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

**Latest information**

- Light leaf spot disease levels remain high nationally. Non-azole options are now available for control.
- Application timing is critical for good control of sclerotinia, with benefits of higher doses at high-risk sites.
- For phoma, azoles continue to show good activity and new non-azole options are also providing good control. Azole products differ in their eradicant activity for phoma control.

**Action**

- Consult phoma and light leaf spot (LLS) risk forecasts.
- Monitor crops from late autumn to early spring and treat at both timings as soon as symptoms are evident. In high-risk areas, and/or where high risk is indicated by the forecasts, ensure fields are treated protectantly while still passable.
- In high-risk areas, varieties with good LLS resistance (RL ratings of 6+) offer benefits in combination with appropriate fungicide choice, dose and timing.
- For all diseases, select an effective product and rate for disease risk and PGR effects, taking growth stage and crop size into consideration.

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**Light leaf spot**  
*Pyrenopeziza brassicae*

Though traditionally thought of as a disease of the north and Scotland, light leaf spot has become increasingly prevalent in England. It can infect plants via rain-splash of spores from crop debris but can also be present in the seed when sown. Infected plants are more vulnerable to winter kill. The disease moves up through the crop via rain-splash onto the upper stems, flowers and pods. This can lead to direct seed loss from distorted and damaged pods.

First symptoms of pale green or bleached blotches surrounded by white spore droplets are not usually evident before late autumn. The fungus can remain active at temperatures below which the crop stops growing, so it is important to control the disease in the autumn, with follow-up treatments in spring around stem extension.

**Sclerotinia stem rot**  
*Sclerotinia sclerotiorum*

The infection cycle of sclerotinia is complex. Fungal resting bodies (sclerotia) in the soil germinate in spring, producing pale brown fruiting bodies (apothecia). These release spores that infect flower petals, which, when they fall and stick to leaves and stems, can provide infection sites into the plant. Stem damage appears first as bleached or fawn lesions on the stem which may develop a fluffy fungal growth. This causes premature ripening and lodging, leading to yield loss.

Each stage of the cycle requires specific temperature and moisture conditions and these do not occur at the right time every year for infection to occur. However, when it does, yield losses can be large. Even where yield losses are small, new sclerotia can be formed in the stem, which return to the soil at harvest ready to infect crops in subsequent years.

**Phoma**  
*Leptosphaeria maculans* and *L. biglobosa*

Phoma can infect plants as soon as they emerge and first symptoms usually appear on leaves in autumn as circular white/fawn spots covered in black, pinhead fruiting bodies. These have minimal impact on growth and yield. The fungus then grows down the petiole and invades the stem to produce stem cankers that cause premature ripening, lodging and yield loss.

Plants with large leaves are less vulnerable than small plants and later epidemics are often less damaging than early ones. Infected crop debris is the main source of infection, so rotational hygiene can help reduce disease pressure. The disease is most active in warm, wet conditions favouring rain-splash of spores. Leaf damage by pests can facilitate infection.
Light leaf spot

In 2014/15, levels of light leaf spot were again high in England. Newer varieties on the Recommended List have higher resistance ratings for LLS but good control can still be hard to achieve. Additionally, laboratory studies indicate variable sensitivity to fungicides in UK LLS strains and mutations have been detected in the target protein for azole fungicides. Whether such strains are having an impact on field control has not yet been determined.

In AHDB Cereals & Oilseeds fungicide performance trials, two sprays were applied: the first before symptoms appeared in autumn and the second as soon as weather allowed application near to early stem extension.

Yield responses to fungicide applications varied depending on site and season. Across four sites in 2014 and 2015, there were significant yield benefits of a two-spray programme (Figure 1). Dose selection is very site- and situation-specific and will depend on varietal rating, crop growth and disease pressure. Early detection and treatment in January/February (where conditions allow) will provide more effective control than treating heavily diseased crops at the stem extension stage.

Some azole fungicides with activity against light leaf spot, such as tebuconazole (eg Orius 20 EW, Folicur), can affect crop growth and can have a negative impact on yield when applied to small plants. Products and rates for disease control should be selected with care and use of high rates of such products on backward, stressed crops should be avoided.

