



The secret life of redberry mite in blackberries

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Redberry mites can devastate blackberry crops, causing irreversible damage to fruit and up to 60 percent crop loss. The microscopic mites colonise the tiny spaces in the developing fruit and cause uneven ripening. Individual drupelets (often nearest the stem end of the fruit) remain hard, red and fail to ripen. The rest of the berry turns black, but the fruit is unsaleable and a potential disease risk if left unpicked.

This tricky pest is being tackled by a team from the Tasmanian Institute of Agriculture (TIA), Tasmanian Department of Primary Industries, IPM Technologies, and Raspberries and Blackberries Australia (RABA).

The team is working to develop integrated pest management (IPM) strategies to improve both monitoring and management of redberry mite in blackberries.

TIA entomologist Dr Steve Quarrell said one of the less endearing features of redberry mites is that they are small – “bloody small” – and they like to hide.

“Think half the size of a two-spotted mite that likes to play catch-me-if-you-can. They spend most of their life tucked away inside buds, under leaf scales and then under the fruit stem and between the actual fruit drupelets.”

“It’s their star survival strategy, which makes them so hard to manage,” he said.

To make monitoring easier, TIA honours student Hui Law has developed a faster and more efficient method of keeping track of redberry mite populations.

The traditional method involves placing buds or fruit onto sticky strips, waiting around four weeks for the fruit to dry, and progressively catching the mites on the sticky strips as they crawl away.

“This is messy and slow so it really isn’t a practical solution for IPM consultants or growers to use,” Hui said.

Hui’s new extraction method involves rinsing the buds or fruit in an ethanol solution for a few minutes.

She then pours this over black filter paper to collect mites and small insects that were hidden within the fruit.

The creamy white coloured redberry mites stand out on the black filter paper which makes counting them much easier and faster.

“We still need a reasonable level of magnification, around 15 to 20 times for counting, so slightly higher than a typical hand lens a grower would use,” she said, “but this method will make monitoring on farm a much more practical option”.



KATIE MULDER (HILLWOOD BERRIES AGRONOMIST) AND STEPHEN QUARRELL (TIA)



HUI LAW (UTAS / TIA HONOURS STUDENT)

Dr Quarrell said an efficient counting method is the first step to understanding and then managing redberry mites. *“If we can monitor where and when the redberry mite population is on the plant, then we can better target our IPM strategies,”* he said.

Last season, Hui extracted and counted mites from over 1400 blackberry fruits from eleven different cultivars at eleven different commercial sites in the major blackberry growing regions of Australia. The count also included samples from wild blackberries, both on and off farm.

Mite numbers tell only part of the story. Growers have helped the research team fill in the bigger picture with historical information about their crops and how they manage them.

Dr Quarrell said this has really helped identify some hot spots for redberry mites, and management practices that could be improved.

“Wild blackberries were a real eye-opener for us. The mite counts from these were sky high compared to the numbers in the commercial blackberry crops.”

“The danger is that nearly all the growers we interviewed said they have wild blackberries near their commercial crop, even as close as five metres. So managing these redberry mite populations could have quite an impact on preventing re-infestation of crops,” he said.

Redberry mites show a definite preference for particular varieties over others, with the standouts being ‘Chester’ and one proprietary variety.

The research team is not sure if this preference is due to the lifecycle of the mites synchronising with the later fruiting varieties, or a particular characteristic of the plant that they find attractive. New late season floriculture varieties becoming available will be ones to watch carefully in the coming season. Trials in 2018/19 will target the susceptible varieties, looking at the development of softer pesticide programs and the introduction of predatory mites as potential management tools. Whilst many crops had low or no redberry mites present this season, the intervention programs used were quite intensive due to a previous history of redberry mite infestation. It will be a positive step forward if the research program can help growers reliably produce high quality blackberry fruit with strategies that are more sustainable and friendlier to people and the environment.

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