Cabbage stem flea beetle

Latest information
- Neonicotinoid-treated seed cannot be planted following the restrictions imposed in December 2013.
- Cabbage stem flea beetle resistance to pyrethroids has been confirmed in the UK.
- Crops are most vulnerable at emergence if the growing point is destroyed. Once cotyledons are through, the crop is much more tolerant to attack.

Action
- Monitor beetle numbers before and at emergence and spray the emerging crop if there is evidence of high pest pressure.
- Once cotyledons are through, refer to spray thresholds.
- Pyrethroids should only be applied when absolutely necessary (to minimise the spread of resistance).

Importance
Cabbage stem flea beetle (*Psylliodes chrysocephala*) is wide-spread in the UK and northern Europe.

Cabbage stem flea beetles migrate into oilseed rape crops during crop emergence. This is the stage at which the crop is most vulnerable as beetles can feed on and destroy the growing point. Once the cotyledons are through, the crop is much more tolerant of attack.

The beetles chew holes in cotyledons and early true leaves, giving rise to ‘shot-holing’ symptoms, which can result in stunting and poor plant vigour. If severe, beetle feeding can kill the seedlings even before they emerge.

Larvae also bore into leaf petioles and, later, into the main stems, which can also affect plant vigour.

Risk factors
Early sown crops are more susceptible to cabbage stem flea beetle attack.

A warm autumn will favour egg laying and early hatch of larvae, coinciding with smaller, more vulnerable plants.

Other flea beetles
There are a number of other flea beetles that are potential pests of oilseed rape. These are the Wessex flea beetle (*Psylliodes luteola*), which attacks crops in the autumn, turnip flea beetles (*Phyllotreta cruciferae, Phyllotreta nigripes*), which attack crops in the autumn and spring, and the large striped flea beetle (*Pemorphus nemorum*), which attacks crops in the spring. Wessex flea beetle is most likely to be damaging in southern England on early sown winter crops, whereas late-sown spring crops are most susceptible to turnip and striped flea beetles.

Pyrethroid resistance and control without neonicotinoids
The confirmation of cabbage stem flea beetles resistant to pyrethroids (knockdown resistance, or kdr) in the UK means that, for some, pyrethroids may provide little or no control.

Kdr usually confers moderate resistance to all pyrethroids applied at recommended field rates.

Pyrethroid sprays should only be applied where there is evidence of high pest pressure at emergence or if thresholds are exceeded post emergence. To prevent resistance from spreading, it is important to spray only if absolutely necessary. Any applications must be made in the correct water volume and at the full recommended rate for the product selected. Repeat treatments should be avoided if possible.
**Assessing the need to spray adult beetles**

The crop is most vulnerable at emergence, as beetles can feed on and destroy the growing point. There are no spray thresholds at emergence but monitoring local pest pressure will give an indication of whether treatment is necessary.

Monitor pest pressure by:
- Checking the number of cabbage stem flea beetles in the previous crop’s harvested seed
- Using water traps to check beetle numbers
- Assessing damage to volunteer oilseed rape plants

Once the cotyledons are through, an assessment of the loss of leaf area due to shot-holing can be used to determine the need for a spray against adult cabbage stem flea beetle.

**Assessing the need to spray larvae**

**Water-trapping**

Set four yellow water traps on the soil surface in early September, two on the headland and two in the field along a wheeling. Fill the traps with water and a drop of detergent to ensure that any insects caught sink and drown.

Visit the traps regularly, weekly if possible, before emptying and resetting the traps. Each time a trap is emptied, the number of cabbage stem flea beetles should be recorded and added to the previous total for that trap. At the end of October, remove the traps.

Use the total numbers of beetles caught in each trap over the whole monitoring period to calculate an average number of beetles/trap. A spray is justified if this average number of beetles/trap caught over the monitoring period exceeds 35.

This has been shown to be equivalent to the threshold of two larvae/plant. Do not spray if this threshold has not been reached.

**Plant dissection**

An alternative option to water-trapping, though more difficult, is plant dissection.

A random sample of 25 plants should be taken from the field in late October/early November. Dissect all leaf petioles and stems with a sharp scalpel and count the number of larvae recovered. Samples are best dissected by an accredited laboratory.

A spray is justified if there are more than two larvae/plant or more than 50% of petioles are damaged.

**Life cycle**

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
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<tbody>
<tr>
<td>June-July</td>
<td>Adults emerge and feed on foliage.</td>
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<tr>
<td>August</td>
<td>Adults ‘rest’ in moist, sheltered places. Adults are often found in large numbers in harvested seed, where they do no harm.</td>
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<tr>
<td>September</td>
<td>Adults move to new crop, mate and eat leaves.</td>
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<tr>
<td>Oct</td>
<td>Eggs laid at the base of plants if mild.</td>
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<tr>
<td>Sept</td>
<td>Newly hatched larvae may enter plants and feed in petioles from October to early April. Egg development and larval activity are inhibited by temperatures below 3°C.</td>
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<tr>
<td>March-April</td>
<td>Larvae feed on main stem and can destroy the growing points.</td>
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<tr>
<td>May</td>
<td>Larvae pupate in soil.</td>
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**Further information**

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HGCA Research Review 73: A review of invertebrate pest thresholds (HGCA, 2009)  
HGCA Project Report 428: Revised thresholds for cabbage stem flea beetle on oilseed rape (HGCA, 2008)  
www.hgca.com/pests

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*HGCA recognises the need for further work on thresholds. The information in this publication is based on current recommendations.

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