

The impact of canopy and crop management on perennial and temporary nitrogen sink dynamics with emphasis on must nitrogenous compounds

Project ID: NWGICH4

Fruiting capacity and berry composition of grapevines are dependent on canopy area, with grapevine reserves affected by crop load. During grape maturation nitrogen (N) uptake is limited, therefore grapes obtain N mobilised from vegetative annual and perennial organs. Recent research has indicated, that removing leaves or bunches could influence N accumulation in the fruit and consequentially nitrogenous compounds that are important for the fermentation process. Stable isotope techniques will be utilised in studies under controlled conditions to determine the allocation and mobilisation of N in the various organs of the grapevines, including must nitrogenous compounds.

We seek a highly motivated PhD candidate with a high level Honours or Masters qualification in biochemistry or plant physiology. The project will be based at the Wagga Wagga campus of Charles Sturt University with some research undertaken at CSIRO in Adelaide (CSIRO Agriculture & Food). The candidate will develop further skills/techniques in plant physiology and biochemistry. The work will be in collaboration with CSIRO using their stable isotope facility for complementary studies; therefore a scholarship top up from CSIRO might be obtained, depending on the level of qualification.

References

- Rossouw, G. C., Smith, J. P. and Holzapfel, B. P. (2017): Impact of reduced post-veraison leaf area on the relationship between petiole and fruit composition. Acta Hort. (ISHS), VIII International Symposium on Mineral Nutrition of Fruit Crops (in press)
- Rossouw, G. C., Smith, J. P., Barril, C., Deloire, A., and Holzapfel, B. P. (2017): Implications of the presence of maturing fruit on carbohydrate and nitrogen distribution in grapevines under post-veraison water constraints. Journal of the American Society for Horticultural Science, 142, 71-84
- Holzapfel, B.P., Watt, J., Smith, J.P., Katja Šuklje and Rogiers, S.Y. (2015): Timing of N Application and Water Constraints on N Accumulation and Juice Amino N Concentration in Chardonnay Grapevines. Vitis 54, 203–211

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