



Grower Summary

TF 218

Increasing hoverfly populations
in apple orchards for control of
apple aphids

Annual 2015

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Use of pesticides

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

Project Number: TF 218

Project Title: Increasing hoverfly populations in apple orchards for control of apple aphids

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Contractor:

Industry Representative: John Evans, JA Cothup and Partners

Report: Annual Report 2015

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Previous report/(s): N/A

Start Date: 1 April 2014

End Date: 31 March 2017

Project Cost: £34,088

GROWER SUMMARY

Headline

- The plant volatiles methyl salicylate plus phenyl ethanol increased the number of hoverflies caught in baited traps indicating adult attraction, although no change to growing practice is being recommended at this stage in the project.

Background and expected deliverables

Apple aphids are an ongoing pest problem and biological control can help to reduce the severity of attack or eliminate the problem. Hoverfly larvae are voracious predators of aphids and if adults can be attracted into the orchard early in the season, and/or encouraged to overwinter in or close to orchards, this increase in predators would be an important component of an IPM strategy (hoverflies overwinter either as adults or pupae depending on the species). Biocontrol is particularly effective where ants are discouraged from protecting the aphids. Hoverfly adults respond to plant produced volatiles and to components specific to aphid feeding. This project aims to determine whether volatiles can be used to attract hoverflies into orchards and whether they then act as effective predators of aphids, reducing aphid populations in the orchard.

Summary of the project and main conclusions

There are clear indications that synthetic volatiles can act as attractants for hoverflies found in apple orchards. In particular, a combination dispenser containing the chemicals methyl salicylate and phenyl ethanol increased numbers of hoverflies when hung inside white delta traps. Experiments in the spring assessed the volatiles methyl salicylate, phenyl ethanol and a combination of the two volatiles. Experiments in the autumn assessed the volatiles methyl salicylate, phenyl ethanol, E β farnesene and a combination of the three volatiles. Whilst there are no recommendations for growers at this stage of the project, the results from the work in 2014 can be taken forward to the 2015 research season.

Financial benefits

Apple trees are subject to a number of aphid pests including the rosy apple aphid (*Dysaphis plantaginea* (Passerini)), the rosy leaf curling aphid (*Dysaphis devecta* (Walker)) and the green apple aphid, (*Aphis pomi* (De Geer)). When conditions are favourable, pest numbers can increase rapidly. The rosy apple aphid is the most damaging of these and high numbers result in curled leaves and misshapen fruits, which can lead to economic losses. The

threshold for Assured Product for RAA, quotes that pesticide application is justified if one aphid is found in the orchard pre-blossom. Some organic orchards in 2013 have seen 100% crop loss from rosy apple aphid.

- Integrated pest management (IPM) strategies reduce pesticide inputs, residues on the fruit and the risk of development of pest resistance to products.
- The use of plant volatiles to attract beneficial species is compatible with IPM and organic control programmes in apple orchards.
- If successful we will be able to manipulate beneficial species numbers in orchards with the aim of ultimately reducing pest numbers.
- Attraction of hoverflies into orchards would also be economically favourable as the adults are important pollinators and are reported to be the most important pollinator group after wild bees.

Action points for growers

- At this stage there are no specific recommendations for growers.