A Flavour Model for Strawberry

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Flavour as added value

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

Application in the supply chain

In tomato an instrumental flavour model exists 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 use 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.

Objective

To develop a tool to predict flavour of strawberry, to enable breeders, growers and wholesale traders to improve flavour of strawberry.

Approach from panels to an instrumental model

Data of a wide range of strawberries were collected of hedonic consumer panels (preference), trained sensory panels (sensory attributes) and instrumental measurements (a.o. sugars, acids, texture and aromas).
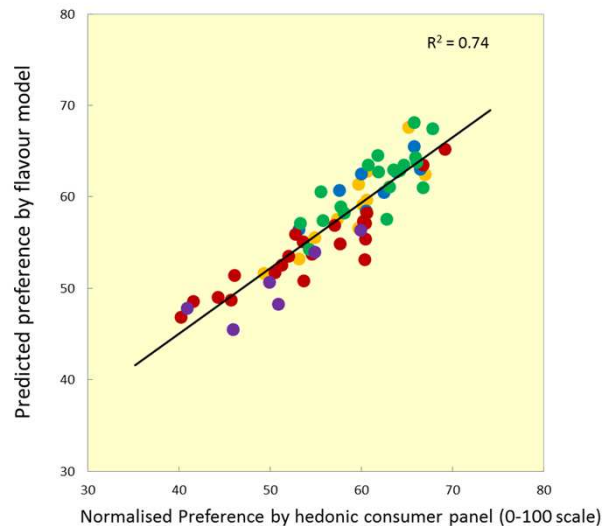

Figure 1. Relation between preference by hedonic consumer panel and predicted preference by the first candidate flavour model of strawberry.

To develop a first candidate flavour model of strawberry, preference by hedonic consumer panels was correlated to sensory attributes of the trained sensory panel. The importance of the different sensory attributes was estimated and correlated to instrumental data and metabolic data. From this matrix a preliminary model has been constructed, explaining the consumer preference from instrumental data. The figure above shows the that the first candidate model of strawberry explains 74% of the consumer preference.

Our Plans

The candidate model will be further validated with a wide range of strawberry varieties. When the validation is sufficient, predictions of strawberry flavour can be made for industry.