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I International Conference on Research for Sustainable Development in Mountain Regions

Book of Abstracts

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Vine response to deficit irrigation in NE Portugal: water productivity, yield and berry composition.

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Vine response to water deficit depends on the pattern and severity of the imposed water stress, and this information has been used to develop deficit irrigation strategies. However, successful strategies may vary among regions with different climates and can even be site specific, depending on the interactions within the grapevine variety, soil type and vineyard management practices. Regulated Deficit Irrigation is one of the most frequently used irrigation strategies in vineyards with the aim to balance grapevine vegetative and reproductive growth by applying less than the full vineyard water requirements, at specific periods of the growing season. The effect of several deficit irrigation regimes on vine water status, grape yield and quality parameters were studied in the Portuguese cultivar Touriga Nacional (Vitis vinifera L.) grown in organic production. Field studies were conducted during two seasons (2014-2015) in a commercial organic vineyard, located in the NE Portugal (lat. 41°31'N; long. 7° 5'W; 326 m asl). Treatments consisted of non-irrigated vines (NI) and three deficit irrigation regimes: 20%, 40% and 60% of reference evapotranspiration (ETo). Water was applied three times a week, from pre-veraison until one week before harvest. The results showed that moderate irrigation improved significantly the grapevine water status during berry ripening. Yield components and pruning weights had a significant increase in irrigated treatments. Water productivity increased each year as the supply of water decreased from 60% ETo to NI vines due to a greater reduction in pruning weight relative to yield. The differences among treatments were not statistical significance in the most of fruit quality parameters. However, the total phenols and the colour intensity showed a significant decrease in 60% ETo irrigated treatment.

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