Vinifera master thesis abstract (template 2013)

Thesis title: **Effect of irrigation on berry quality and skin cell wall composition in the grape varieties Touriga Nacional and Trincadeira**

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Institution/company involved: **Instituto Superior de Agronomia**

Tribunal members (name/position):

- Carlos Manuel Antunes Lopes, Professor Associado, UTL/ISA
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Date & location of the oral examination:
4-12-12 2:00 PM on Instituto Superior de Agronomia

Confidential: ☐ **Yes** ☒ **No**

Abstract (max 300 words)

The main objective of this study was to determine how water availability effected the composition of both the grape berry and the skin cell wall of two Portuguese grape varieties, Touriga Nacional and Trincadeira. Different vines situated in the Centro Experimental de Pegões, 70 Km East from Lisbon, Portugal, were subjected to Nonirrigated (NI, no water applied) and Fully-irrigated (FI, 100% of evapotranspiration rate) treatments throughout the growing season for each variety.

Berries were harvested and sampled on 20th September 2010 from the four plots and the yield and quality parameters were tested. Differences between the treatments were noted with grapes from irrigated plants showing significantly higher berry weight, and volume. Whereas the non-irrigated berries showed higher levels of anthocyanin content, colour intensity, total phenolics and total acidity, than the fully irrigated. There were also differences noted between varieties in several parameters, mainly with Touriga Nacional showing a higher content in the phenolic compounds.

Slight differences were found in the cell wall composition of the berries, with fully irrigated treatments showing higher levels of cellulose. There was a decrease in total sugar content, and total uronic acid content within fully irrigated berries for both varieties. In addition, Touriga Nacional showed an increase in neutral sugars under the fully irrigated treatment, where as irrigations showed to decrease the level of neutral sugars for Trincadeira.

It is possible that the extractability is correlated to the decrease in total sugar and pectins that may aide the release of the cell wall bound phenolic compounds to the must.

Keywords (5): *Touriga Nacional , Trincadeira, Irrigation, Cell Wall, Polysaccharides, Extractability Index*

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