Impact of cover crop in vineyard on the musts volatile profile of *Vitis vinifera* L. cv Syrah

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INTRODUCTION

Grape aromatic characteristics are very important for the production of quality wines. The concentrations of volatile compounds and precursors in grape berries are highly influenced by viticultural practices [1]. To date there have been few studies that relate growing practices, as the cover crops, with the volatile composition of must.

OBJECTIVE

The aim of this work was to evaluate the influence of *Hedysarum coronarium* "Zulla" cover crop on the volatile profiles of organically grown Shyraz variety grapes.

RESULTS AND DISCUSSION

A higher number of volatile compounds were detected in musts from 2019 harvest (158) than in musts from 2020 harvest (121). The major group of compounds was alcohols in which were detected 32 different compounds followed by aldehydes (25) and ketones (21).

Regarding total content of volatile compounds, contrary trends were observed between harvests (Fig. 1).

Grouping compounds according to chemical characteristics can be seen in Fig. 2 and Fig. 3.

It was observed different must composition between harvests regardless of cover crop treatment, highlighting the terpenes content. The clearest trend was the increase of volatile phenols in both harvests with the amount of cover crop and the decrease of methyl esters which total amount was inversely correlated with the amount of “Zulla” cover crop (Fig. 4).

The compounds that primary contribute to the sample distribution were isopropyl laurate, 2-phenylethanol acetate, 2-cyclopenten-1-one, 3-octanone, and 3-phenoxi-1-propanol correlated with 2019 harvests and 5-methyl-3-hexanol, 1,2-benzosothiazol, pentanal, 3-methyl-1-butanal last compound only detected in this harvest.

PLS-DA results showed a clear separation among samples from different harvest and the musts from grape obtained with similar cover crop condition were also located near (Fig. 6). The compounds with high VIPs values were cis-3-hexenol, β-damascenone, ethyl isovalerate, 2-heptanol and unknown m/z 70-42 (UPL 1818).

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The results of principal component analysis (PCA) showed that PC1 grouped the samples according to harvest and PC2 depending on the amount of cover crop, separating clearly the samples obtained without cover crop, especially in the case of 2019 harvest (Fig. 5).

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CONCLUSIONS

- Cover crop had an effect over volatile profile of Syrah grapes.
- Free volatile compounds were reduced when the amount of cover crop applied increased.

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REFERENCES