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Annual Report

Fungicides for light leaf spot control in winter oilseed rape

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This report is produced as part of the fungicide performance in wheat, barley and oilseed rape project (21120013, 2018–22).

CONTENTS

1. Background

Over the last ten years, fungicides for control of light leaf spot have been evaluated at ADAS High Mowthorpe, North Yorkshire, and by SRUC near Edinburgh, Midlothian or in Aberdeenshire. From 2015 to 2017, there was an additional site with NIAB in Dorset.

- All trials are carried out on susceptible varieties – usually, AHDB Recommended Lists (RL) ratings for the target disease of 5 or 6
- All products are tested at four doses (¼, ½, ¾ and full recommended label rate) and compared with an untreated control
- All products are applied as two-spray programmes; a first application in the autumn (usually November) with a second application at or during early stem extension (February/March)
- Leaf disease assessments are conducted after each application, with stems and pods assessed pre-harvest
- Yield data are adjusted to 91% dry matter

Priority for inclusion for testing is given to products not currently approved, to allow independent data to be available when they come to market. Data in this report starts from 2015 and focuses on the efficacy of products that have recently been approved for use in oilseed rape. Products tested included:

- Azole solo (Proline 275)
- SDHI solo (Filan)
- QoI solo (Architect)
- QoI + azole co-formulation (Priori Gold)
- QoI + SDHI co-formulation (Shepherd)
- SDHI + azole mixture (Aviator Xpro)

Historic information is available on the AHDB website: ahdb.org.uk/knowledge-library/fungicide-performance-in-cereals-and-oilseed-rape

2. Harvest years 2015 and 2016

Aviator Xpro, Architect and Proline were included in trials conducted in 2015 and 2016. In 2015, fungicides were applied on 24 November and 17 February to cv. PR46W21 at the trial site near Malton, North Yorkshire, 29 October and 15 March to cv. Fencer near Edinburgh, Midlothian and 18 November and 25 March to cv. Harper at the NIAB site in Dorset. Light leaf spot was again observed early in North Yorkshire and fungicides were applied earlier than stem extension at this site. In 2016, fungicides were applied on 26 November and 12 February to cv PR46W21 at the trial site near Malton, North Yorkshire, 25 November and 23 November and 25 February to cv. Harper in Dorset. A cross-site analysis was conducted for light leaf spot control and yield across all five experiments conducted in 2015 and 2016 (Figure 1). All treatments significantly reduced light leaf spot compared to the untreated control, with all products performing similarly (Figure 1a). Yield responses to the two-spray fungicide programmes (untreated = 3.40 t/ha) of up to 0.40 t/ha were observed.

