

## EFFECTS OF EARLY LEAF REMOVAL ON GRAPE QUALITY OF ALBARIÑO VINES SUBJECTED TO DIFFERENT WATER REGIMES

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### Abstract:

**Context and purpose of the study** - The grape quality is affected by the canopy manipulation. Water management is a fundamental tool for controlling reproductive growth and grape quality. Moreover, the overall effect of irrigation might produce changes according to other cultural practices, particularly those associated with leaf removal. The present study aimed to determine the effect of early defoliation on the volatile composition of cv Albariño under different water regimes.

**Material and methods** - This work was conducted in 2016 and 2017 growing seasons in an experimental vineyard of *Vitis vinifera* cv. Albariño located in Galicia (Spain), Denomination of Origin Rías Baixas.

The early defoliation treatment was applied by leaf removing of the first six basal leaves at before flowering (DF) and compared with an undefoliated control treatment (C). DF and C were applied to vines on different water regime treatments, rainfed (R0) and drip irrigated at 30% of the reference evapotranspiration (R2). The grapes from each experimental treatment replication were analyzed by chemical (OIV methods) and volatile composition (GC-MS).

**Results** - Glucose and fructose (G+F) reached the highest values in R0. Early defoliation (DF) applied in both water regimes (R0 and R2) increased sugars concentration and decreased the malic and tartaric acids. The GC-MS analysis of Albariño musts allowed identifying and quantifying thirty-six volatile compounds belonging to seven families, including higher alcohols C6 compounds, terpenes, C13-norisoprenoids, volatile esters, acetates, volatile acids, volatile phenols and lactones.

Must volatile composition was affected by the treatments. Early defoliation (DF) induced an increase of total volatile concentration of cv Albariño must independently of water regime. Alcohols and terpenes+C13-norisoprenoids were the most affected volatiles, increasing their concentration when early defoliation was applied in both water regimes. However, ethyl esters and C6-compounds concentration only increased when DF was applied in R0.

**Keywords:** *Vitis vinifera*, defoliation, irrigation, grape chemical composition, volatile composition.

### 1. Introduction.

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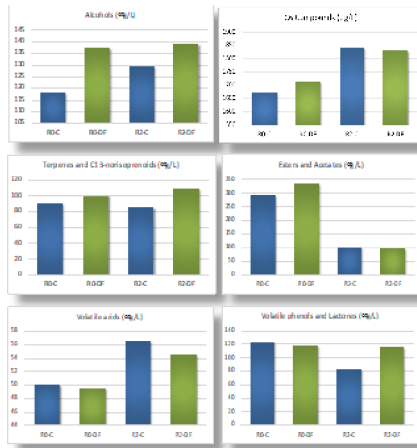
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FAN, YAN and ammonia were affected by early defoliation increasing their concentrations when DF was applied in R0.

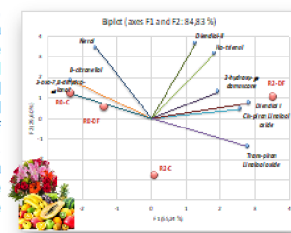
Treatment	G+F	Total acidity	Malic acid	FAN	Ammonia	YAN
R0-C	227.94	7.13	4.45	163.00	63.50	228.38
R0-DF	238.79	6.05	4.41	178.25	65.38	241.75
R2-C	205.91	6.66	5.31	192.13	90.25	272.13
R2-DF	218.47	6.10	4.92	155.75	68.00	223.88



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Terpenes and C<sub>13</sub>-norisoprenoids, varietal compounds, have a relevant role in the aroma of white wines, since they impart in floral and fruity attributes. Terpenes and C<sub>13</sub>-norisoprenoids were subjected to PCA to understand the effects of water deficit and early defoliation. In general R0 and DF had a greater influence on these compounds increasing their concentration in Albariño musts.



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