

Aroma chemical markers of Durello wines from different vintages and origins: a case study.

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INTRODUCTION AND AIM

This study investigated aroma chemical and sensory diversity of Durello DOC, an Italian sparkling white wine. In recent years, Durello wines have gained increasing attention from consumers, and the appellation has grown significantly in terms of production volumes and vineyard surface. The production of this white wine is located in the hilly area of the eastern Lessini mountains straddling the border between the provinces of Verona and Vicenza in the north of Italy. Durello wines must be produced with Durella grapes (*Vitis vinifera* L. cv. Durella) for at least 85%, while for the remaining 15% grapes of the Garganega, Pinot grigio, Pinot noir, and Chardonnay varieties can be used. The PDO contemplates the possibility of producing Durello by secondary fermentation either with Charmat and Classico method. The present study has two main objectives: on one hand, we intended to provide for the first time a detailed characterization of the volatile composition of commercial Durello wines; on the other hand, we wanted to investigate the influence of the two production techniques considered in the PDO regulation as well as of bottle aging of different vintage wines on relevant aroma compounds

MATERIALS AND METHODS

List of studied wines with codes, producers and vintages.

WINE	PRODUCTION METHOD	PRODUCERS	VINTAGES
DUR 01	Charmat	1	2016
DUR 02	Classico	2	2016
DUR 03	Charmat	3	2016
DUR 04	Classico	4	2016
DUR 05	Classico	4	2016
DUR 06	Classico	5	2017
DUR 07	Classico	4	2017
DUR 08	Classico	2	2017
DUR 09	Charmat	3	2017
DUR 10	Classico	6	2017
DUR 11	Classico	7	2017
DUR 12	Classico	5	2018
DUR 13	Charmat	8	2018
DUR 14	Classico	2	2018
DUR 15	Charmat	3	2018
DUR 16	Classico	9	2018
DUR 17	Charmat	10	2018
DUR 18	Classico	11	2019
DUR 19	Classico	2	2019
DUR 20	Classico	6	2019
DUR 21	Classico	9	2019

