

P49 – PIWIs meet drought: ecophysiology responses to soil dehydration

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Abstract

Grapevine interspecific hybrids (PIWIs) represent an interesting alternative to classic cultivars in several wine regions, especially under sustainable and organic production systems. While such genotypes are well characterised for some agronomic aspects and mainly because their response to biotic stressors such as powdery and downy mildews, little is known about their response to abiotic stressors such as drought. Here we studied the response of three different commercial PIWI genotypes (Donauriesling, Muscaris, and Sauvignier gris, all grafted on rootstock Kober 5BB) to drought by monitoring their leaf gas exchange and water potential during dehydration in two seasons (2020 and 2021). We quantified the leaf area development and some leaf hydraulic traits to understand how they relate to the drought response in a pot experiment under controlled conditions. The results showed slight differences between genotypes only during the first days of dehydration, where Sauvignier gris exhibited a less tight stomatal control as compared with the other PIWIs and in coordination with a lower (more negative) osmotic potential and turgor loss point. However, after five days under drought, all genotypes exhibited similar stomatal behaviour ($g_s < 0.05 \text{ mol m}^{-2} \text{ s}^{-1}$). Our study shows that PIWIs behave and operate within similar ranges of stomatal conductance and water potentials as compared with other *V. vinifera* cultivars used in this study (Grüner Veltliner and Riesling). Acclimation to long-term water deficit and impacts on fruit composition is needed to better understand PIWIs ability to grow under limited water scenarios.

Keywords: water stress, grapevine, grapevine hybrid, drought tolerance