INFLUENCE OF TWO YEAST STRAINS AND DIFFERENT NITROGEN NUTRITION ON THE AROMATIC COMPOUNDS IN LUGANA WINE

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INTRODUCTION AND METHODS

Lugana Protected Designation of Origin (PDO) wines are made from Turbiana grapes. The production area of this wine type is located in the provinces of Verona and Brescia close to Garda lake. Wine aroma profile is one of the main feature of the expression of the varietal and geographical identity of wine. The aroma of Lugana wines results from the combined contribution of esters, terpenes, norisprenoids, sulfur compounds and the benzenoid methyl salicylate. This study aims to investigate how volatile aroma compounds are affected by different nitrogen supplies and yeast strains.

Trebbiano di Lugana must

- Standard vinification protocol
- Triplicate
- YAN:256 mg/L

2 yeasts*

- Zymaflore DƎLTA
- Zymaflore X5

* Laffort, France

5 nitrogen modalities**

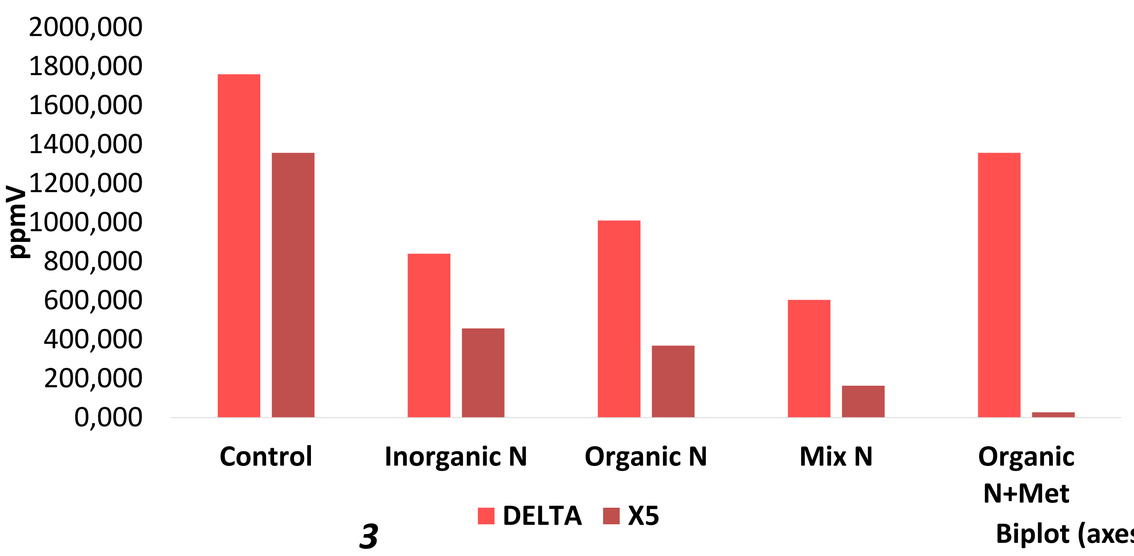
- Control (no addition made)
- Organic
- Inorganic (DAP)
- Mix of Organic and inorganic
- Organic + pure Methionine (30 mg/L)

