



Redberry mite update 2018

Key Points

- **Particular blackberry varieties** are more susceptible to redberry mite than others
- **Removing wild blackberries** from around commercial crops may reduce reinfestation
- **A new 'shake and wash' method** speeds up monitoring of redberry mite
- **Winter bud monitoring** may help predict redberry mite
- **The mite predator** *Typhlodromus occidentalis* will be released in blackberry crops during the coming season

Integrated Pest Management of Redberry Mite in Blackberries

Redberry mite is a tiny mite that infests blackberries in Australia and many other blackberry producing countries. Redberry mite is believed to be the primary cause of redberry disease, a disorder which causes incomplete, delayed or uneven ripening of blackberry drupelets so that some stay hard and red while others are fully black and ripe. This makes the fruit unsaleable for fresh market.

In the first year of research we have:

- surveyed blackberry growers to understand the extent of the problem and management practices
- surveyed commercial blackberry crops to understand the numbers and distribution of redberry mite and predators
- developed a new sampling and monitoring method for redberry mite

Grower interviews

We interviewed 13 growers, 3 agronomists, 2 Integrated Pest Management specialists and 1 berry consultant. In January 2018, Australian blackberry production came from 81 ha and 11 different varieties with 47 ha under tunnels. The planted area continues to grow. The bulk of production is from Tasmania and Victoria with small inputs from NSW, Qld and WA.

Blackberry varieties

Redberry mite showed a strong preference for some blackberry varieties. Green fruit was collected from commercial blackberry crops from throughout Australia and from wild blackberries. Of the 10 commercial varieties surveyed, BL454 and Chester were more susceptible to redberry mite infestation. Very low numbers were detected in other varieties.

Canopy management and variety

International research has shown that redberry mite populations are very low in primocane varieties such as Elvira that have had a complete mow down at the end of the season compared to florican varieties. Elvira will continue to be monitored to confirm this.

Wild blackberries are redberry mite hot spots

Redberry mite numbers in wild blackberries were more than double the number found in the most susceptible commercial crops. The closer wild blackberries were to a commercial crop, the greater the reported redberry disease.

Removing wild blackberries on-farm may be an easy way to reduce pest pressure.



Biological control

There are no known biological controls for redberry mite. Based on similar pest species (eriphyid mites) two candidates of commercial predatory mites that have potential include *Thyphlodromus occidentalis* (Biological services) and *Typhlodromips montdorensis* (Bugs4Bugs).



How many predators do you need?

The ratio of predator to pest is key to successful management. In broad mites, a good ratio for success is 1 predator to every 10 broad mites. This is a guide to what might be needed to manage redberry mite but is currently unknown. The ratio of predators to redberry mites in commercial blackberry crops was much lower. Supplementing the natural predator population with commercial predators may be a good option if a suitable predator is available.

2018/19 Integrated Pest Management (IPM) trials

This season we will introduce the *Typhlodromus occidentalis* into 4 commercial blackberry crops with a history of susceptibility to redberry mite in both Victoria and Tasmania. We will monitor both redberry mite and the predator numbers before and after release and for its overwintering persistence in buds.

Is redberry disease caused by a virus?

Researchers at East Malling, UK successfully controlled redberry mite using miticides but still observed symptoms of redberry disease. It was thought that a virus infection transmitted by mite feeding could be the cause. Although several viruses were detected in the blackberry fruit, none of these are mite transmitted.

Chemical Management

Did sprays control redberry mite in fruit?

Chemical intervention in highly susceptible crops still reported significant redberry mite levels and damage.

Programs developed to manage redberry mite overseas include:

- **NZ Boysenberry**
- **East Malling (UK)**
- [UC IPM Extension](#)

Fungicide toxicity and redberry mite

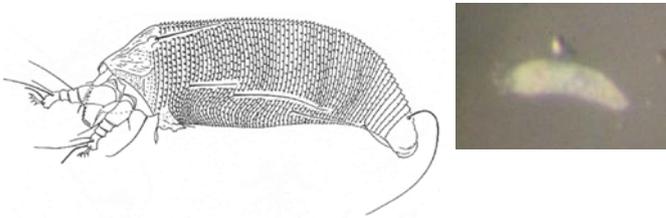
Fungicides may be a less obvious key to redberry mite management. Some fungicides are reported to be toxic to predatory mites. Switching to registered fungicides that have low toxicity to predatory mites may help tip the balance in favour of predators.

A review of fungicide toxicities is available here:

[‘Integrating pesticides and predatory mites in soft fruit crops’](#) M Fountain (Phytoparasitica, 2015).

Redberry mite sampling

Redberry mites are tiny, whitish in colour and only half a mm long and look a bit like a worm with legs at one end of a long body. This makes monitoring a challenge and you will need a lens with 20X magnification



The old method

Green fruit are placed on strips of upturned sticky tape stapled to black card. The fruit is then incubated at 25° C for 3 to 4 weeks before counting mites trapped on the sticky tape. **This is very slow and does not provide an accurate measure of mite numbers!**



Redberry mite sampling (cont)

The new faster ‘shake and wash’ method

TIA honours student Hui Law developed a new faster method for extracting and counting redberry mite that extracts more than double the number of mites and predators.

Fruit are placed in a vial containing 70% ethanol and shaken for 1 minute. The ethanol is poured on to a petri dish over black card for counting using 20 X magnification.

What to sample?

Redberry mites tend to be very spread out throughout the blackberry crop. Analysis of fruit samples showed that it is hard to detect redberry mite with a high degree of accuracy. For a susceptible variety 10 fruit need to be sampled to detect with 50% certainty.

Sampling winter buds to predict redberry mite populations

Hui’s research found redberry mites are more concentrated in winter buds. Up to 7 times as many were detected in buds than in fruit. This means that a relatively small number of winter buds needs to be sampled. Counting mites from 7 buds gave a 50% chance of detection.



What’s next?

- IPM trials at 4 field sites (Tasmania and Victoria)
- Release of the predator *T. occidentalis* at trial sites
- Measure the impact of chemical use on predators and redberry mite
- Determine how many redberry mites are needed to cause damage
- Continue to assess a range of varieties for redberry mite numbers and damage
- Winter bud sampling to help develop this as a predictor of redberry mite in the fruiting crop

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Contact

Dr Steve Quarrell

Tasmanian Institute of Agriculture
stephen.quarrell@utas.edu.au