Volatile profile

Sensory profile



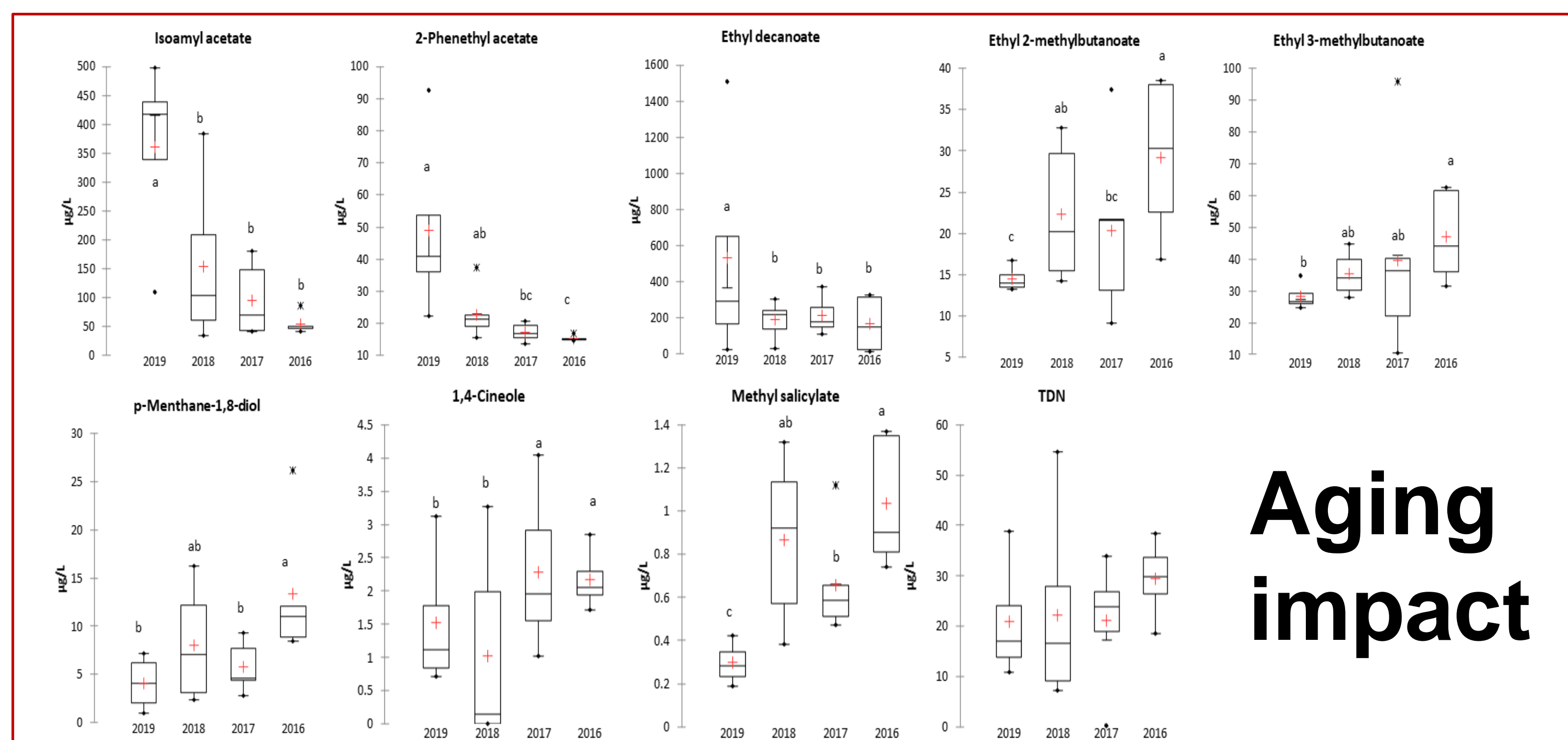
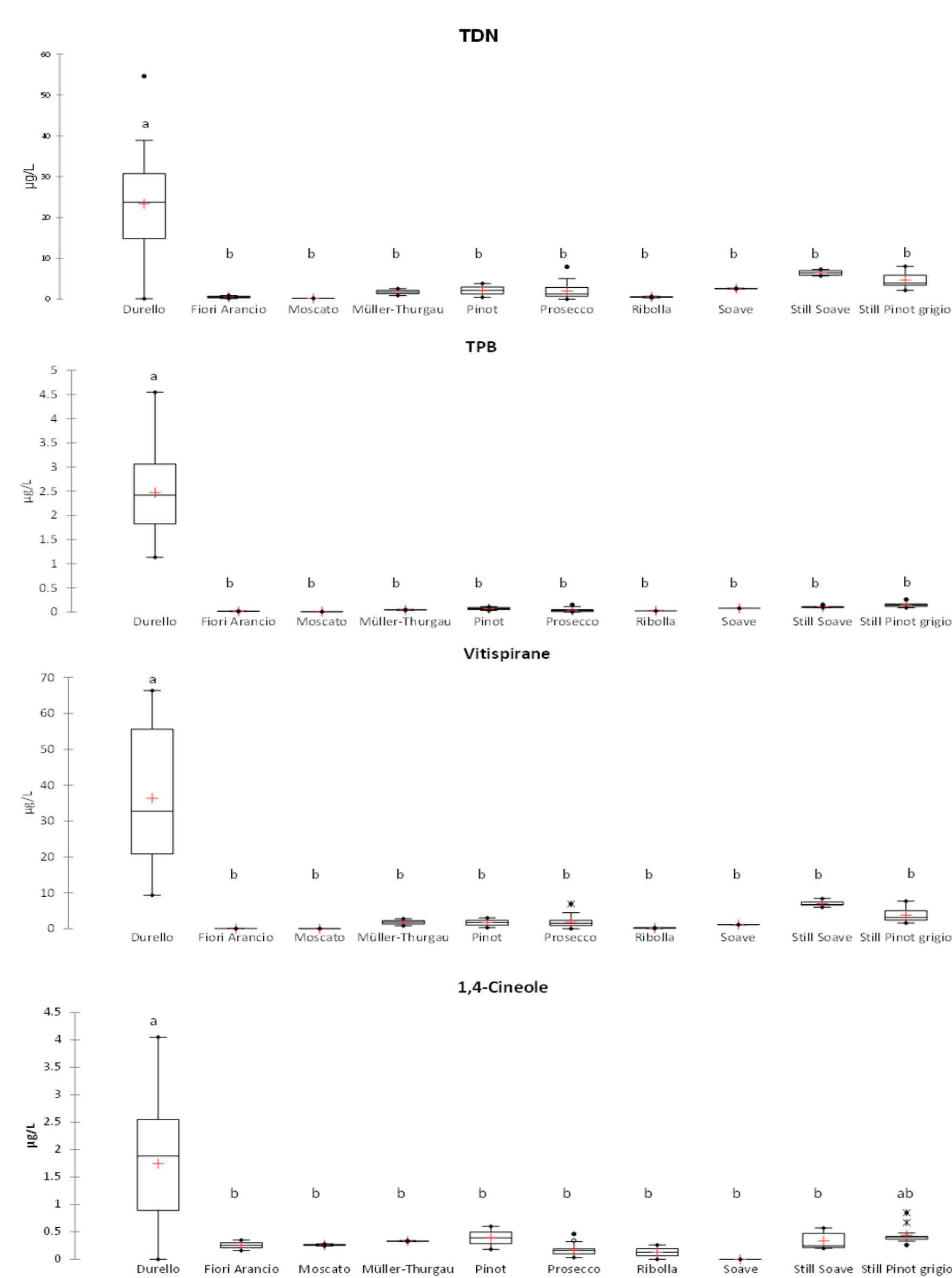
SPE-GC-MS
HS-SPME-GC-MS



