

<b>Project title:</b>	Improving integrated pest and disease management in tree fruit
<b>Project number:</b>	TF223
<b>Project leader:</b>	Dr Robert Saville East Malling Research
<b>Report:</b>	Annual report, March 2017 (Year 2)
<b>Previous report:</b>	Annual report, March 2016 (Year 1)
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<b>Location of project:</b>	NIAB EMR (Lead), RSK ADAS, Natural Resources Institute, University of Reading.
<b>Industry Representative:</b>	The programme management group (PMG) Nigel Kitney, Jeremy Linsell, Nigel Jenner and Tom Hulme
<b>Date project commenced:</b>	01/04/2015
<b>Date project completed:</b>	31/03/2020

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## 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 .....

Michelle Fountain

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## **GROWER SUMMARY**

### **Objective 8 – Apple fruit rhynchites weevil and apple sawfly**

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 8 has been dealing with the search for sex pheromones for the apple fruit rhynchites weevil and apple sawfly, which could be used in a sex pheromone monitoring trap.

#### **Headline**

- Work has started to identify a sex pheromone for the apple sawfly.

#### **Background and expected deliverables**

In the first year of the project, the researchers sought to identify a sex pheromone for the apple fruit rhynchites weevil. As this was unsuccessful, attention has turned to the apple sawfly. Apple sawfly is a locally common and problem pest, particularly in organic orchards where products for effective control are not available. However, timing of application relies on knowing when the first flight is occurring and when females are laying eggs. The aim of this project is to identify the sex pheromone of the apple sawfly for use in future monitoring and mating disruption studies.

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

Apples infested by apple sawfly larvae were collected in spring 2015 from an unsprayed orchard at NIAB EMR. The apples were placed onto compost in mesh covered bins. Larvae were allowed to crawl out and enter the compost. As apple sawfly has only one generation per year these were maintained outside until spring 2016. However, no apple sawfly adults emerged and pupae were found to be infected with either bacteria or fungus. The previous winter had been very wet and it was speculated that the soil may have become too wet outside.

In spring 2016 apple sawfly infested apples were collected again and kept in drier conditions in compost filled bins (as above) in the laboratory until November, when the bins were transferred to outdoor conditions and covered to prevent too much rain entering. Initial analyses of 24 diapausing larvae have shown only three were alive. The bins will be brought into room conditions in spring 2017 for emergence of adults and headspace volatile collection for pheromone identification.

## **Financial benefits**

If it goes unnoticed in an apple orchard, the apple sawfly can cause very significant damage. Eggs are laid in flowers and young larvae feed just beneath the surface of the skin on developing fruitlets, leaving characteristic ribbon scars. The larvae can also consume the flesh of the developing fruits. Losses can be severe, particularly when the amount of blossom or crop set is light. In the past, broad spectrum insecticides used to control other spring pests soon after petal fall offered incidental control of apple sawfly, but the number of approved products available has diminished, so apple sawfly could become a bigger problem for growers in future.

The development of a sex pheromone for use in a monitoring trap will help to identify the need for a specific control spray and ensure that it is applied at the optimum time, thus avoiding unnecessary additional sprays at extra expense.

## **Action points for growers**

- At this stage in the project, it is too early to offer any action points for growers based on the research done so far.