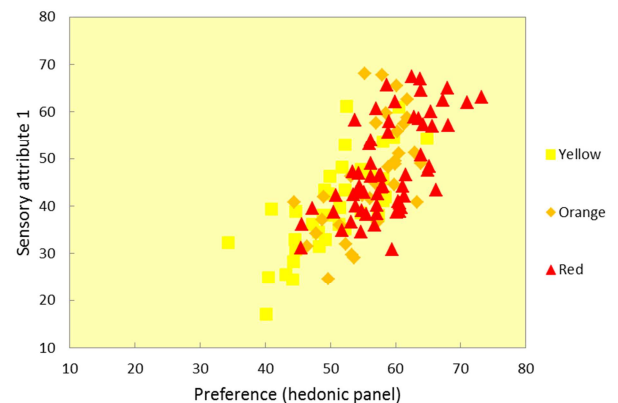


Figure 1: Relation between consumer preference and one of the sensory attributes of sweet pepper ($R^2=0.46$).

From sensory model to instrumental model

To develop a first candidate flavour model of sweet pepper, instrumental data and metabolic data will be correlated to sensory attributes. From this matrix a preliminary model will be constructed, explaining the sensory preference from instrumental data. Figure 2 already indicates the positive relation between the sensory panel response on sweetness and the instrumental measurement of refraction.

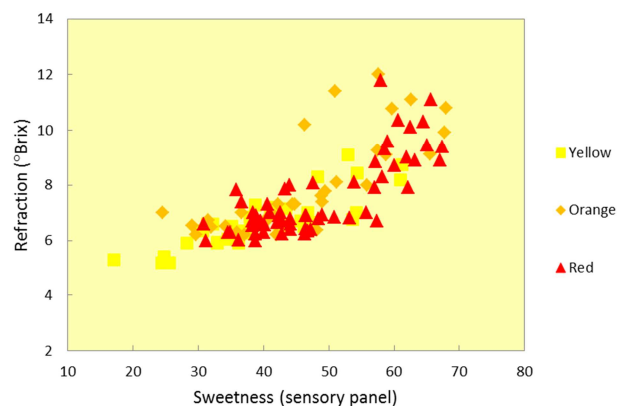


Figure 2: Relation between sweetness and refraction of sweet pepper ($R^2=0.61$).