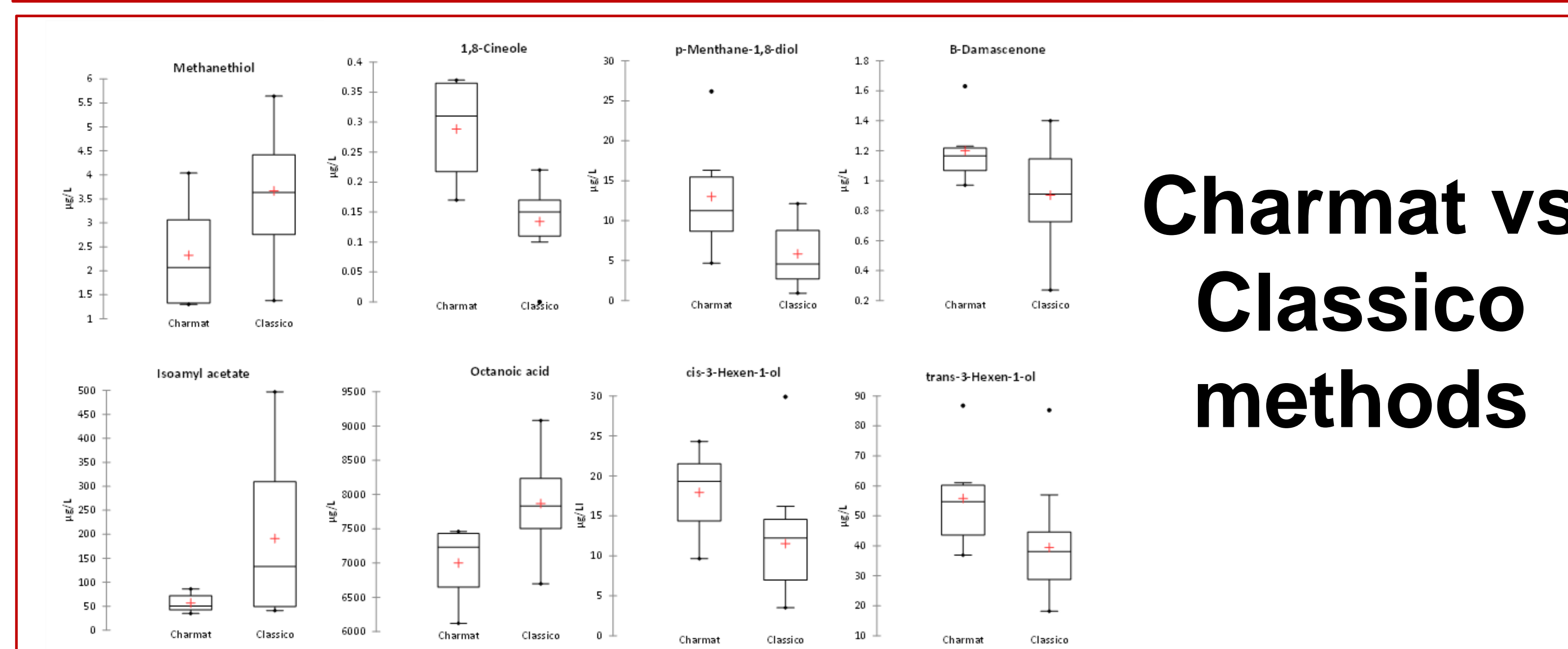
SORTING TASK

RESULTS AND DISCUSSION

Durello markers



Aging impact



Charmat vs Classico methods

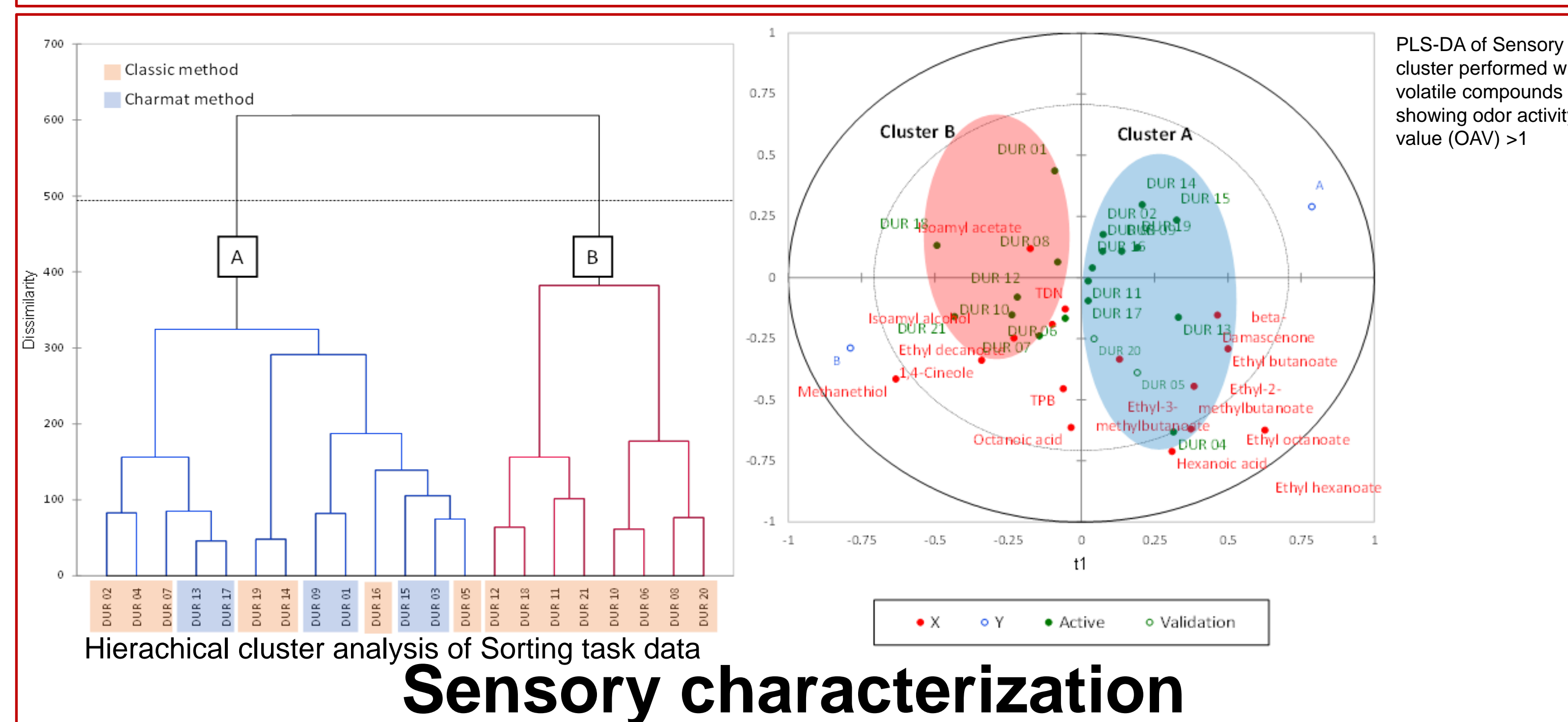
TAKE HOME MESSAGE

The present study provides for the first time a characterisation of the volatile fraction of Durello sparkling wines. Among the volatile compounds analysed, 1,4-cineole and a group of non-megastigmane norisoprenoids (TDN, TPB and vitispirane) were identified as possible markers of this wine type

The type of secondary fermentation method (Classico or Charmat) can impact significantly Durello volatile composition, highlighting the importance of various complex phenomena including possible adsorption of volatile compounds on yeast lees as well as formation of volatile compounds from amino acids.

Bottle aging and vintage of production also introduce significant modifications to Durello volatile composition, in particular affecting esters and terpene content, including an increase in 1,4-cineole.

Sensory assessment showed the existence of two odour profiles, which were due to the combined influence of the production method but also of vintage and winery. Methanethiol, esters, and 1,4-cineole appeared to contribute primarily.



Hierarchical cluster analysis of Sorting task data
Sensory characterization