



Organic mulches slightly influence wine phenolic composition and sensorial properties

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Grapevines have traditionally been grown in semi-arid areas, but viticulture is now compromised by climate change. Therefore, it is necessary to implement environmentally friendly viticulture practices to adapt grapevines to current climatic conditions. In this context, organic mulches offer many benefits, such as reduced soil erosion and increased organic matter, soil water content and crop productivity. However, these practices must not compromise grape and wine quality. Therefore, the objective of this study was to evaluate the effect on wine physicochemical and phenolic composition and sensorial properties of different soil management practices on the vine row. Over four years, we examined five soil treatments in two different vineyards. Three treatments involved organic mulches (grape pruning debris (GPD), straw (STR), and spent mushroom compost (SMC)). The other two treatments involved conventional soil management methods (interrow tillage (TILL) and herbicide (HERB)). The implanted organic mulches affected wine physicochemical parameters although they remained within acceptable ranges for optimal wine elaboration. In general, wines obtained from organic mulches had higher potassium levels and hue than those from bare soils. The pH of these wines was higher due to lower concentrations of tartaric and lactic acid. The phenolic profile showed minimal differences among treatments, except for SMC wine, which had lower total flavonols content. Additionally, no differences in wine sensorial properties were observed. Therefore, organic mulches like STR, GPD and SMC could be an alternative option to mitigate climate change effects without decreasing the wine quality.

Keywords: *Grapevine, mulching, soil management, viticulture, circular economy*

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