

Fungicide performance in oilseed rape



Light leaf spot



Sclerotinia



Phoma

Latest information

- For phoma and light leaf spot (LLS) control, azoles and non-azoles continue to show good activity.
- Use a range of modes of action effective against target disease(s) throughout the fungicide programme as part of an anti-fungicide resistance management strategy.
- Application timing is critical for good control of sclerotinia, with benefits of higher doses at high risk sites.
- Some products, including some older re-registered products, have updated application restrictions; take care to follow product label recommendations.

Action

- Consult phoma and LLS risk forecasts.
- Monitor crops for LLS 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 as a protectant while still passable.
- Varieties with good LLS resistance (RL ratings of 6 and above) offer benefits in high risk areas in combination with appropriate fungicide choice, dose and timing.
- For all diseases, select an effective product and dose for disease risk and plant growth regulator (PGR) effects, taking growth stage and crop size into consideration.

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

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

The newest varieties on the AHDB Recommended List show continued improvement in light leaf spot (LLS) resistance being delivered by breeders, with several varieties now scoring 7. Nevertheless, good control can be hard to achieve, particularly where disease pressure is high.

In AHDB fungicide performance trials, two sprays are applied: the first before symptoms appear in autumn and the second as soon as weather allows application near to early stem extension. Yield responses to fungicide applications have varied depending on site and season.

Across six trials in 2015 and 2016, there were significant yield benefits from a two-spray programme of up to 0.44t/ha, but no statistically significant difference between tested products or fungicide doses (Figure 1). Dose effects are 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. Further treatment

may be required if the disease is still active in crops before and during flowering.

Some azole fungicides with activity against LLS, such as tebuconazole (eg Orius, Folicur), can affect crop growth and have a negative impact on yield when applied to small plants. Products and doses for disease control should be selected with care and use of these active ingredients at high doses on backward, stressed crops should be avoided.

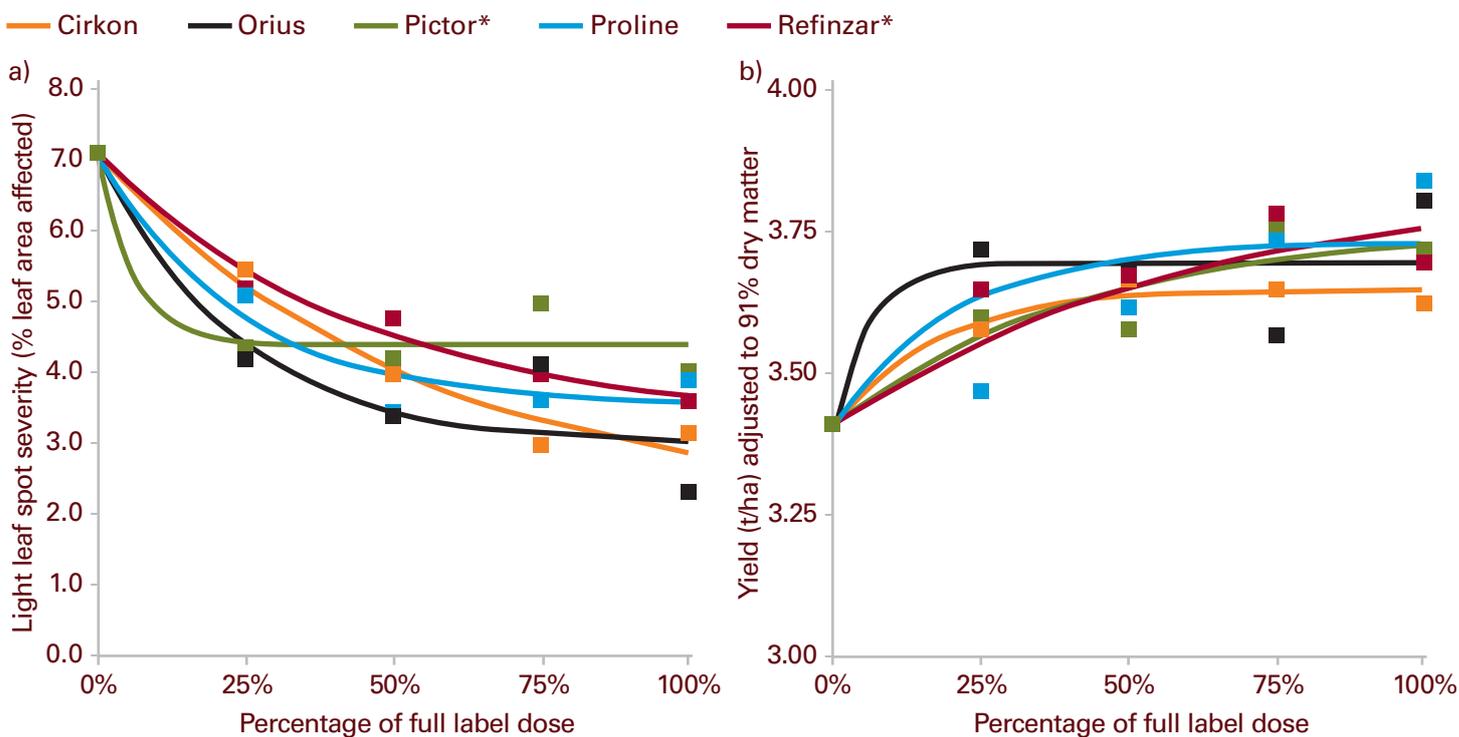


Figure 1. Fungicide performance against light leaf spot; mean of six trials in 2015 and 2016; a) disease, b) yield.