Figure 1. Fungicide performance against light leaf spot; mean of four experiments in 2014 and 2015 a) disease, b) yield. No statistically significant differences between products for disease control or yield.

Note: Some products included in these trials (Refinzar and Pictor) were applied outside of their label recommendation to allow the efficacy testing against light leaf spot specifically.
Sclerotinia

Nationally, sclerotinia disease levels have been low in recent years and this trend continued in 2015. However, untreated crops in high-risk situations remain at risk. This was seen in an AHDB Cereals & Oilseeds trial in 2015, where disease levels were moderate (20% of untreated plants affected) and there were significant yield responses to treatment of around 1 t/ha (Figure 2).

Fungicides are only effective against sclerotinia when applied protectantly before infection occurs. Persistence of full-rate fungicides after application is approximately three weeks and, given the difficulty of predicting sclerotinia severity in crops, robust doses of fungicides are recommended.

Previous work has demonstrated a single spray applied at mid-flowering and before significant petal fall can give good control if this application occurs prior to infection and covers the majority of the remaining flowering period. This does not protect the crop against infection during early flowering and, therefore, two-spray programmes can offer protection for the whole of the flowering period.

Yield benefits of applying a two-spray programme have been demonstrated in years where the flowering period is extended and weather has been conducive for sclerotinia infection during flowering. Second sprays can also offer benefits by controlling late infection, and preventing formation and deposition of sclerotia (resting bodies) back in the soil. Good spray penetration into the crop canopy is important and fungicides should be applied in a minimum of 200 litres water/ha.

In 2015, there was no improvement in yield with increased fungicide dose for sclerotinia control. All products significantly reduced disease and significantly increased yield compared with the untreated, even at a quarter dose. This suggests that infection occurred very shortly after fungicides were applied.

Results from previous years have shown that fungicide dose is important for sclerotinia control, particularly at high-risk sites where weather is conducive for infection for extended periods during flowering (Figure 3). In previous years at high-yielding sites, fungicides with growth regulatory activity gave significant yield benefits when disease levels were low.

Figure 2. Fungicide performance against sclerotinia in 2015 a) disease, b) yield. No statistically significant differences between products.

Figure 3. Benefit of using higher fungicide doses at high-risk and low-risk sites for sclerotinia control. Data averaged by dose for all products tested in AHDB Cereals & Oilseeds-funded fungicide performance trials conducted in 2007 and 2008.
Phoma

Phoma continues to pose a significant disease risk for winter oilseed rape, especially in southern and central England. Crops with small plants, including those which are backward due to attack by cabbage stem flea beetle, are particularly at risk. Late infections occurring from February onwards on large plants are generally not damaging to yield. Many varieties are susceptible to phoma leaf spot/stem canker; therefore, effective use of fungicides is important for control.

Previous AHDB Cereals & Oilseeds fungicide performance trials have shown that products with growth regulatory activity (e.g. tebuconazole and metconazole) perform better when applied in protectant rather than eradicant situations for phoma control; this should be considered when selecting products. They do, however, offer an option for growth regulatory activity on large plants.

In AHDB Cereals & Oilseeds trials in 2013/14 and 2014/15, two sprays were applied: the first when 20–40% of plants were affected in the autumn and the second 6–8 weeks later.

Orius 20 EW gave weaker control of phoma leaf spot than other products, however, yields were only slightly affected suggesting some benefits from growth regulatory activity on large plants at these timings (Figure 4). Proline and Refinzar were the most effective products. Despite differences in disease control, all fungicides gave similar yields and there were no statistically significant differences.

![Figure 4. Fungicide performance against phoma; mean of two experiments with high disease levels in 2014 and 2015.](image)

All products except Orius 20 EW significantly reduced stem canker index but the yield responses were not statistically significant.

Note: Some products included in these trials (Refinzar and Pictor) were applied outside of their label recommendation to allow the efficacy testing against phoma leaf spot specifically.

Further information

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Phoma leaf spot and light leaf spot forecasts: www.rothamsted.ac.uk/tools

G65: Oilseed rape guide (AHDB, 2015)

IS37: Phoma leaf spot and stem canker (AHDB, 2015)

Project Report 538: Reducing the impact of sclerotinia disease on arable rotations, vegetable crops and land use (AHDB, 2015)

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