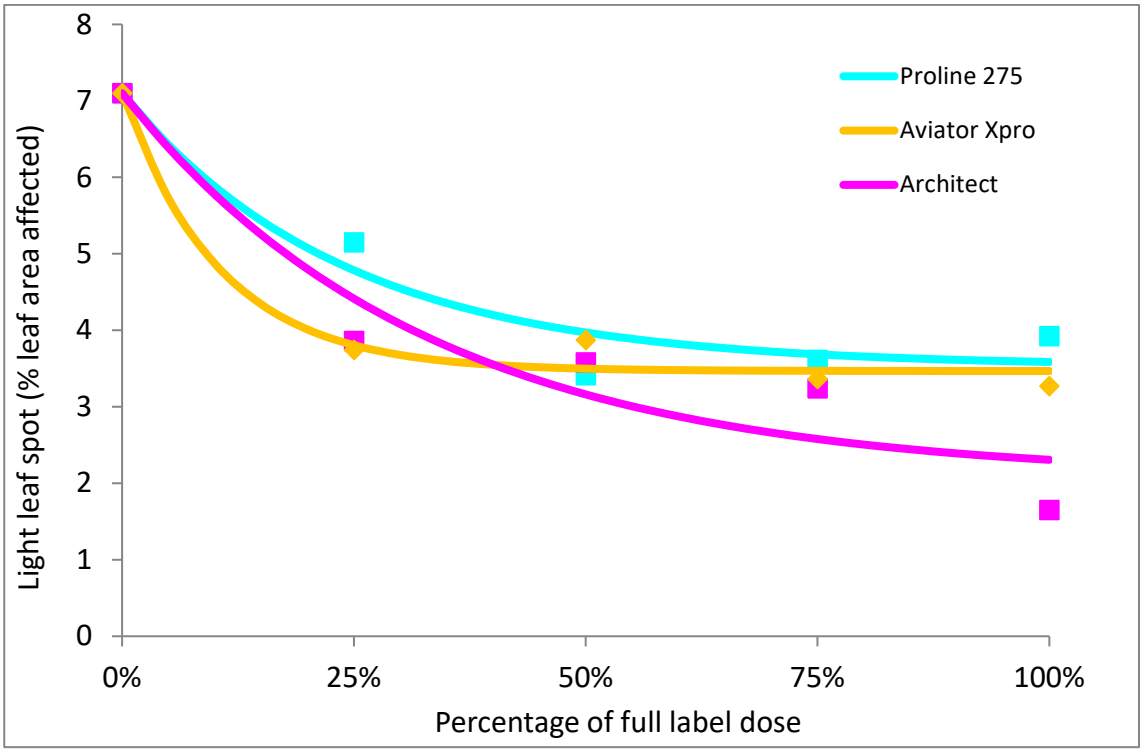
3. Harvest year 2020

Light leaf spot severity was high in North Yorkshire in 2020, with c. 9% leaf area affected in untreated plots in mid-March. Fungicides were applied on 2 December 2019 and 5 February 2020 to cv. Fencer. All treatments reduced light leaf spot compared to the untreated control, providing similar control (Figure 2a). Yield responses to fungicide application (untreated control = 3.30 t/ha) ranged from 0.2 to 0.4 t/ha (Figure 2b).

4. Harvest year 2021 and cross-site analyses (2019 to 2021)

Priori Gold was included in the trials conducted in 2018/19, 2019/20 and 2020/21, Filan in 2018/19, Shepherd in 2019/20 and 2020/21, and Aviator 2020/21. Neither Priori Gold nor Filan have a label recommendation for light leaf spot. However, as they are likely to be used against other diseases when control of light leaf spot will also be required, the information is presented here. Proline was included in all years as a standard. Data from the North Yorkshire and Edinburgh trials were combined for a cross-site analysis. All treatments performed similarly, reducing light leaf spot compared to the untreated control (Figure 3a). Yield responses to fungicides (untreated control = 3.90 t/ha) ranged from 0.1 to 0.4 t/ha (Figure 3b). When data was combined with previous seasons (2019 to 2021), a similar trend was observed (Figure 4a), and yield responses to fungicide application (untreated control = 3.50 t/ha) ranged from 0.3 to 0.6 t/ha (Figure 4b).

a.



b.

