



Agriculture & Horticulture
DEVELOPMENT BOARD



New Project

TF 196

Investigation of the effects of commonly used insecticides on earwigs, important predators in apple and pear

Project Number: TF 196

Title: Investigation of the effects of commonly used insecticides on earwigs, important predators in apple and pear

Start and end dates: 1st April 2011 to 31st March 2014

Project Leader: Dr Michelle Fountain, East Malling Research

Industry Representative: Peter Checkley, Howard Chapman Ltd

Location: East Malling Research and Growers apple orchards (to be decided depending on orchard earwig populations)

HDC Cost: £30,600

Project Summary:

Earwigs are very important generalist predators in both apple and pear orchards. They play a key part in regulating populations of several highly damaging pests including woolly aphid and other aphid pests, mussel scale, codling moth and pear sucker. Recent laboratory tests and field experiments in other European countries indicate that several very commonly used insecticides including thiacloprid (Calypso), indoxacarb (Steward) and spinosad (Tracer) have harmful effects on earwigs and could be responsible for the low populations of these important predators in some orchards. This project will further investigate the lethal and sub-lethal effects of these and other commonly used insecticides on different earwig life stages. The effects of programmes of insecticide sprays typically used in UK apple and pear production will be investigated

Aims & Objectives:

(i) Project aim(s): To determine the harmful effects to earwigs of insecticide products commonly used on apple and pear.

(ii) Project objective(s):

- To investigate the short-term and long-term sub-lethal effects of abamectin (Agrimec), acetamiprid (Gazelle), chlorantraniliprole (Coragen), chlorpyrifos, flonicamid (Mainman), indoxacarb (Steward), methoxyfenozide (Runner), spinosad (Tracer), spiroticlofen (Envidor), thiacloprid (Claypso) and a coded product on feeding, development and longevity of different earwig life stages in the laboratory (year 1)
- To determine, at different times of the season, the effects of programmes of the maximum seasonal number of applications of those products that are harmful to earwig populations (year 2)

- To compare the effects of typical growers full season insecticide programmes of insecticides that have been identified as harmful to earwigs with programmes of sprays that are safe (year 2 or 3)

Products with sub-lethal or long-term lethal effects in Objective 1 will be field tested in Objective 2. Combining results from Objectives 1 and 2, an earwig 'harmless' field spray programme will be devised and tested against a growers conventional spray programme.

Objective 1 depends on the collection and culturing of earwigs, the former of which is very simple, but long-term effects will require more intensive management and potentially a high replication to account for natural mortality of earwigs kept for a long period of time.

Objectives 2 and 3 are quite straightforward and, therefore, low risk providing there is an abundant earwig population in the orchards in the year the trials are carried out. A survey, using tap sampling methods will identify suitable orchards.

Further information

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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