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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

Fungicides for control of light leaf spot on winter oilseed rape have been evaluated over the last ten years at ADAS High Mowthorpe, North Yorkshire, 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 ratings for the target disease of 5 or 6). All new and existing products are tested at four doses (¼, ½, ¾ and full recommended label rate) and compared with a completely untreated control. All products were applied as two-spray programmes; a first application in the autumn (usually November) and a second application at or during early stem extension (February/March). Leaf disease assessments are done after each application and stems and pods assessed pre-harvest. Yield data is adjusted to 91% dry matter. Priority for inclusion for testing in this project is given to products not currently approved, to allow independent data to be available when they come to market. Data is not presented for harvest year 2022 as disease levels were insufficient to determine yield effects. Historic data in this report starts from 2015 onwards and focuses on the efficacy of products that have recently been approved for use in oilseed rape, as well as industry standards. Products tested have included an azole solo (Proline 275), SDHI solo (Filan), QoI solo (Architect), QoI + azole co-formulation (Priori Gold) QoI + SDHI co-formulation (Shepherd) and SDHI + azole mixture (Aviator Xpro). Not all products were tested in all years. Historic data is available on the AHDB website: ahdb.org.uk/fungicide-performance

2. Results

2.1. 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.

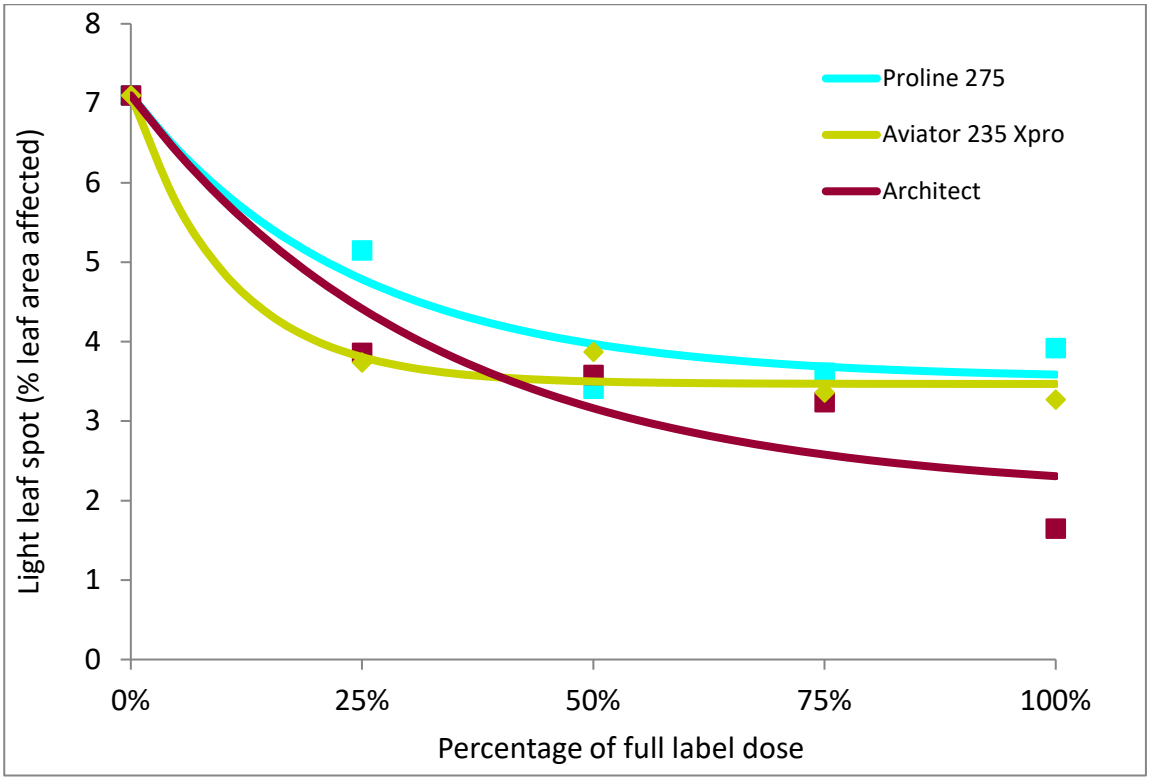
2.2. Harvest year 2020

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).

