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Título Comunicación oral: Management of water status in vineyards: meta-analysis of its effects on yield and grape composition.

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RESUMEN: Mediterranean vineyards have been traditionally grown under rainfed conditions, but in recent decades the irrigated area has increased significantly, seeking to minimize the adverse effects of severe water stress on grape quality and yield. Given the large area occupied by vineyards, and the increasing scarcity of water resources, it is necessary to develop strategies for the optimization and efficient use of water to reduce the risk of its overexploitation. The present study aims at valorizing previous knowledge generated in different research projects by means of a meta-analysis of the effects of water status management on vineyard performance and grape composition. A database compiling around 1,400 replicates belonging to 41 water management trials conducted in Spain between 1996 and 2020, covering a wide range of soil and climatic conditions, was used. Each replicate was classified by its level of water stress as No Stress (>-0.411 MPa), Mild (-0.674 to -0.411 MPa), Moderate (-0.936 to -0.674 MPa), High (-1.2 to -0.936 MPa), and Severe (<-1.2 MPa), using their stem water potential values averaged over the season. The mean response ratios and the proportion of change produced by the increase in water stress on vegetative development, yield and grape composition were evaluated. Changes in plant water status caused significant differences in the parameters analyzed, regardless of the starting stress level, although these patterns varied depending on the specific parameter being analyzed. Thus, the change in pruning wood weight and yield with increasing stress ranged from -5% to -26%, with the greatest changes occurring from moderate to high stress. The changes in soluble solids content of berries ranged from +0.4% to +1.5% with increasing stress, except when increasing from moderate to high stress (-0.74%). In the case of titratable acidity, the change from increasing from a high level of stress to a severe one was +1.4%, while in all other cases it decreased (between -2.6% and -5.2%). The results showed the overall impact of plant water status management in the vineyard performance and constitute a valuable tool for the management of this resource.