



Agriculture & Horticulture
DEVELOPMENT BOARD



Grower Summary

CP 073

The Role of Chemicals in the
Location of Host Plants by
Midge Pests of UK Fruit Crops.

Annual 2012

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Only officially approved pesticides may be used in the UK. Approvals are normally granted only in relation to individual products and for specified uses. It is an offence to use non-approved products or to use approved products in a manner that does not comply with the statutory conditions of use, except where the crop or situation is the subject of an off-label extension of use.

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.

HDC
Stoneleigh Park
Kenilworth
Warwickshire
CV8 2TL

Tel – 0247 669 2051

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

Project Number: CP 073

Project Title: The Role of Chemicals in the Location of Host Plants by Midge Pests of UK Fruit Crops.

Project Leader: Professor David Hall

Contractor: NRI – University of Greenwich

Industry Representative: Mr Nigel Kitney
Mr Tom Maynard

Report: Annual Report 2012

Publication Date: 09 July 2013

Previous report/(s): Annual Report 2013

Start Date: 01 February 2011

End Date: 31 March 2014

Project Cost: £64,650

Headline

- Chemicals have been identified from raspberry canes and blackcurrant shoots which may attract female raspberry cane midge and blackcurrant leaf midge.

Background and expected deliverables

Species of gall midge (Diptera: Cecidomyiidae) are important pests of many horticultural crops and are often very difficult to control by conventional means. NRI and EMR have made considerable progress in identification of female sex pheromones in this group of insects, and some are now in use for monitoring populations of several pest species (Hall et al., 2012). However, the female-produced sex pheromones attract only males. Attractants for the females, particularly mated females, would potentially be far more valuable for both monitoring and control of the pests. There is good evidence in several species of midge that mated females are attracted to their host plants for oviposition by specific odours from the plants. Although this has been known for over 40 years in some cases, the chemicals responsible for this attraction have not yet been identified.

This project will aim to identify the chemicals responsible for attraction of mated female midges to oviposition sites on their host crop for up to three species which are important pests of soft fruit and tree crops in the UK and where such attraction has been demonstrated previously. These are the raspberry cane midge, *Resseliella theobaldii*, the blackcurrant leaf midge, *Dasineura tetensii*, and the apple leaf midge, *D. mali*.

Summary of the project and main conclusions

Experimental work over the last growing season has focused on the raspberry cane midge and the blackcurrant leaf midge.

During the spring of 2012, collections were made from raspberry canes both before and after splits were made. In the first year it was noted that female raspberry cane midges were attracted to artificial splits made in canes in the field. The chemicals produced by raspberry primocanes before and after artificial splits were made were compared and chemicals present in larger quantities or only after splits were made were identified.

Due to the warm spring and then cold early summer, no populations of raspberry cane midge could be found in the field, so it was not possible to carry out planned laboratory bioassay and EAG work on this species. Thus subsequent work focussed on the blackcurrant leaf midge. Volatile collections were made from young blackcurrant leaves and key chemicals

produced were identified. Blackcurrant midge larvae were collected and reared to adulthood. A 4-way olfactometer bioassay was established and preliminary studies carried out on the responses of virgin and mated adult midges to the volatiles from blackcurrant shoots.

In conclusion

To date chemicals produced by two varieties of raspberry cane after splitting have been identified as potential attractants for female raspberry cane midge. Chemicals have also been identified from blackcurrant shoots as potential attractants for blackcurrant leaf midge. A laboratory bioassay for these attractants has been developed.

Financial benefits

- None to date

Action points for growers

- None have yet been identified.