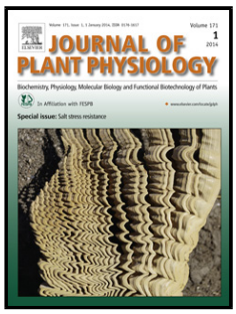

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Evaluation of water relation parameters in *vitis* rootstocks with different drought tolerance and their effects on growth of a grafted cultivar

Gregorio Gullo, Antonio Dattola, Vincenzo Vonella, Rocco Zappia

[1]Department AG.R.A.R.I.A. *Mediterranean* University of Reggio Calabria, Reggio Calabria, 89124 Italy, UE – ggullo@unirc.it; antonio.dattola@unirc.it; vincenzo.vonella@unirc.it; rocco.zappia@unirc.it; www.unirc.it

[1]Corresponding author: Gregorio Gullo
Dept. AG.R.A.R.I.A.
Mediterranean University of Reggio Calabria
Loc. Feo di Vito
89124 Reggio Calabria, Italy, UE
Tel: +39-0965-801254
Fax: +39-0965-2204856
e-mail: ggullo@unirc.it

Abstract

Knowledge of root hydraulic resistance will allow us to better understand water relations arising in the soil-plant-atmosphere continuum. These are the basis for better control of plant behaviour in the current environmental context that is more and more affected by global warming and problems related to increased drought frequency and duration. The objectives of this study were to determine how the growth of a cultivar changes in response to the drought tolerance of the rootstock used in *Vitis* grown in a semi-arid area and how the root hydraulic resistivity and root hydraulic conductivity change with increased transpiration when adopting a rootstock with a different drought tolerance.
These experiments were carried out on intact plants of Gaglioppo grapevines grafted onto rootstocks of 779 P, a drought-tolerant American hybrid, and 420 A, a drought-susceptible American hybrid.
Root hydraulic conductivity was significantly higher in the roots of 779 P than in the roots of 420 A. Stomatal conductance, net assimilation of CO_2, leaf water potential, and relative water content were also higher in Gaglioppo grafted onto 779 P than that grafted onto 420 A. Leaf area, leaf dry weight, and specific leaf weight of Gaglioppo were also higher when grafted onto 779 P. Gaglioppo grapevine grafted onto 779 P showed superior growth and physiological performance.