



Agriculture & Horticulture  
DEVELOPMENT BOARD



# **Grower Summary**

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**SF 141**

Efficacy of insecticides, timed using the blackberry leaf midge sex pheromone trap, to control the pest on raspberry 2014

Final report 2015

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

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## **Further information**

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

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HDC is a division of the Agriculture and Horticulture Development Board.

**Project Number:** SF 141

**Project Title:** Efficacy of insecticides, timed using the blackberry leaf midge sex pheromone trap, to control the pest on raspberry

**Project Leader:** Dr Michelle Fountain, East Malling Research

**Contractor:** East Malling Research

**Industry Representative:** Salih Hodzhov, W B Chambers and Son

**Report:** Final report 2015

**Publication Date:** 15 April 2015

**Previous report/(s):** Annual report 2015

**Start Date:** 1 March 2013

**End Date:** 31 March 2015

**Project Cost:** £19,391

## **GROWER SUMMARY**

### **Headlines**

- Well-timed applications of insecticides using the sex pheromone traps reduce levels of damage by blackberry leaf midge.
- The dose of products can be reduced by 50% with the addition of Silwet L-77 without compromising efficacy.

### **Background and expected deliverables**

Blackberry leaf midge, *Dasineura plicatrix*, attacks blackberry, loganberry and raspberry and is an increasing problem in raspberry under polythene, with up to four generations occurring per year. Because adult midges are so small they are difficult to detect at the first generation and, therefore, it is difficult to time effective sprays against them to control leaf galling. The galling causes damage to primocane shoot tips, causing cane branching, which can have adverse effects on yields. The most effective time to spray is at egg laying/egg hatch when the larvae are most vulnerable. The newly developed species specific sex pheromone trap is now available commercially for monitoring blackberry leaf midge emergence, but the timing of the sprays had not been investigated. This project aimed to find the most effective timing of sprays (year 1) and identify the most efficacious products in admixture with wetters for blackberry midge control in protected raspberry (year 2).

### **Summary of the project and main conclusions**

In the first year of the project (2013) a replicated field trial examined the effects of single applications of chlorpyrifos or deltamethrin to control blackberry leaf midge. The sprays were applied 1, 3, 7 and 14 days after a sex pheromone trap catch of 10 male midges per trap per week was exceeded. The 1, 3 and 7 day applications of both insecticides reduced the numbers of larvae and the resultant leaf galling.

Blackberry leaf midge sex pheromone monitoring traps proved a useful tool for timing applications of chlorpyrifos and deltamethrin. Early applications (within 7 days of the trap threshold of 10 midges per trap being exceeded) gave good levels of control of blackberry leaf midge in raspberry crops. After 7 days, control of midge larvae and subsequent leaf damage was reduced resulting in higher numbers of larvae and resultant galling of leaves.

In year 2 (2014) a replicated field experiment compared applications of chlorpyrifos and deltamethrin versus thiacloprid at full rate and half rate, with and without Silwet L-77. Applications of chlorpyrifos, deltamethrin or thiacloprid (made within 7 days of the trap catch threshold), reduced numbers of midge larvae and levels of damage by blackberry leaf midge. Reducing the insecticide dose by 50% when using the products in admixture with Silwet L-77, was as effective as the full dose applied alone and increased the duration of efficacy of thiacloprid from 13 to 20 days.

## Financial benefits

A leading grower estimated that attacks of blackberry midge could reduce blackberry yield by 10%, which would lead to losses of up to £3,000 per ha on a typical 15t/ha crop. The pest is more serious on raspberry and can cause 60% loss in cane height on some modern primocane varieties. If the pest were not controlled and this occurred, 40% crop losses could be expected amounting to a loss of £12,000 per ha.

## Action points for growers

- Sex pheromone traps for blackberry leaf curling midge are commercially available and should be used to monitor midge populations in vulnerable raspberry and blackberry crops to identify the optimum time to apply plant protection products.
- Traps should be checked at least every 7 days, but we would recommend twice weekly for the first generation to give a larger window of opportunity to apply plant protection products.
- Chlorpyrifos, deltamethrin and thiacloprid were all effective products giving >80% control, but chlorpyrifos and deltamethrin are broad spectrum and have persistent adverse effects on natural enemies and biocontrol agents including *Phytoseiulus persimilis*.
- Effective insecticides should be applied within 7 days of a trap catch of 10 midges per trap and targeted at the emerging primocane leaf tips.
- The dose of active can be reduced by 50% by mixing with Silwet L-77 at the recommended rate without compromising efficacy.
- The addition of Silwet L-77 can increase the longevity of thiacloprid in the crop by up to seven days.
- Product label recommendations should be followed.