



Vinifera Master Thesis Abstract (template 2013)

Thesis Title: Decision tool comparison based on evapotranspiration, soil, and plant water content to determine vineyard water requirement and improve irrigation strategies for white winegrape production.

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Date and location of the oral examination (if known):

Confidential: Yes No

Abstract (max 300 words):

Topic position and objectives: Water used for irrigation is the most used worldwide and improve the water use for irrigation purposes has become a necessity. In arid places like eastern WA, it is necessary a well-designed irrigation regime to optimize water use; also this irrigation water use reduction, aid in the vineyard management. The first objective of this project is to evaluate the effectiveness of different decision making tools to schedule irrigation based on evapotranspiration, soil moisture, and plant water status. The second objective is to determine optimal irrigation regimes for Chardonnay and Riesling varieties.

Methods: This project consist in evaluate water content approaches with 3 different irrigation decision tools according to evapotranspiration, soil moisture, and stem water potential and observe which one is the most suitable for irrigation scheduling. As well as 3 irrigation treatments based on 2 regulated deficit irrigation systems (RDI); moderate seasonal irrigation deficit moderate water deficit from fruitset to veraison; and another treatment based in partial rootzone drying (PRD).

Results: According to the results and the objectives of the research the suggestion for these 2 varieties about the most suitable decision tool comparison for schedule irrigation was the one based in the stem water potential approach. Regarding to the 3 deficit irrigation systems results suggest the RDIs treatment for the chardonnay block and for the Riesling block any of the RDI treatments.

Main conclusions:

- Replacing 100% the evapotranspiration approach is not a viable way to schedule irrigation due to an excessive irrigation.
- Differences between irrigation treatments (PRD and RDI) are apparently due to water amount rather than differences of the hydraulic signals that the treatment traits cause.

Keywords (5): evapotranspiration, soil moisture, stem water potential, regulated deficit irrigation systems, partial rootzone drying

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