



Agriculture & Horticulture
DEVELOPMENT BOARD



Grower Summary

SF 116

Preventing red berry disease by
monitoring and control of
blackberry mite

Final 2012

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Before using all pesticides check the approval status and conditions of use.

Read the label before use: use pesticides safely.

Further information

If you would like a copy of the full report, please email the HDC office (hdc@hdc.ahdb.org.uk), quoting your HDC number, alternatively contact the HDC at the address below.

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Project Number:	SF 116
Project Title:	Preventing red berry disease by monitoring and control of blackberry mite
Project Leader:	Professor Jerry Cross
Contractor:	East Malling Research
Industry Representative:	Richard Harnden
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Headline

Blackberry mite can be effectively controlled by sprays of Codacide oil and Dynamec. Red berry disease is caused only in part by blackberry mite and can be partially controlled by acaricides.

Background and deliverables

Red berry disease is causing serious damage and losses in commercial blackberry plantations in the UK, especially in high value crops grown in tunnels. A proportion of drupelets, often those at the base of the fruits around the calyx, remain green or red and hard whilst the remaining drupelets ripen normally attaining their normal black colouration at maturity. Red berry disease is thought to be caused by the blackberry mite, *Acalitus essigi* (Eriophyidae), which feeds on the flowers (and foliage) injecting toxic saliva into the developing drupelets. The problem has been known for many years but was not significant until recently when the incidence of damage in most UK commercial blackberry plantations dramatically increased and became the most serious problem in commercial production. The upsurge in damage coincided with the loss of the fungicide tolyfluanid (Elvaron Multi), a fungicide with known acaricidal properties against Eriophyid mites, including pear leaf blister mite and apple and pear rust mites.

Blackberry mites over-winter beneath bud scales and invade the new growth, living and increasing on the flower buds, petioles and leaves. At blossom time they enter the flowers and feed on the developing drupelets, especially those sheltered by the calyx. As fruits mature they become less suitable for mite feeding and at harvest it is often difficult to find mites in the damaged fruits. For this reason it is often difficult to diagnose blackberry mite as the cause of the problem, as uneven ripening may also be caused by poor pollination. The extent of blackberry mite infestation in UK blackberry crops needs to be determined and effective means of monitoring and controlling this pest need to be developed.

Summary of the project and main conclusions

In 2011, a replicated experiment was done in a protected blackberry plantation at Belks Farm, Otham, Maidstone, to evaluate the efficacy of acaricide spray treatments for control of blackberry mite, red berry disease and effects on yield. Treatments were:

1. Fortnightly programme of sulphur from bud burst until mid May
2. Fortnightly programme of Codacide oil from mid May to mid ripe fruit (mid July)
3. Two sprays of Dynamec + Break Thru S 240, at 5% flower and 2 weeks later

4. Combination of treatments 1+2
5. Combination of treatments 1+2+3
6. Untreated control (double replicated)

Sprays were applied at 1,000 l/ha with a knapsack sprayer. The number of mites present at the shoot bases and in the petioles was assessed on 1 August 2011. The incidence of red berry symptoms was assessed through the harvest period. The yields of red berry affected and unaffected fruit on each plot were recorded by the grower. The main conclusions of the study were:

- Blackberry mites were only found at the bases of the shoots or in the leaf petioles.
- All the spray treatments evaluated gave very good control of blackberry mite, there being no statistically significant and consistent differences between treatments. All reduced mite numbers by 96% on average.
- There was a high incidence of red berry symptoms, an overall mean of 17.3% of fruit being affected by red berry symptoms on the untreated control plots. None of the treatments significantly reduced the incidence of red berry symptoms.
- A mean of 129 punnets of blackberry fruits were harvested from the untreated control plot (8 m length of row) by the grower from 17 picks between 12 August and 11 October 2011. 41% of fruits were categorised as being outgrade (not suitable for marketing as first quality, mainly due to red berry symptoms) on these plots by the pickers. None of the treatments reduced the yield or the % outgrade fruit significantly.
- Overall, these results confirm the findings of the project in year 1, that blackberry mite is not the sole cause of red berry symptoms and in this crop it was at best a minor cause. Control of the mites to a high standard did not result in a significant reduction in symptoms.

Financial benefits

A typical 12 tonne / ha crop of raspberries was worth more than £60,000 at typical 2010 prices of £5,000/tonne. The large losses caused by red berry disease, which this work shows can be in excess of 30% of the crop, is clearly a huge financial loss to UK blackberry growers. The very substantive reductions in losses due to red berry disease (by up to 70%

depending on plantation) recorded in this work and the large increases in marketable yield achieved demonstrate this research is of huge potential financial benefit to UK blackberry growers.

Action points for growers

- Blackberry growers should apply acaricide sprays for control of blackberry mite and avoid the worst ravages of red berry disease, but the sprays are unlikely to completely eliminate the problem as the mites are not the only cause.
- A fortnightly programme of sprays of Codacide oil, starting from May onwards, supplemented with two sprays of Dymamec at 5% flower and 2 weeks later is likely to be the best choice. Sulphur can also give good control but in the first year's work was phytotoxic, and left unsightly deposits on the foliage and fruit.