

Abiotic constraints on the reproductive development of hazelnut bushes during establishment phase

Project ID: NWGICH10

New hazelnut orchards take a minimum of 7-8 years from orchard establishment to commercial productivity. The financial implications of this can be a deterrent to new growers and limits the potential for the expansion of the Australian hazelnut industry. Reducing the length of the establishment phase in hazelnut orchards would have obvious economic benefits to the industry. However, for this to occur it would mean that the bushes would need to be productive earlier than normal. The tolerance of the bushes to this is not yet known; therefore an indicator of the ability of the bushes to sustain a certain crop load early would provide useful information.

To determine the ability of hazelnuts to reach and sustain commercial productivity earlier than usual, this project could include the following:

- investigate factors that contribute to the timing of reproductive development in key hazelnut varieties and how this varies across cool and warm regions
- determine major components, metabolites, enzymes and gene expression that are involved in the regulation of reproductive development
- determine the effect of climate and internal hazelnut bush resources on the development of catkins and female flowers
- identify possible factors that could induce early productivity in hazelnut bushes
- investigate possible indicators that could monitor the stress of bushes induced to early productivity

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 Orange Agriculture Institute (NSW DPI) with some work undertaken at the Wagga Wagga campus of Charles Sturt University. The candidate will develop further skills and techniques in plant physiology and biochemistry. The research will be linked to other institutions worldwide that also undertake research on hazelnut production. The work for this project will be in collaboration with the hazelnut industry; therefore a top-up scholarship from the industry can be obtained.

References

Snare, L. and Gottschall, S. (2017) Hazelnuts in Australia: Opportunities for long-term development, AgriFutures Australia Publication No 17/031 AgriFutures Australia Project No. PRJ-007666

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