2.3. Harvest year 2021 and cross-site analyses (2019–2021)

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 were 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.

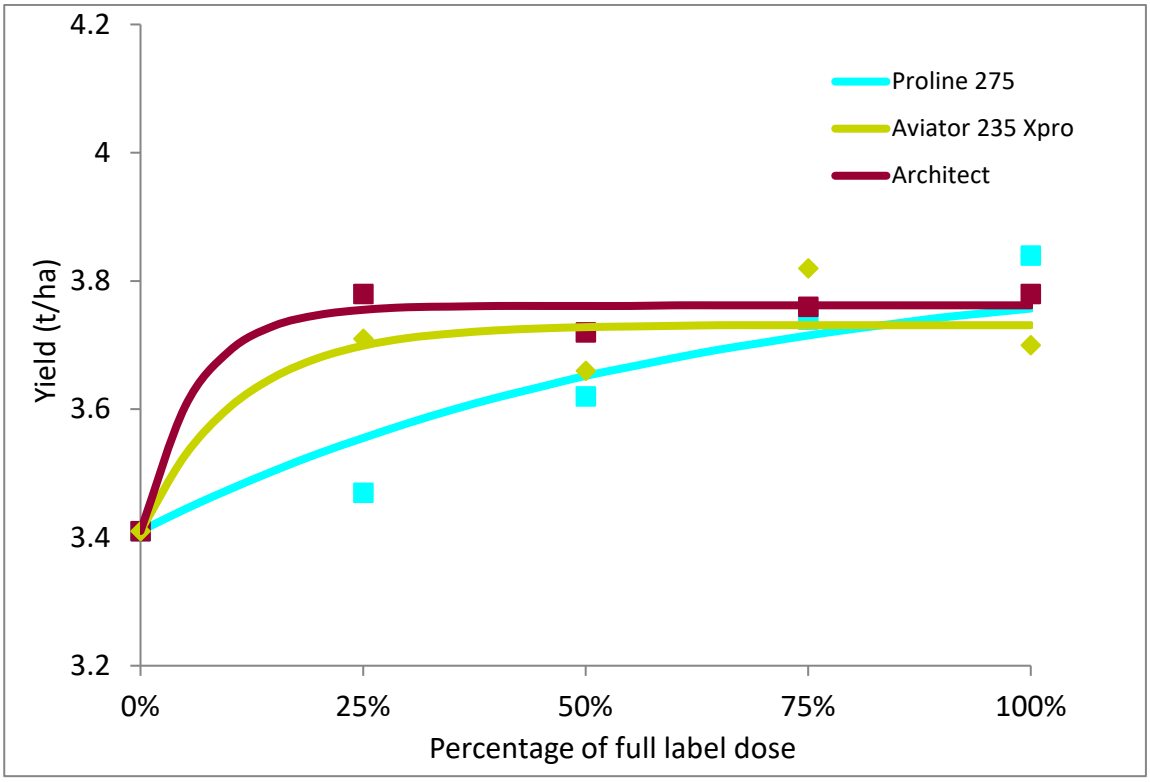
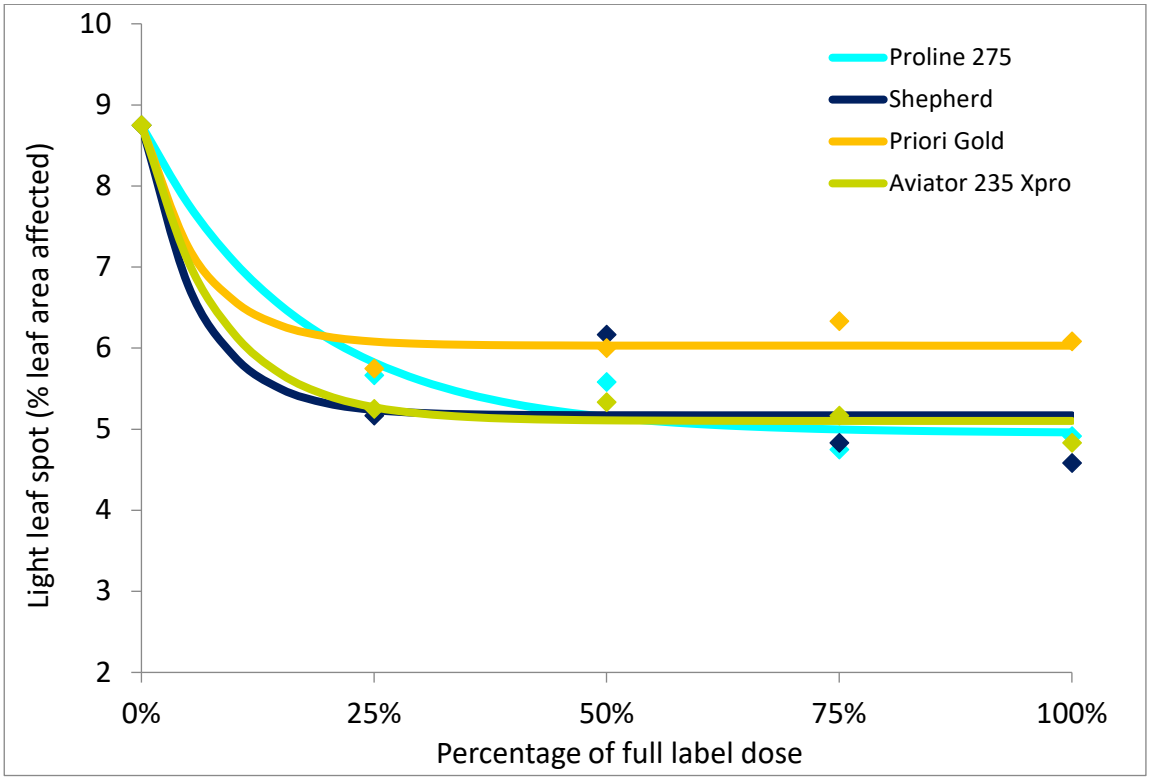


