

CII-002. EVALUATION OF LEAF REMOVAL TECHNIQUES AND PROTECTION OF CLUSTERS FROM RADIATION TO IMPROVE THE QUALITY OF THE GRAPES AND WINES

SUMMARY

OBJECTIVES

To develop and calibrate manual and mechanical leaf removal techniques, and protection of Cabernet Sauvignon grapes from the sun, enabling the benefits of sun exposure to be obtained, minimizing sun damage and maximizing their production and qualitative potential, as well as simultaneously validating the monitoring grapes ripeness.

METHODS AND RESULTS

Three experimental wine-growing trials were conducted in commercial Cabernet Sauvignon vineyards to evaluate: [1] the impact of leaf removal strategies and sunscreen application on the quality of grapes and wines; [2] the effectiveness of a ripeness monitoring system on the harvest and; [3] leaf removal strategies and grape ripeness on the quality of grapes and vines. The leaf removal strategies were fundamentally different in terms of type, intensity and application method [manual or mechanical]. In the vineyards, radiation, temperature, canopy area and quadrat method parameters of the canopy were measured using standard protocols. For each trial, wines were produced in the CRI's experimental winery, in accordance with previously established methods. The wines obtained were submitted to chemical, phenolic composition and sensory analysis, following specified methodologies. The main results show that the different leaf removal strategies have significant effects on the canopy microclimate and quality of the grapes and wines. Very intensive leaf removal increases the sun exposure of grapes, and results in wines with lower polyphenol concentrations [and total anthocyanins], and negative sensory attributes. These latter two effects can be effectively countered with the use of a grape sunscreen or by delaying high-intensity leaf removal until pre-harvest. On the other hand, different grape ripeness results in wines with varying chemical and sensory characteristics. Finally, although the mechanical leaf removal method generates canopy microclimates and grapes with greater sun exposure than the manual method, there is no significant effect on the quality of the wine.

CONCLUSIONS

Low-to-medium intensity leaf removal favors a better quality of wine, particularly in sensory terms. The quality of the wines is also enhanced by delaying the harvest date of the grapes in accordance with the ripeness monitoring system. With regard to the leaf removal methods, the mechanical method does not have any negative effects on the quality of grapes and wines, and as such would be a feasible alternative.

SIGNIFICANCE OF THE STUDY

After three seasons, leaf removal strategies exist which enable the microclimate to be adjusted, limiting the exposure of clusters to the sun and enhancing the quality of Cabernet Sauvignon grapes and wines.