

Grower Summary

TF 204

Improving codling moth spray
timing

Annual 2013 (issued 2014)

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Before using all pesticides check the approval status and conditions of use.

Read the label before use: use pesticides safely.

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

Project Number: TF 204

Project Title: Improving codling moth spray timing

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Further information

If you would like a copy of this report, please email the HDC office (hdc@hdc.ahdb.org.uk), alternatively contact the HDC at the address below.

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GROWER SUMMARY

Headline

- The 2013 results suggest that the interval between sprays for codling moth (expected cover period) should be reduced where significant crop damage occurred the previous year.

Background and expected deliverables

Codling moth is the most important pest of apples and also an important pest of pears in the UK. Most insecticide sprays approved on apple are used against it. Control is usually good, but populations are not being reduced to sufficiently low levels that spraying can be avoided or decreased in subsequent years: growers are on an insecticide treadmill. UK growers generally rely on pheromone traps to decide if and when to spray for codling moth but previous work in project TF189 suggested that they are of limited benefit and growers may not be making best use of their time and effort in using them.

Experience in the Netherlands indicates that as good or better control of codling moth can be obtained using development and population simulations given by the RIMpro-Cydia model, which uses data from local meteorological stations. The model, which is available to all growers, takes into account when conditions suitable for egg laying occur (dusk temperatures > 15 °C) as well as maturity and longevity of females rather than activity of males as indicated by sex pheromone trap catches. This work will determine which of the three alternative decision-making methods is best, leading to improvements in control and/or savings in monitoring costs and management time.

Summary of the project and main conclusions

In 2013, the trial comparing three methods of timing insecticide sprays for codling moth, was continued for a second year using the same plots in three commercial orchards in Kent. A significant modification was made to the codling moth sex pheromone trap threshold used. In 2012 the trap threshold was ≥ 5 moths/trap/week in two weeks (not necessarily successive weeks). In 2013 it was simplified (and lowered) to a single catch of ≥ 5 moths in June-July or ≥ 3 moths in August and September. Thus the new methods assessed were:

Method 1: Standard method of monitoring male moth flight using pheromone traps and spraying after a threshold of a single catch of ≥ 5 moths is exceeded in June-July or ≥ 3 moths is exceeded in August and September.

Method 2: Use of the RIMpro-Cydia forecasting model in conjunction with pheromone trap records. Sprays only applied if both model indicates egg laying risk and pheromone trap threshold exceeded.

Method 3: Use of the RIMpro-Cydia forecasting model in conjunction with an assessment of codling moth damage the previous year to indicate general codling moth risk in the particular orchard.

- The adjusted simpler sex pheromone trap thresholds (≥ 5 moths/trap/week in June-July, ≥ 3 moths/trap/week in August and September) performed satisfactorily in 2014.
- The 'Trap', 'RIMpro' and 'RIMpro+trap' treatments performed similarly in terms of control of codling moth and the resultant fruit damage. However, levels of damage (2.67-3.46 % fruits) were too high and considerably above an economically acceptable level at one site, and marginally too high (1.04-1.51%) at another. An economic damage threshold of $>0.3\%$ of fruits damage is appropriate.

The results suggest that the interval between sprays for codling moth (expected cover period) should be reduced where significant crop damage occurred the previous year. The RIMpro model resulted in one more insecticide spray being applied in early August at two sites but there was no obvious benefit from this extra spray in terms of improved control of codling moth.

As in 2012, the combo traps mainly caught males, generally in larger numbers than the sex pheromone traps. Catches of females were small and erratic. Whilst combo traps have a place for monitoring the success of sex pheromone mating disruption treatments, no real advantages over the sex pheromone traps were apparent for timing pesticide sprays. The trial is to be continued for one further season in 2014.

Financial benefits

Codling moth control programmes typically cost growers >£200/ha/season. Even a low level of fruit damage (< 0.3% fruits damaged) is likely to be economically unacceptable. Improving control and/or reducing insecticide use will be of financial benefit to growers.

Action points for growers

The findings from this project to date are preliminary and no grower action points are recommended at this stage.