

Project title: Improving integrated pest and disease management in tree fruit

Project number: TF223

Project leader: Dr Robert Saville
East Malling Research

Report: Annual report, March 2017 (Year 2)

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The results and conclusions in this report are based on an investigation conducted over a one-year period. The conditions under which the experiments were carried out and the results have been reported in detail and with accuracy. However, because of the biological nature of the work it must be borne in mind that different circumstances and conditions could produce different results. Therefore, care must be taken with interpretation of the results, especially if they are used as the basis for commercial product recommendations.

AUTHENTICATION

We declare that this work was done under our supervision according to the procedures described herein and that the report represents a true and accurate record of the results obtained.

Robert Saville

Project leader, Plant Pathologist

NIAB EMR

Signature Date

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GROWER SUMMARY

Objective 10 – Weevils in pear

Project TF 223 is a five year project which was commissioned to tackle a number of current pests and diseases affecting tree fruit crops. Objective 10 has been investigating a new weevil pest of pear and trying to understand the optimum time of the year to control it.

Headline

- A new damaging weevil pest of pear is being investigated.

Background and expected deliverables

A new pest of pear, still to be identified, is being investigated. The weevil is from the *Anthonomus* family of weevils known to feed and develop in buds and fruits of plants. Unlike *Anthonomus piri* (apple bud weevil), this weevil is feeding and laying eggs in unopened flower buds in the spring.

In order to control the weevil it is will be necessary to target sprays in the spring, before the flower clusters open. This research aimed to establish the activity period of the pest, its lifecycle and the toxicity of thiacloprid (Calypso) and acetamiprid (Gazelle) to the weevil (*Anthonomus* sp.).

Summary of the project and main conclusions

The weevil was found to be more active (tested by tap sampling a set number of trees) on warm still nights compared to in the daytime. It was active through March, peaking in numbers in mid-March. Mating occurred and females laid eggs in flower buds at bud swell.

In laboratory tests, when directly applying crop protection products to weevils with a Burkard benchtop sprayer, Gazelle did not provide effective control, but Calypso at full and half field rate resulted in 80-90% mortality of field collected weevils. Calypso caused detrimental effects to weevils within three days of application. More research is needed to confirm the identity and inform the complete lifecycle of the insect, including activity in autumn. More research is needed to identify the optimum spray timing during the season and during the day. Consideration should be given to natural enemies in each orchard. Weevils are very specific to orchards, so it is important not to spray every orchard, but to monitor orchards at night and spray where damage occurs.

Financial benefits

A single egg in a flower bud is likely to hatch and the larva destroy the flower. It is estimated that female weevils in the Anthonomus family can lay around 25 eggs, so it is clear that very significant numbers of flowers and fruits could be lost if the weevil is left uncontrolled.

It is therefore important in this work to identify the optimum time of day and time of the season to apply sprays of thiacloprid (Calypso) which is now known to offer control (based on the laboratory tests done in this project).

Action points for growers

- Monitor pear orchards after dark by tap sampling trees to look for weevil activity.
- Assess the amount of bud damage.
- Consider the effect of any applications of Calypso on natural enemies in the trees and only spray when and where it is really needed.
- Monitor each orchard, as not all orchards on a farm have the weevil.