

NAME: Etienne TERBLANCHE

INSTITUTION: Instituto Superior de Agronomia, Universidade Técnica de Lisboa

MASTERS: Vinifera Euromaster - European Master of Sciences of Viticulture and Enology

SUPERVISOR: Hernán Ojeda,

CO-SUPERVISOR: Carlos Manuel Antunes Lopes

DATE: 27/07/2012

TITLE OF THESIS:

Aroma precursors in *Vitis vinifera* L. cv. Viognier B. as influenced by training system and grapevine water status.

Abstract

The aromatic potential of fruit from *Vitis vinifera* L., Viognier B. at harvest subject to two training systems [vertical shoot positioning (VSP) and minimal pruning (MP)] and two irrigation regimes [Irrigated (I) $\Psi_{pd} > -0.4$ MPa and Non-irrigated (NI) $\Psi_{pd} < -0.4$ MPa] were investigated under Mediterranean conditions (South of France). In order to understand the scope of the imposed treatments; vegetative expression; yield components; bunch microclimate and classical ripening parameters (soluble solids; pH; titratable acidity, organic acids, nitrogen and cations) were also quantified. Both increased water deficits and MP treatments caused reductions in berry size, leading to greater aroma precursor concentrations. NI treatments resulted in lower yields than I treatments, consequently altering leaf area: fruit weight ratios. Irrigated (I) treatments displayed greater canopy densities and lower degree of berry colour evolution than NI treatments. In general increased-; water deficits, bunch exposure and leaf area: fruit weight ratios lead to greater berry aroma precursor content. As a result of actions on biosynthetic level and concentration due to reduction in berry size, the MPNI treatment displayed the highest aroma precursor concentration, while the VSPI treatment displayed the lowest concentration. The results from this study confirm an interaction between plant water status and training system affecting aroma precursor content. It also highlights grapevine water status as a decisive factor influencing grape aroma potential on various levels.

Keywords: aroma precursor, training system, water status, bunch exposure