

Upgrading the tomato flavour model and the role of different pathways (TO I)

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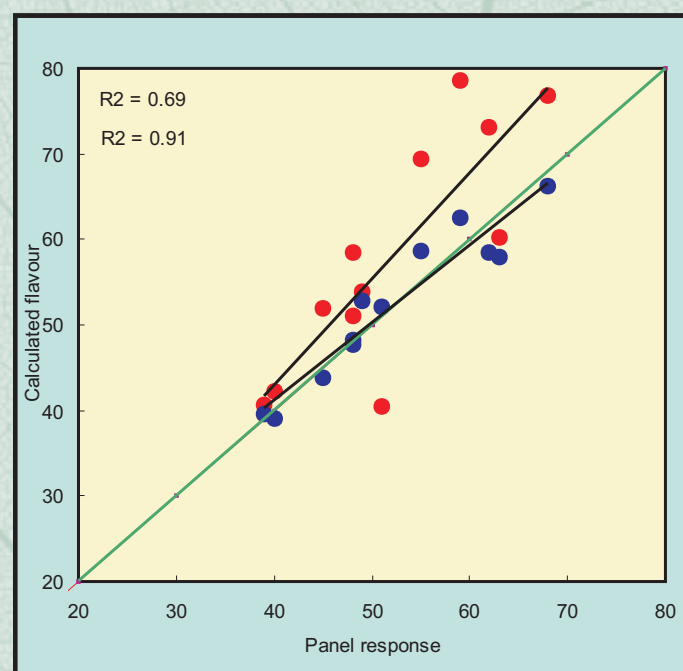
Upgrading the flavour model

The present flavour model is now used by different parties on a regular basis for routine measurements of tomato flavour. In this project we upgrade the model to cope with the newest varieties and newest lines.

Seven tomato flavour tests and paired measurements of fruit characteristics were carried out ($n = 14$). With our partners we have actively sought for outliers of the model. Each test consisted of known and new varieties, thus creating a “worst case test” for the present flavour model. The outliers could be characterized in four groups:

- (1) the fruits are sweet, but not acid enough;
- (2) the fruits have a skin that is too tough or too hard;
- (3) fruits that lack a good bite;
- (4) fruits that are too sweet.

For all the seven flavour experiments, candidate models were constructed. Several candidate models are promising. The importance of new parameters could be established.



Predictions by the present flavour model (red) and a new candidate model (blue); experiment of May 2009.

Studying the pathways with spiking experiments

To understand the physiological pathways that lead to a good tomato flavour, studies using spiked tomato pulp were carried out in 2008. The samples were spiked with different compounds for the phenyl propanoid pathway, the leucine/isoleucine pathway and the phenolic pathway. In 2009 the concentration of the added compounds were measured.

With methylsalicylate and methylbutanol, the measured concentration did not correspond with the expected concentration. These lower concentrations could explain why these compounds could not be tasted by the panels. The possible cause of these differences is presently discussed. Perhaps, the blending process converts methylsalicylate and methylbutanol into compounds which cannot be tasted. The concentration of phenylethanol, on the other hand, was much higher than expected. It was described as rotten, overripe, stale beer, musty.



Other compounds investigated

Compound	described as
guaiacol	smokey, oily, grassy
euganol	hay, musty
isobutylthiazol	unripe, green, sour

Because of the inconclusive results of the spiking experiment of 2008/2009, alternative plans are made for measuring the effect of these compounds on taste.