

Potassium deficiency and drought stress in grapevine cultivars

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Potassium availability affects drought responses in plants through several metabolic roles, among which stomatal regulation, cell growth and xylem hydraulics. *Vitis vinifera* L. is a highly valuable crop and several genotypes have been selected during its millennial cultivation. Varieties show differences in their adaptability to stress conditions, making them more or less suitable to certain climatic and edaphic conditions. The varieties cultivated in Sicily are characterized by high variability. We investigated the response of two Sicilian cultivars (Nero d'Avola and Catarratto) to potassium deficiency and drought stress. Two-year-old grafted plants were grown in agriperlite, with or without potassium in the fertigation solution, and subjected to moderate drought stress by suspending irrigation for 6-8 days. Potassium content of xylem sap, leaf and root tissues were measured with an ion-selective electrode. Changes in stomatal conductance, plant transpiration and hydraulic conductance were compared between genotypes and treatments, in order to gain information for the development of optimal fertigation practices and the selection of the most drought tolerant varieties.