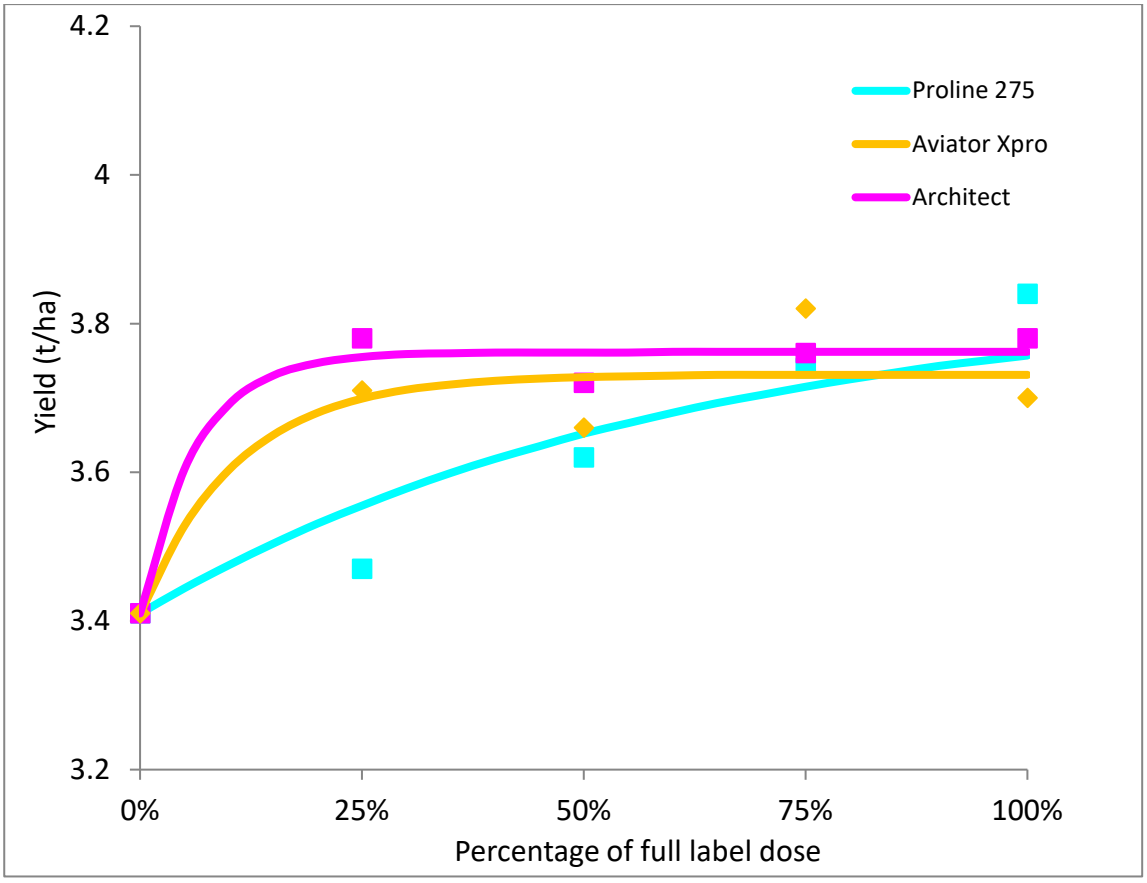
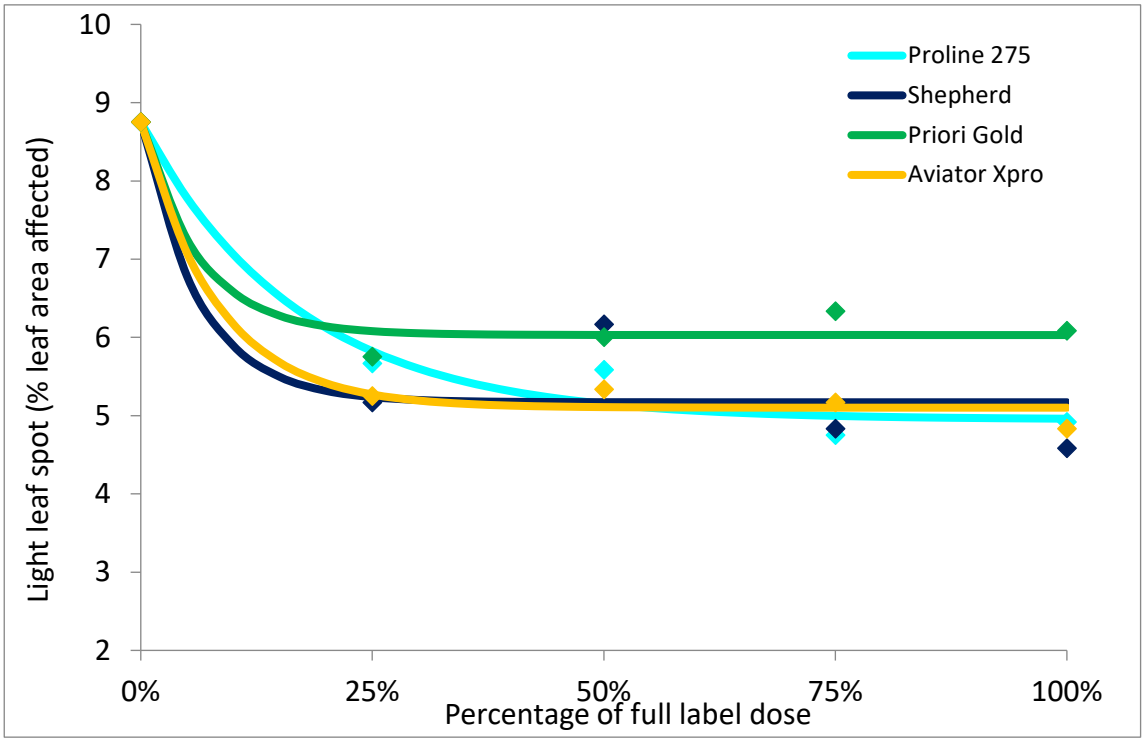


