Importance
Phoma stem canker is one of the most important diseases of winter oilseed rape in England. The disease is predicted to result in losses of about £100M each season, despite fungicide treatment (estimate based on annual survey data presented through CropMonitor.com).

The disease reduces yield by restricting water and nutrient transport through the stem, resulting in premature senescence. In severe cases, phoma stem cankers may sever the plant stem, killing the plant.

Latest information
- There are regional differences in the proportions of species and races in the UK phoma pathogen population
- Weather data can be used to predict the threshold of 10% phoma leaf spotting

Always read product labels, consider your local conditions and consult a professional agronomist, if necessary.

Two pathogens: one disease
Phoma stem canker is caused by two species of fungi: Leptosphaeria maculans and L. biglobosa.

Cankers caused by L. maculans are generally associated with the stem base and are considered to be more severe than the upper stem lesions often associated with L. biglobosa. The prevalence of the two species in the local pathogen population therefore affects the severity of phoma stem canker.

Triazole fungicides are more effective for control of L. maculans than of L. biglobosa.

Risk factors
- Susceptible varieties – cankers are more severe in susceptible varieties
- Warm temperatures and available moisture – pathogen development is dependent on rainfall and temperature; pathogen development is not limited by low temperatures but it is slowed in cold seasons
- Frequent rain events in summer/autumn – localised showers that re-wet debris favour pathogen development
- Poor crop establishment – the pathogen grows quickly from leaf to stem on small plants
**Varietal resistance**

There are two types of oilseed rape resistance against the phoma pathogens.

*R*-genes can be very effective at preventing disease; however, their use needs to be carefully managed. The phoma populations can rapidly change so that the resistance provided by a particular *R*-gene is no longer effective.

Recent population survey results from an AHDB-funded project (RD-2009-3676) indicated that there are regional differences in the effectiveness of different *R*-genes, which may be related to regional differences in cropping history.

Many plant breeders agree that future varieties should aim to combine effective *R*-gene resistance with background quantitative resistance.

<table>
<thead>
<tr>
<th>Genetics</th>
<th>Activity:</th>
<th>Leaf</th>
<th>Petiole</th>
<th>Stem</th>
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<tbody>
<tr>
<td><em>R</em>-gene</td>
<td>Single</td>
<td>☑</td>
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<tr>
<td>Quantitative</td>
<td>Multiple</td>
<td>☑</td>
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</tr>
</tbody>
</table>

![Image of oilseed rape plants and field experiment results](image1.png)

**Chemical control**

**Control threshold**

The timing of fungicide applications is important to achieve phoma control.

The established threshold for treatment is when 10% of plants within a crop are affected by phoma leaf spotting in the autumn (Figure 3).

**Fungicide performance**

The AHDB winter oilseed rape fungicide performance project gives information to help guide product choice. See cereals.ahdb.org.uk/disease for more information.

**Forecasts**

The AHDB and Bayer supported phoma forecast (available at www.rothamsted.ac.uk/phoma-leaf-spot-forecast) gives predicted dates of 10% leaf spotting.

This information is available on a regional basis, with dates provided for more than 80 sites across the UK (Figure 4).

The forecast uses temperature and rainfall data from July to September to simulate the development of *L. maculans* on crop debris and the subsequent infection of young plants.

Localised rain events can mean that nearby sites may have predicted dates of 10% leaf spotting that differ by a month or more.

**Recommended List**

The stem canker resistance ratings in the AHDB Recommended List provide information on varietal resistance in winter oilseed rape on a 1 (susceptible) to 9 (resistant) scale.

These annually updated ratings are compiled from final assessments of stem canker severity in late spring and do not include phoma leaf spotting data nor do they distinguish between phoma species.

**Further information**

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G65: Oilseed rape guide (AHDB, 2015)

IS35: Fungicide performance in oilseed rape (AHDB, 2014)

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