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# *Application of a new sensory-instrumental tool for the evaluation of promising apple genotypes*

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## Abstract

Most frequently, breeding programs adopt instrumental evaluation methods to assess the quality of the selections of interest. Sensory methods, when applied, are employed only at a later stage on fruit of selection chosen on the basis of previous instrumental screenings. Instrumental measurements, however, cannot replace sensory evaluation when a description of perceivable quality is needed. In this work, a detailed protocol, combining sensory and instrumental methods, is applied to define the sensory properties of 11 new apple breeding selections (*Malus x domestica* Borkh.) and to characterise them from their original parental genotypes.

The final aim is to provide to breeders a reliable sensory profile of new selections, and a useful tool to predict sensory properties by instrumental characterisation. Descriptive sensory analysis was performed by a trained sensory panel of 14 judges through a sensory vocabulary composed of 11 attributes related to texture, taste and overall odour and flavour [1]. Simultaneously on the same samples the basic chemical composition and texture properties were assessed by a set of standard and innovative instrumental measurements [2], to allow the interpretation of the sensory description in terms of fruit chemical and physical properties. The collected data permitted to study affinities and specificities of the new selections in comparison to their parental genotypes. Instrumental measurements confirmed the existence of differences between the samples and reflected their sensory description, helping to interpret the perceivable quality in terms of chemical and physical properties. Moreover, the combined analyses allowed the development of effective prediction models, with very good results especially for the texture attributes. This is an important first step in the achievement of a reliable complete sensotyping of apples by rapid instrumental characterisation that can be applied on the large data sets usually needed in the initial phase of breeding programs.

## References

- [1] Corollaro ML, Endrizzi I, Bertolini A, Aprea E, Demattè ML, Costa F, Biasioli F, Gasperi F. Sensory profiling of apple: Methodological aspects, cultivar characterisation and postharvest changes. *Postharvest Biol Technol.* 2013;77:111-120.
- [2] Costa F, Cappellin L, Longhi S, Guerra W, Magnago P, Porro D, Soukoulis C, Salvi S, Velasco R, Biasioli F, Gasperi F. Assessment of apple (*Malus × domestica* Borkh.) fruit texture by a combined acoustic–mechanical profiling strategy. *Postharvest Biol Technol.* 2011;61:21-28.