Figure 1. Cross-site and year analysis [Five sites – three sites in 2015 (Midlothian, Dorset and North Yorkshire) and two sites in 2016 (Dorset and North Yorkshire)] for light leaf spot control for disease (a.) and yield (b.).

a.



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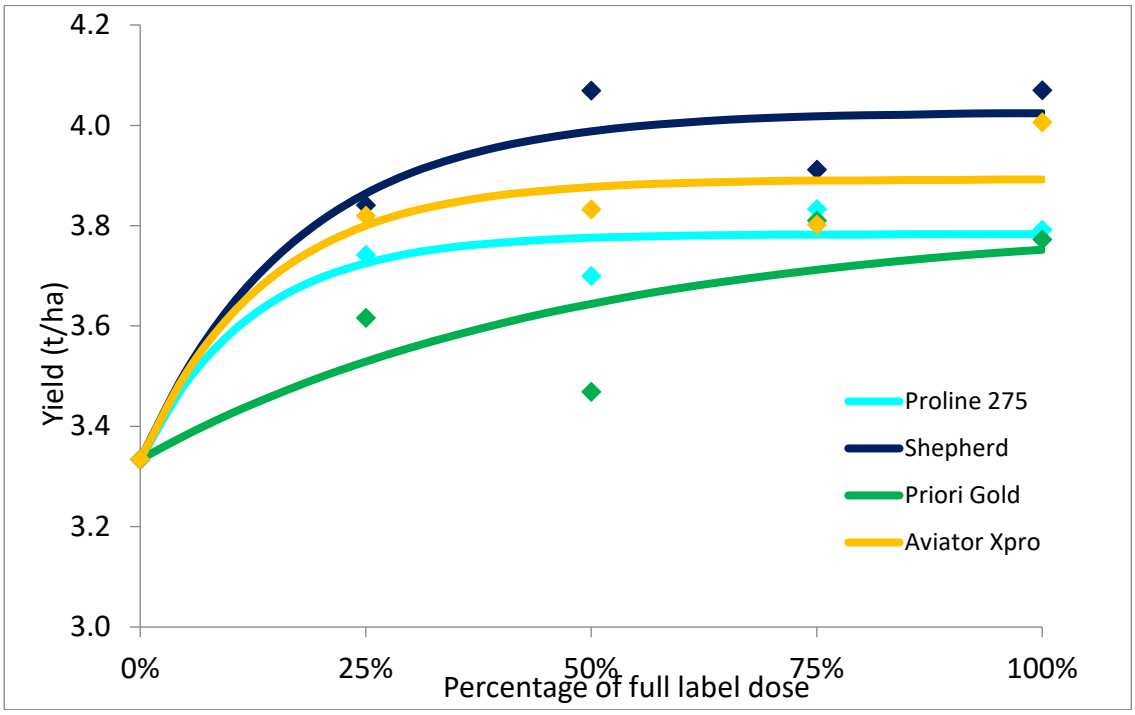
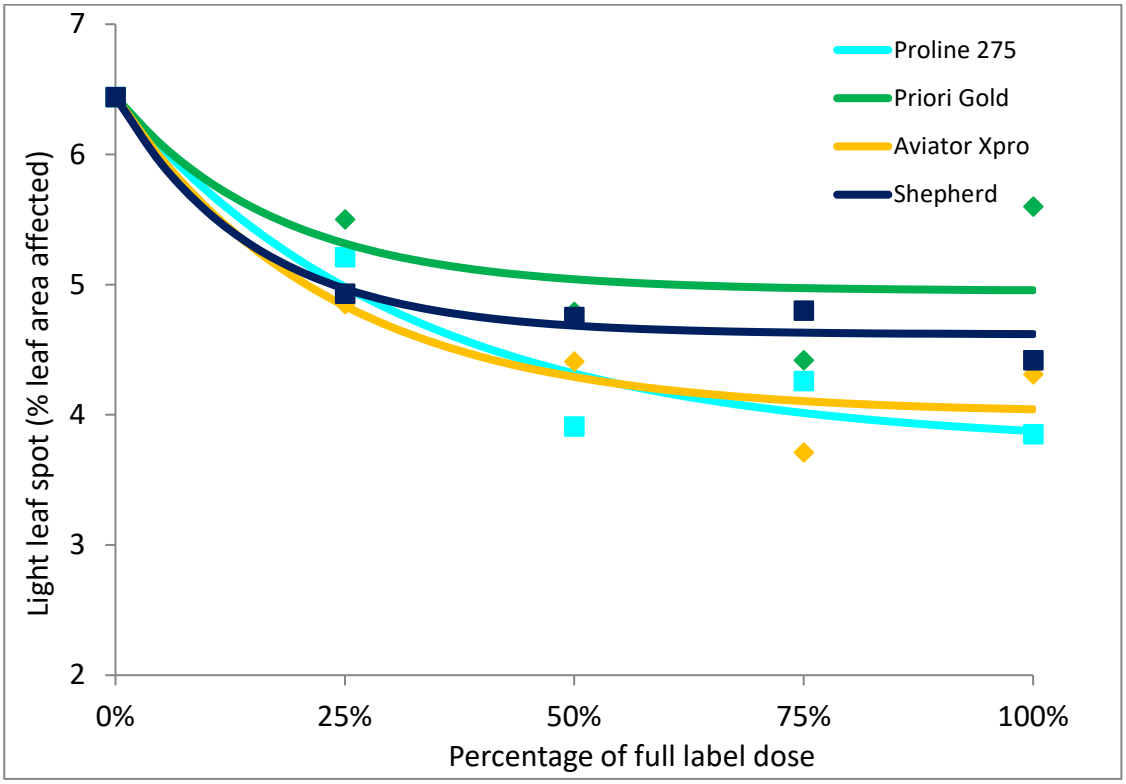