*Refinzar and Pictor were applied outside of their label recommendation to allow specific efficacy testing against light leaf spot.



Light leaf spot

Sclerotinia

Sclerotinia levels were reported to be low again nationally in 2016, however, there are still areas where crops are at high risk. This is highlighted by AHDB trials conducted in the west of England and Wales in 2016, where disease levels were moderate (>20% of plants affected where no fungicides were applied) and significant yield responses to fungicides observed. From three trials in 2015 and 2016, average yield improvements from a single spray of between 0.4–0.8t/ha were reported (Figure 2).

Fungicides are only effective against sclerotinia when applied as a protectant before infection occurs. It should be noted that the performance of products is

dependent on when infection conditions occur after application. Low doses can appear effective when infection occurs only once within days of application.

In high risk years, eg where weather favourable for infection occurs regularly throughout flowering, low doses will not provide adequate persistence. Persistence of full dose fungicides after application is approximately three weeks, therefore robust doses 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. Two-spray programmes can offer protection for the whole of the flowering period.

Yield benefits to 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/deposition of sclerotia (resting bodies). Good spray penetration into the crop canopy is important and fungicides should be applied in a minimum of 200 litres water/ha.

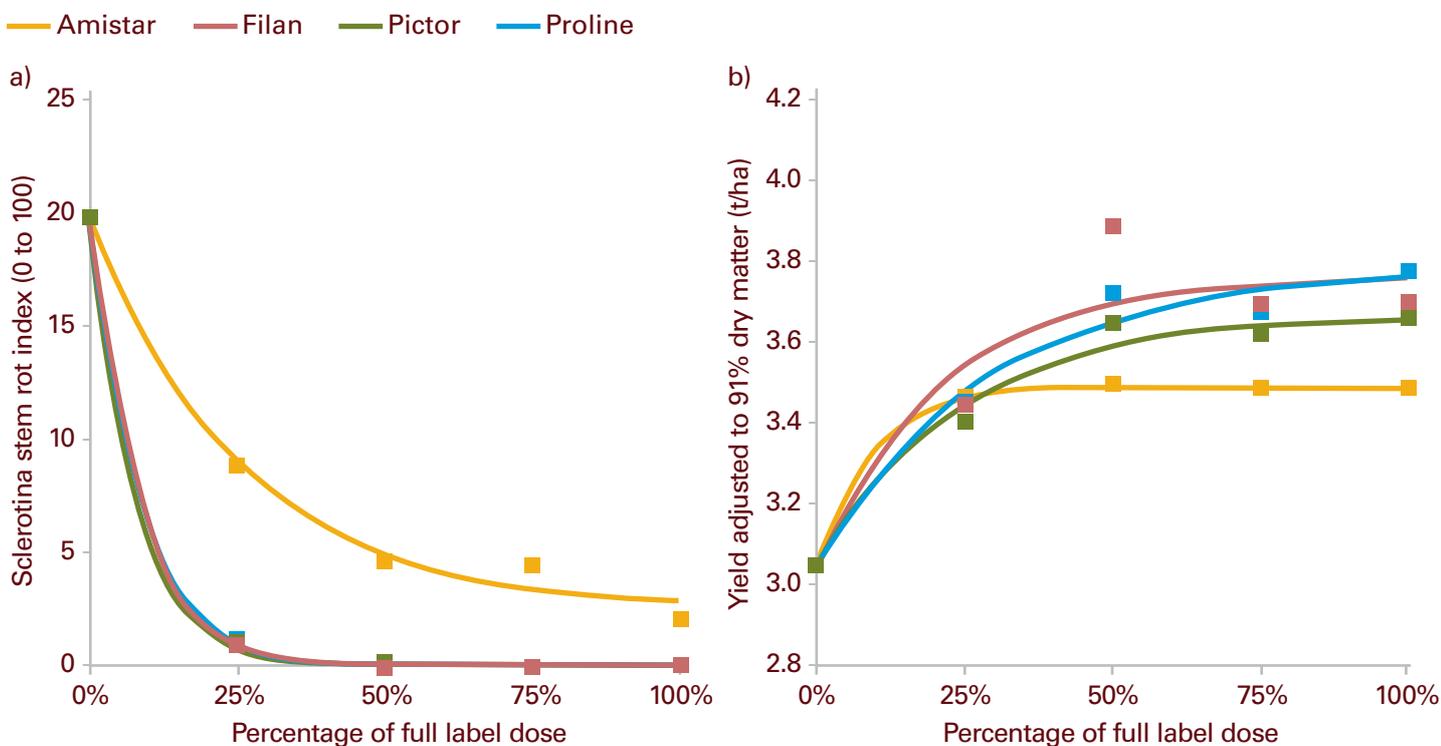


Figure 2. Fungicide performance in three trials against sclerotinia in 2015 and 2016; a) disease, b) yield.



