# Monitoring and control of pollen beetle in oilseed rape

## Biology

In recent years, pollen beetles have rarely been abundant enough to warrant treatment: careful monitoring can prevent unnecessary 'insurance' sprays and preserve the efficacy of pyrethroid products.

Pollen beetles migrate to winter oilseed rape crops from mid-March and throughout April. If flowers are not open, beetles bite into and kill buds. Damage to buds declines as the flowers begin to open and pollen becomes more easily obtainable.

Beetles lay their eggs in closed buds. On hatching, larvae feed within the buds and in flowers throughout May before dropping to the soil to pupate. A new generation of adults emerges in June-July and feed on pollen from a wide range of flowers, including spring oilseed rape. Adults then hibernate over winter in leaf litter, mainly in deciduous woodland.

## Risk assessment

***The damage-susceptible stage of the crop is green-yellow bud.*** Once the crop starts flowering, the beetles move to the open flowers, becoming pollinators rather than pests.

Crops are usually most at risk when the weather is dry and warm (above 15°C). Using baited monitoring traps (Oecos), as well as online pollen beetle migration forecasts, to detect local movement can allow efforts to be focused to when and where they are most needed. A pollen beetle migration forecast based on local weather data is freely available online (**www.hgca.com/pests**). This prediction tool provides a series of three maps, informing on a local scale: (1) whether or not migration is likely to have started, (2) the risk of migration in the next three days and (3) the predicted completion of migration. Use of maps 2 and 3 in particular can help to reduce unnecessary 'insurance' sprays.

## Control thresholds

The revised threshold for winter and spring oilseed rape is based on the maximum number of buds each beetle can destroy and the number of excess flowers produced by different crops. The plant population makes a large difference to the pollen beetle threshold, as plants in low plant population crops produce more branches and, therefore, more flowers.

Alan Dewar, Dewar Crop Protection

**Always consider your local conditions and consult a professional agronomist if necessary.**

### Revised control thresholds for winter and spring oilseed rape

| | |
|---|---|
| If there are less than 30 plants/m$^2$ | the threshold is 25 pollen beetles per plant |
| If there are 30–50 plants/m$^2$ | the threshold is 18 pollen beetles per plant |
| If there are 50–70 plants/m$^2$ | the threshold is 11 pollen beetles per plant |
| If there are more than 70 plants/m$^2$ | the threshold is 7 pollen beetles per plant |

### Estimating plants/m$^2$

Plants/m$^2$ can be estimated by counting the number of plants within a square foot and multiplying by 11. Ideally this should be done at several positions within a field. It is easiest to count plants at the 5 to 6 leaf stage after the risk of slugs reducing the population has passed. However, if there is winter plant kill, a spring plant count should be done at the same time as the pollen beetle assessment.

### Monitoring pollen beetle numbers

Monitor the number of pollen beetles per plant periodically throughout the damage-susceptible stage of the crop (**green-yellow bud**). Sample at least ten plants along a transect of a 30m minimum from the middle of the headland towards the centre of the crop and calculate the mean number of beetles per plant, spraying only when that number exceeds the control threshold. When counting the number of beetles per plant it is important to recognise that plants in higher population crops may only have one budding shoot, whereas plants in lower population crops are likely to have branched out and produced several more.

**Information Sheet 18**
**Spring 2013**

Stoneleigh Park
Warwickshire CV8 2TL
www.hgca.com

HGCA Publications
T 0845 245 0009
E hgca@cambertown.com

# Insecticide resistance

Pollen beetle resistance to pyrethroid insecticides is now widespread throughout the UK. A strategy for contending with pyrethroid resistance needs to cover all spring and early summer insecticide applications, regardless of their intended target.

## Agronomic advice from IRAG

The UK Insecticide Resistance Action Group (IRAG-UK) has developed advice based on reducing use of pyrethroids and on exploiting other insecticide groups, which should be used cautiously to preserve their effectiveness.

### Monitor crops

- **ONLY** spray if current thresholds are reached
- **Do NOT apply insecticides purely for insurance purposes**
- **Do NOT spray after flowering starts:** the pollen beetles migrate to open flowers, away from the buds, and become pollinators rather than pests

### Inspect crops

- Inspect the midfield and headland
- In recent years, pollen beetles have rarely been abundant enough to warrant treatment

### If treatment is necessary

- Consider neonicotinoids, indoxacarb or pymetrozine as alternatives to pyrethroids
- **Do NOT** use more than one neonicotinoid spray
- **Do NOT** use more than one indoxacarb spray
- **Do NOT** use more than one pymetrozine spray
- Use a non-pyrethroid if above threshold numbers of beetles survive a pyrethroid treatment and there is time before flowering
- Seed weevil and summer aphids rarely need treatment
- For aphids, use a suitable aphicide (depending on the presence of other pests); consult an agronomist

| Chemical group | Active substance | Example products |
|---|---|---|
| Pyrethroid | Alpha-cypermethrin | Alert, Contest |
| | Cypermethrin | Permasect C, Sherpa 100EC, Toppel 100EC |
| | Deltamethrin | Decis, Delta-M 2.5EC, Ladgold Deltaland |
| | Lambda-cyhalothrin | Hallmark with Zeon Technology, Clayton Sparta |
| | Tau-fluvalinate | Klartan, Mavrik |
| | Zeta-cypermethrin | Fury 10EW, Angri, Symphony |
| Indoxacarb | Indoxacarb | Rumo |
| Pymetrozine | Pymetrozine | Plenum |
| Neonicotinoid | Thiacloprid | Biscaya, Standon Zero Tolerance |
| | Acetamiprid | InSyst |



## Natural predators

Pollen beetle larvae are attacked by parasitic wasps. 25-50% of larvae are killed by these on unsprayed crops. Where insecticides are used extensively, levels of parasitism can be considerably lower.

The parasitic wasps may not be affected by insecticides applied against pollen beetle at green bud, as they arrive in crops during flowering.

Trap cropping with turnip rape can attract more parasitoids into the crop and can often reduce populations of pollen beetles to below spray threshold levels.

Alan Dewar, Dewar Crop Protection

## Further information

Sam Cook, Rothamsted Research
sam.cook@rothamsted.ac.uk

Steve Ellis, ADAS
steve.ellis@adas.co.uk

Caroline Nicholls, HGCA
caroline.nicholls@hgca.ahdb.org.uk

IRAC website www.IRAC-online.org/teams/crop-protection/coleoptera

PR495 – Re-evaluating thresholds for pollen beetle in oilseed rape

PR504 – Development of an integrated pest management strategy for control of pollen beetles in winter oilseed rape

www.hgca.com/publications

**Monitoring and control of pollen beetle in oilseed rape**
Information Sheets are free to levy payers.
To join the mailing list contact subscriptions@hgca.ahdb.org.uk