Figure 2. Light leaf spot severity control (a.) and yield (b.) response, at 91% dry matter, in relation to fungicide dose in one trial conducted 2020. Note: Priori Gold does not have a label recommendation for light leaf spot. However, as it is likely to be used when control of this disease will be required, the information is presented.

a.



b.

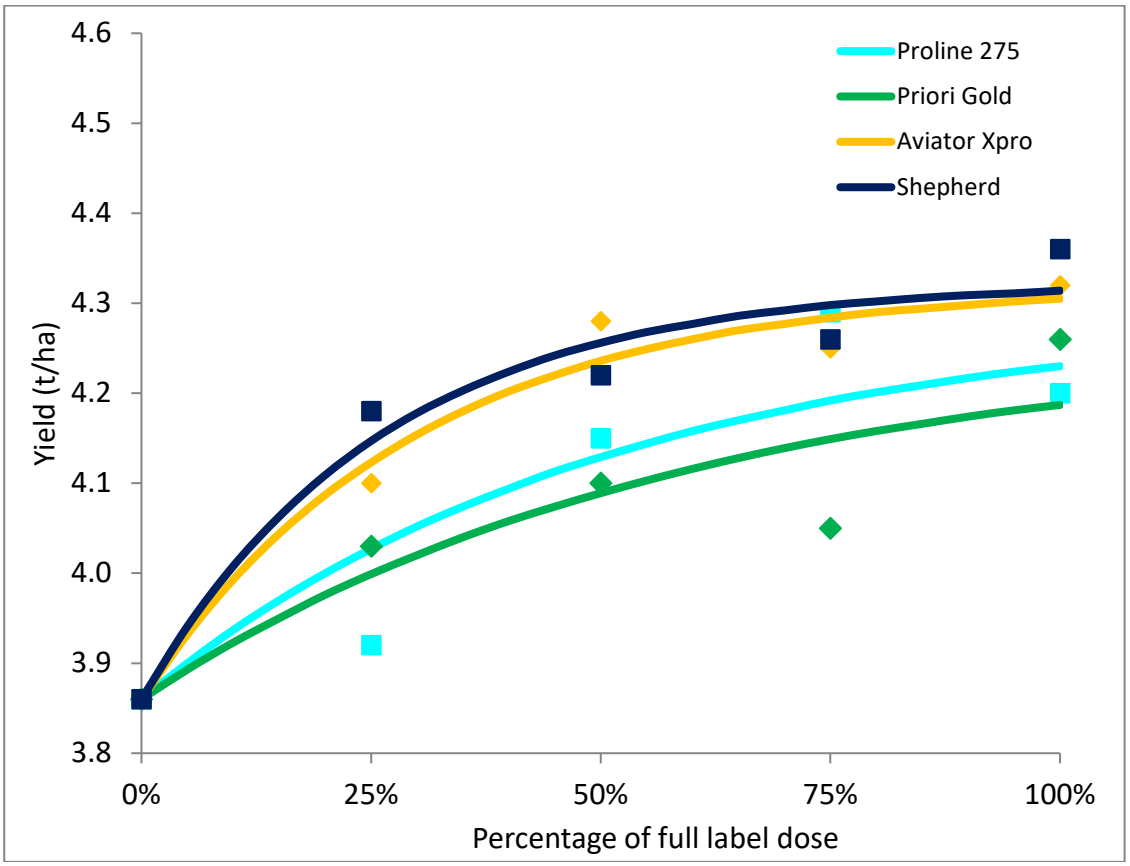
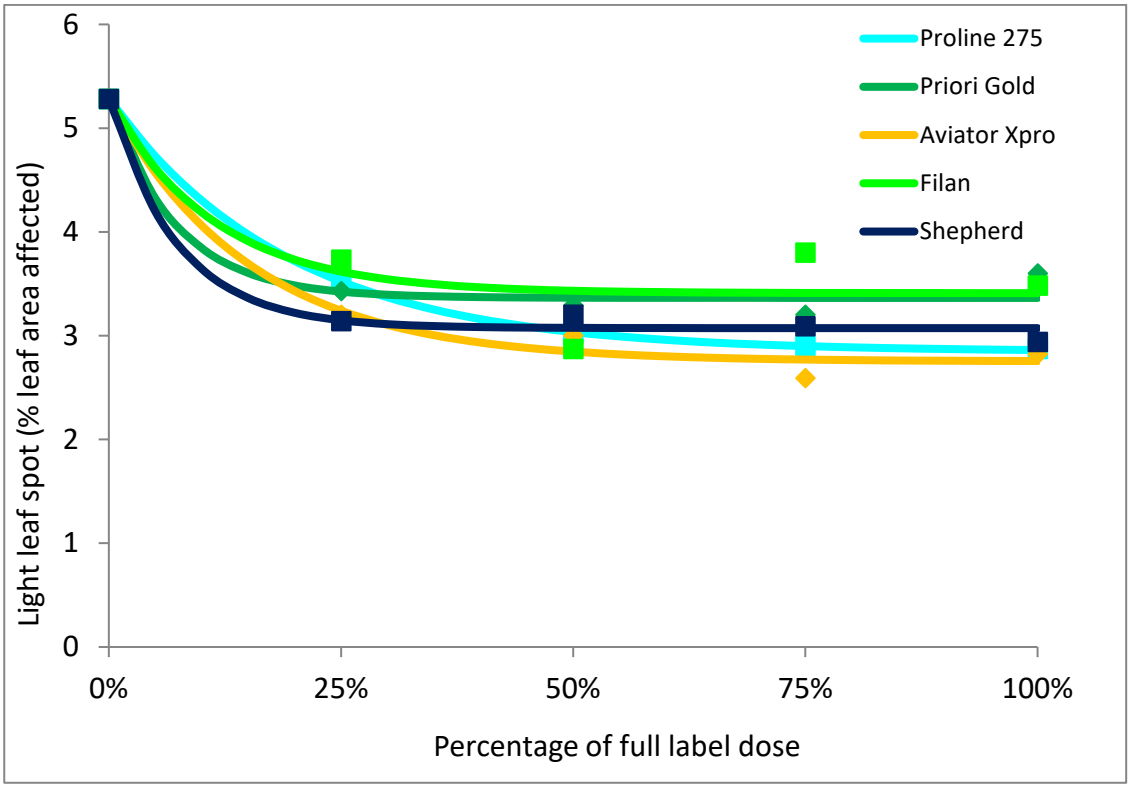