Sclerotia in oilseed rape stem

Phoma

Phoma continues to pose a significant disease risk for winter oilseed rape, especially in southern and central England, particularly on susceptible varieties. Effective use of fungicides is therefore important for control. Later drilled or backward crops with small plants, including those attacked by cabbage stem flea beetle, can be particularly at risk from the autumn epidemic, whereas late infections on large plants occurring from February onwards are generally not as damaging to yield.

Previous AHDB fungicide performance trials have shown that

products with growth regulatory activity (eg tebuconazole and metconazole) perform better when applied in protectant rather than eradicant situations for phoma control and this should be considered when selecting products. They do, however, offer an option for growth regulation on large plants.

In AHDB trials, two sprays are applied: the first when 20–40% of plants are affected in the autumn and again 6–8 weeks later. In three trials with moderate to high untreated stem canker levels conducted in 2014, 2015 and 2016,

there were significant yield benefits, on average, of 0.4t/ha across the trials.

Orius 20EW and Cirkon gave weaker disease control of phoma stem canker than other products, but equivalent yield increases, suggesting some benefit from growth regulation on the larger plants in these trials (Figure 3). Proline, Pictor and Refinzar were the most effective products against stem canker. There were few yield benefits associated with increasing product dose above 50% of the recommended label dose.

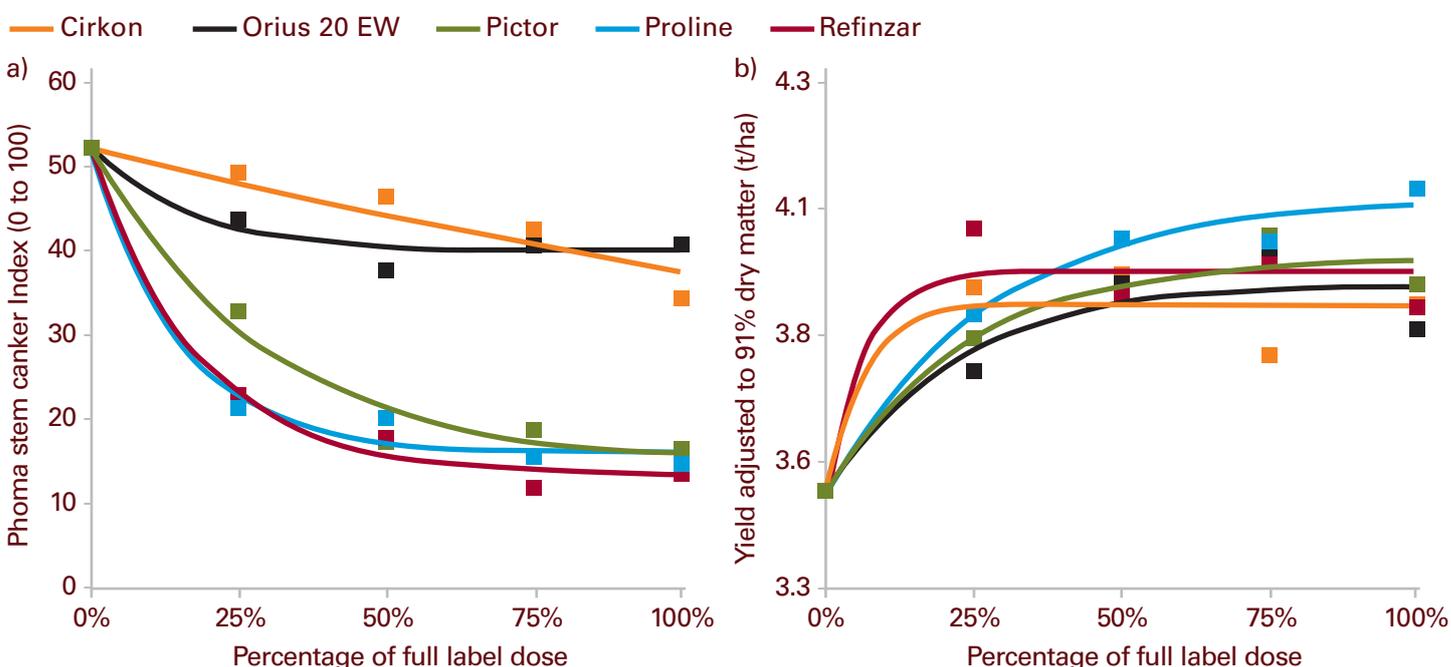


Figure 3. Fungicide performance against phoma stem canker, mean of three trials with moderate to high disease levels (Index 43 to 71) in 2014, 2015 and 2016; a) disease, b) yield. Three years data for Proline, Orius 20EW and Refinzar and 2 years data for Pictor and Cirkon.

Note: Refinzar was tested as a two-spray programme but is restricted to one application per season, with a latest application timing of GS30 (stem extension). Pictor cannot be applied prior to 1 February or GS20 in year of harvest.

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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