

\$2.4 million boost for Rubus pest management

RB21000: Integrated pest management approaches to address pest challenges in raspberry and blackberry

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A national five-year **\$2.4m** research program will boost integrated pest management (IPM) in Rubus crops - meeting the challenge of modern growing systems and pests.

The program will be delivered through Hort Innovation and led by the Tasmanian Institute of Agriculture (TIA) partnering with NSW Department of Primary Industries (NSW DPI) and Agriculture Victoria (AgVic).

Dr Stephen Quarrell (TIA) is excited to be leading a truly integrated approach to pest management in Rubus crops.

“Working with blackberry growers on redberry mite management, it became obvious that we needed to consider the impacts of the whole pest and disease management program if we wanted better outcomes for growers. This funding is allowing us the time and scope to develop better integrated pest management systems, particularly for protected cropping and tricky-to-manage pests.”

The research team brings together some new and familiar faces. TIA’s Steve Quarrell is familiar to many through his research on redberry mite in blackberries. He is joined in Tasmania by entomologist and pollination guru Jon Finch. The Victorian team of Greg Lefoe, Jackie Steel and Hassan Rahmani bring expertise in classical biological control and mite management. Newly appointed entomologist Saleh Adnan will manage trials in NSW. The regionally based extension crew of Michele Buntain (TIA), and Melinda Simpson (DPI NSW) are berry industry stalwarts whilst Emily Crawford (AgVic) is a welcome new face with experience gained helping apple growers implement IPM. Research will be conducted in the main production regions of NSW, Tasmania and Victoria.

The program’s research focus will be the key IPM strategies of Cultural Management and Classical, Augmentative and Conservation Biocontrol. The program will also have a strong focus on developing extension materials that support better pest and disease management.

New biological control options

Two-spotted mite management is a good example of augmentative biological control currently being used in Rubus crops, where the natural enemies - predatory mites - are reared and then released in the crop. In this project, the research team will look to expand the biological control options available to Rubus growers.

The team will conduct a survey of the pest and beneficial species within our Rubus growing regions to find what beneficial insects are already in Australian Rubus crops. An example is the mite predator *Typhlodromus dossei*. It was commonly observed in blackberry fruit sourced from Victoria and Tasmania during the redberry mite project and could be cultivated as a future biocontrol agent to fill a current gap in mite management.

The Argentinian parasitic fly *Trichopoda giacomelli* is a potential candidate for green vegetable bug management. Scientists released this parasite in Northern NSW cotton for green vegetable bug control in 1996 but its current geographic range is unknown. The project will examine how far this species has spread since being released and if a release could be effective in southern growing regions.



Tasmanian entomologist and pollination expert Jon Finch

Photo credit: Tasmanian Institute of Agriculture



Dr Steve Quarrell (TIA) inspecting blackberry mites

Photo credit: Tasmanian Institute of Agriculture

Conserving our natural and introduced beneficials

Introducing beneficial species multiple times during the long Rubus growing season can be hugely expensive. Protecting introduced beneficial species and natural enemies is a way of ensuring a better return on investment. Conservation biocontrol aims to both preserve and boost introduced and naturally occurring beneficial species in and around the crop by providing areas of shelter and forage that is not exposed to pesticides. These protected beneficial species help reduce pest pressure around the crop and help re-establish 'good bug' populations in the crop if a disruptive pesticide does need to be applied.

The research team recognises protected cropping poses some interesting challenges to implementing conservation biocontrol. The interrow can be very dry and is well trafficked making plant establishment tricky. We will work with growers to design a system that retains maximum cropping area whilst looking at innovative ways to economically establish more diverse plant communities for beneficial species.

Farm management and cultural control strategies

One form of cultural pest management we will investigate is trap cropping. The name 'trap crop' is very descriptive of how they work. 'Trap crops' are highly attractive to their target pests, luring them away from the Rubus crop. This provides growers with an opportunity to use disruptive chemical controls outside of the commercial crop without creating withholding period issues or secondary pest outbreaks. We see trap crops as a good option for highly mobile migratory pests such as mirids.

Pesticides and Rubus IPM

IPM aims to minimise pesticide use in the crop rather than eliminate it altogether. It looks at the whole system to understand how different management decisions impact on other aspects of crop protection, and fruit yield and quality. It may seem obvious, but one of the biggest issues when implementing IPM is knowing when and how best to respond to a pest outbreak. Part of this program is therefore about helping growers make the best decision around what pest management strategy (cultural, biological or chemical) is most appropriate at any given time and situation. Therefore, some of the key outputs for this project will be regional grower workshops and the development of industry friendly decision-making tools and guidelines to better understand how many common crop protection strategies impact on other aspects of production.

The project, Integrated pest management approaches to address pest challenges in raspberry and blackberry (RB21000) is a strategic levy investment under the Hort Innovation Raspberry and Blackberry Fund. This project has been funded by Hort Innovation, using the raspberry and blackberry research and development levy and contributions from the Australian Government and co-investment from the University of Tasmania, Agriculture Victoria, and NSW DPI. Hort Innovation is the grower owned, not-for-profit research and development corporation for Australian horticulture.

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