Figure 3. Light leaf spot severity control (a.) and yield (b.) response, at 91% dry matter, in relation to fungicide dose in two trials conducted 2021. Note: Priori Gold does not have a label recommendation for light leaf spot. However, as it is likely to be used when control of this disease will be required, the information is presented.

a.



b.

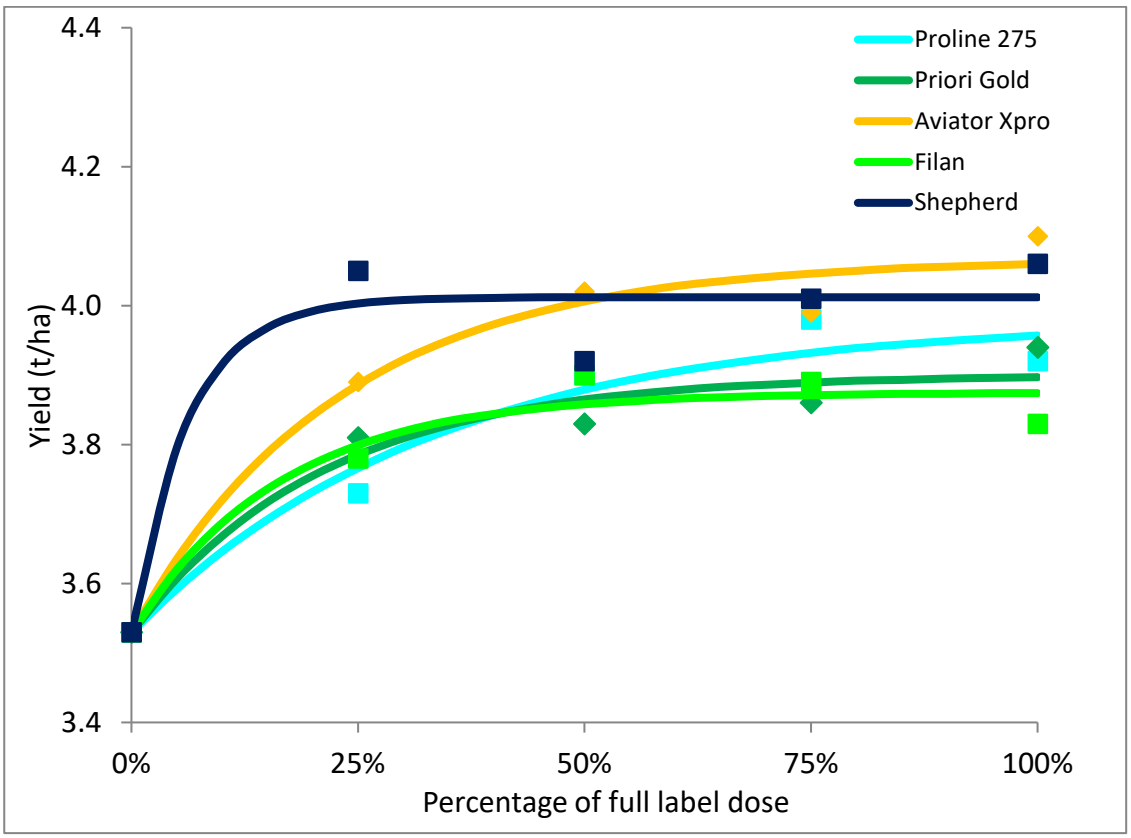


Figure 4. Light leaf spot severity control (a.) and yield (b.) response, at 91% dry matter, in relation to fungicide dose in five trials conducted 2019 to 2021. Note: Neither Filan nor Priori Gold has a label recommendation for light leaf spot. However, as they are likely to be used when control of this disease will be required, the information is presented.

5. Assessing and managing light leaf spot (harvest year 2022)

Light leaf spot incidence has been high for the past two years, with pressure typically higher compared to previous years. The latest light leaf spot forecast for 2021–22 indicates that, for an average rainfall scenario, there will be high risk of infection across Scotland, North and South West of England (above 50% incidence infection next spring) but lower risk in the rest of England and Wales (1 to 25% incidence). Airborne spores are produced on the previous year's crop debris. Therefore, the presence of pod and stem lesions in previous crops, as well as their proximity to this year's crop, increases the risk on farm. Late-emerging crops are generally less severely affected than earlier sowings.

Close proximity to volunteers is considered to increase light leaf spot risk and new crops should be monitored closely. This situation will occur if volunteers are being used as part of a cabbage stem flea beetle management strategy and new crops are situated in neighbouring fields. Monitoring will be particularly important where the new crop consists of a susceptible variety (variety with a resistance rating of 5 and below) and the crop was drilled early to mid-August.

Use a spray in autumn (November) at high-risk sites, particularly on susceptible varieties. After the autumn treatment, inspect crops regularly, on a field-by-field basis, for light leaf spot, from January onwards. There is no threshold, so it is necessary to react to the presence of light leaf spot by spraying as soon as it is seen. This will be most important for susceptible varieties. Note that there are product restrictions, in relation to application date and growth stage, when considering options at this timing.

6. Summary – key points for light leaf spot control

- Where light leaf spot has been a problem in recent years, consider using more resistant varieties (resistance rating of at least 6)
