

Project proposal: Quantifying the effect of an established wind break on fruit quality, yield and tree performance of a bearing citrus cultivar on a commercial farm in Stellenbosch, Western Cape.

Co-supervisors/promotors:

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Option 1 – Horticultural focus

Quantify the effect of wind on fruit quality of citrus fruit on different bearing positions at three distances from an established wind break. (evaluate skin finish, fruit density and internal quality as TSS/Acid ratio and relate this to wind speed and direction)

Determine the effect of wind on fruit growth and yield at two distances from an established wind break. (measure weekly/bi-weekly growth rates of individual fruit on marked trees and yield/tree and relate to wind speed and direction and possibly VPD?)

Quantify tree growth of bearing citrus trees, in the top and bottom of the tree, as affected by wind at two distances from an established wind break. (measure shoot growth during the season, SWP, stomatal conductance and leaf temperatures on ad hoc dates and relate this to wind speed and direction and temperatures)

Option 1 – Eco physiology focus

Citrus has a general problem with water uptake and high leaf temperatures (Veste et al. 2000 -- http://www.desertconsult.de/PDF/27Veste%20Horticulturae531_2000_Citrus.pdf) and its performances with water uptake. Grapes had less problems with transpirational cooling. The ecophysiological (gas exchange) can be connected now with chlorophyll fluorescence measurements and the canopy temperature measurements to the effect of existing wind breaks in these sites as follows:

- a. Linking NDVI, PRI, chlorophyll fluorescence and gas exchange measurements, photosynthesis measurements of different crops (citrus and/or wine grapes) ;
- b. linking water relations and leaf photosynthesis and transpiration;
- c. transpiration cooling and wind speed (at the leaf level)