** Addions were made when H_2S appeared.
All additions to obtain 100 mg/L of YAN added.

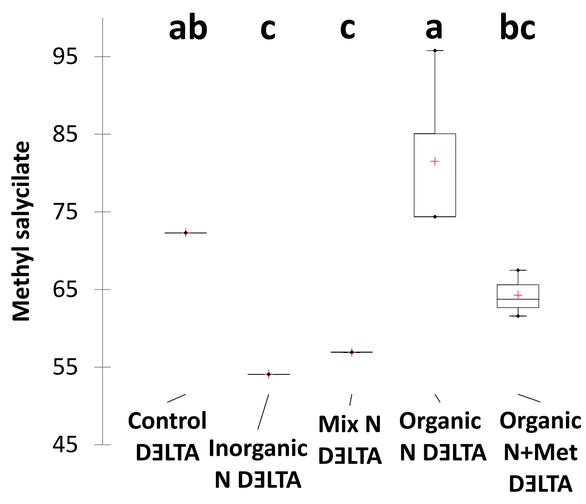
SPE-GC-MS
SPME-GC-MS

RESULTS

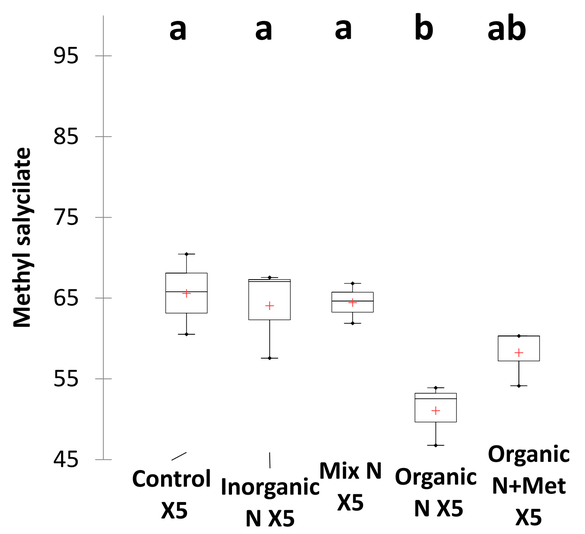
1 **Cumulative production of H_2S**



2A **Box plots (Methyl salicylate)**



2B **Box plots (Methyl salicylate)**



3 **Biplot (axes F1 and F2: 54,76 %)**

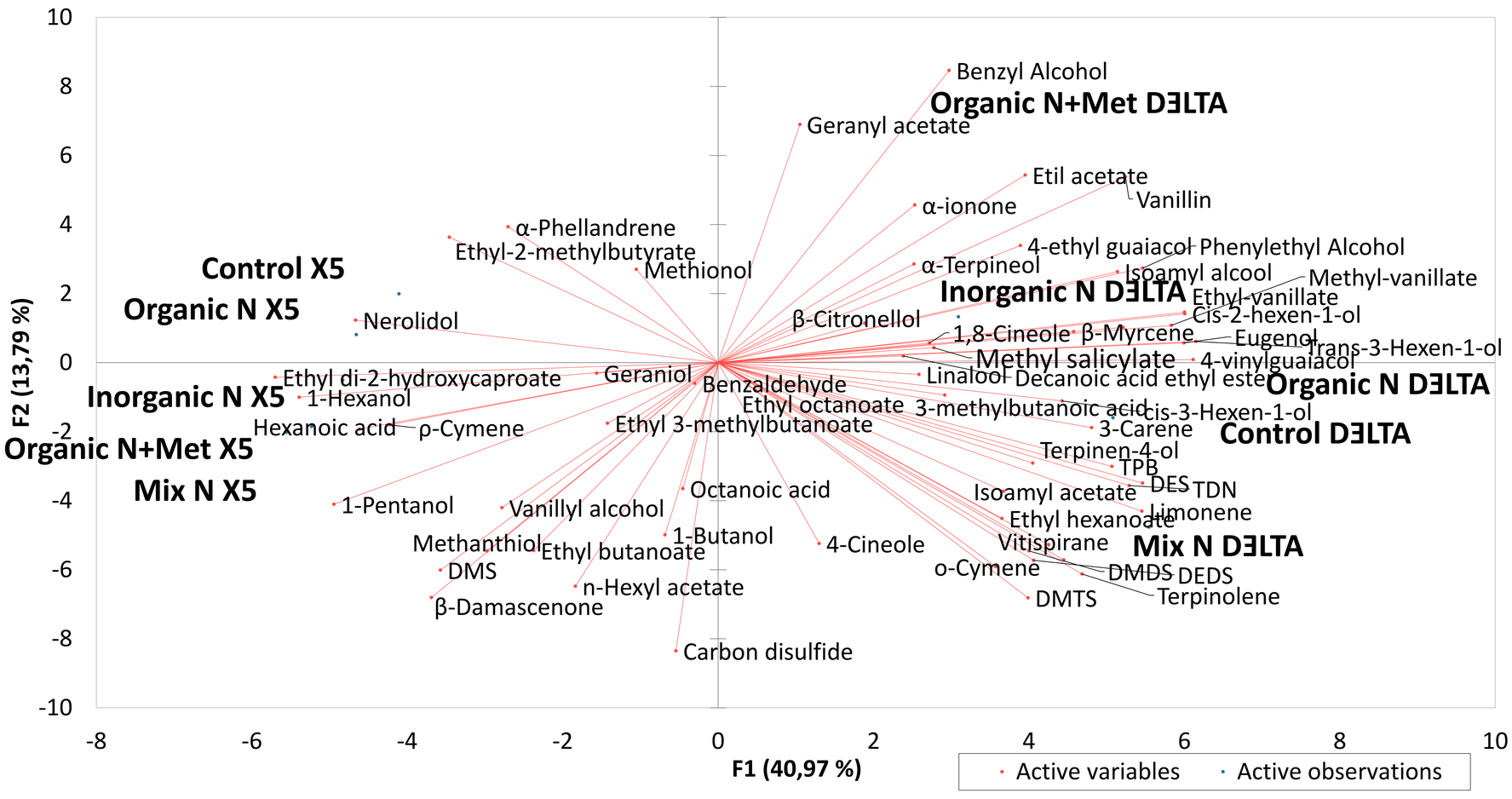


Fig. 1 – *Cumulative pruduction of H2S during alcoholic fermentetion of Lugana musts/wines.*
Fig. 2 *– Box plot of Methyl Salicylate in* ***A)*** *DƎLTA wines* ***B)*** *X5 wines. Letters shows significant s difference between wines (ANOVA, α=0.05).*
Fig. 3 *– PCA* (biplot) of SPME-GC-MS and SPE-GC-MS data of Lugana wines.

CONCLUSION

This study showed that the choice of yeast proved to be the variable with the greatest impact on the volatile chemical profile of the wines studied. Furthermore, the choice of nitrogen nutrient had a significant impact on the production of volatile compounds but did not follow a specific trend within the classes of compounds that could be defined as improving or worsening the general aromatic profile of the wines. In fact, the yeast-nutrient interaction is specific, so different yeasts can have different outputs with the same nutrient. Therefore, it is important to calibrate the nitrogen nutrition according to the yeast strain chosen.
A major influence of yeast and nutrient was observed for methyl salicylate, a key aroma compound of Lugana wines.

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