- Azoles and non-azoles are available (as solo products and co-formulations) for light leaf spot control which is important for fungicide resistance management
- It is recommended that a variety of products, representing different modes of action groups, are used throughout the fungicide programme – this includes fungicide applications where light leaf spot is not the main target but is likely to be present
- There are opportunities to use azole/non-azole co-formulations and mixtures and product alternation strategies in the autumn, as well as non-azole products at other points in the programme (e.g. for sclerotinia control as part of a resistance management strategy)
- Strains of light leaf spot with decreased sensitivity to azoles have been reported in the UK; however, no substantial loss of efficacy has been detected or demonstrated in trials, yet

- The latest oilseed rape fungicide resistance management guidelines are available: ahdb.org.uk/frag
- Using a range of modes of action throughout the fungicide programme is necessary as part of a robust fungicide resistance management strategy to prevent the selection for fungicide insensitive strains
- Recent fungicide experiments indicate that good control of light leaf spot can appear difficult to achieve, however, we still see yield responses to fungicide
- Some sites have shown benefits from using application rates above half dose but others have not
- There are prospects for improving control through better fungicide timing, as many crops are treated too late, when the disease is already well established
- Autumn sprays and early detection and treatment in January/February (where conditions allow) will also provide further control and this earlier timing is more effective than treating heavily diseased crops at the stem extension stage
- Optimum dose and yield response is site and situation specific and will depend on variety resistance rating, crop growth and disease pressure
- For increased efficacy at high disease-pressure sites, higher doses may be necessary, but this does not always translate into yield responses in this trial series
- Product choice will also be influenced by requirements for phoma activity and/or plant growth regulation of large plants (e.g. metconazole or tebuconazole products) and label restrictions
- Some negative responses were noted at sites where fungicides with PGR activity were used at high doses, particularly in Scotland and in stressed crops
- Negative effects have not been reported for any of the products included in the datasets presented in this report