Figure 1. Cross site and year analysis [Five sites – three sites in 2015 (Midlothian, Dorset and North Yorkshire) and two sites in 2016 (Dorset and North Yorkshire)] for light leaf spot control for disease (a.) and yield (b.).

a.



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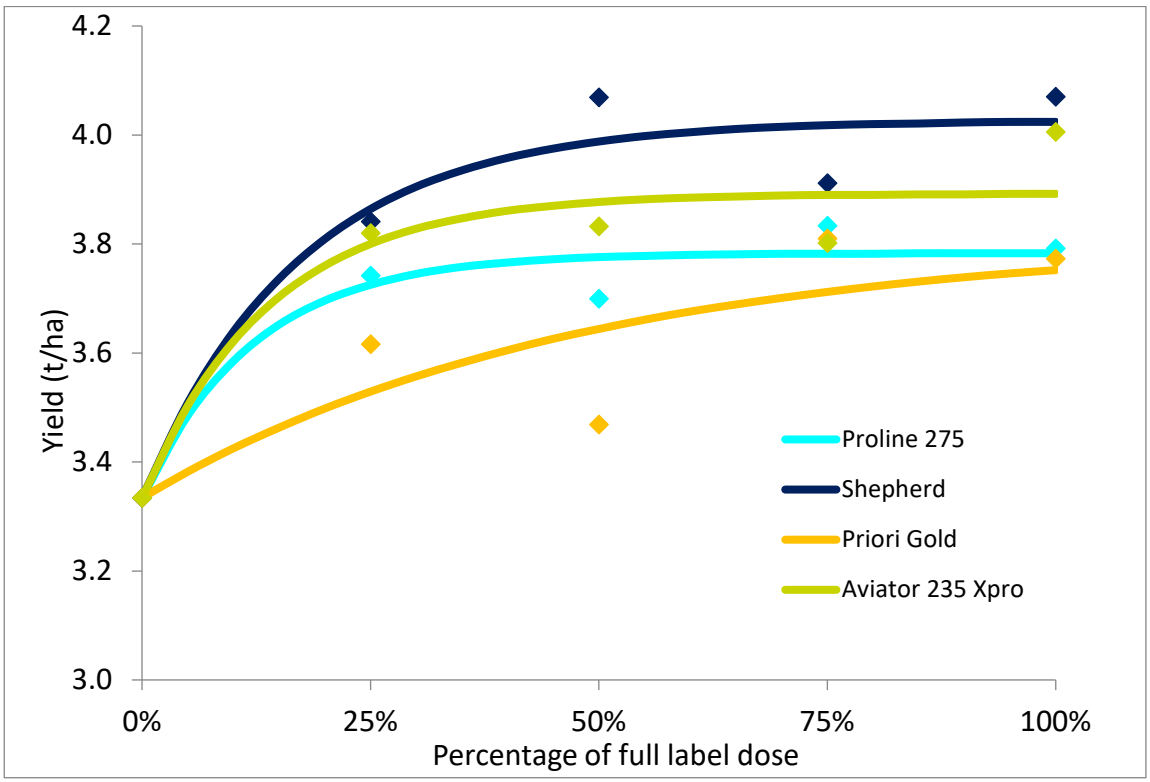
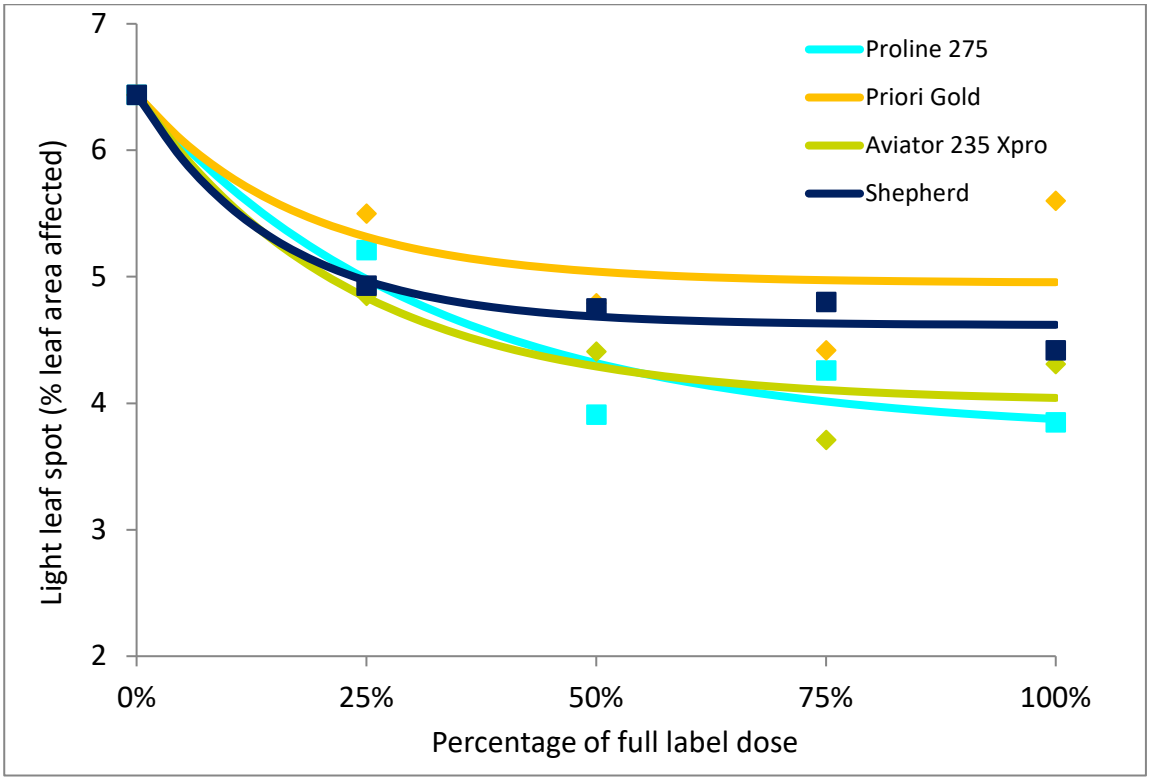


Figure 2. Light leaf spot severity control (a.) and yield (b.) response, at 91% dry matter in relation to fungicide dose in one trial conducted 2020. Note: Priori Gold does not have a label recommendation for light leaf spot, however, as it is likely to be used when control of this disease will be required,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

a.



b.

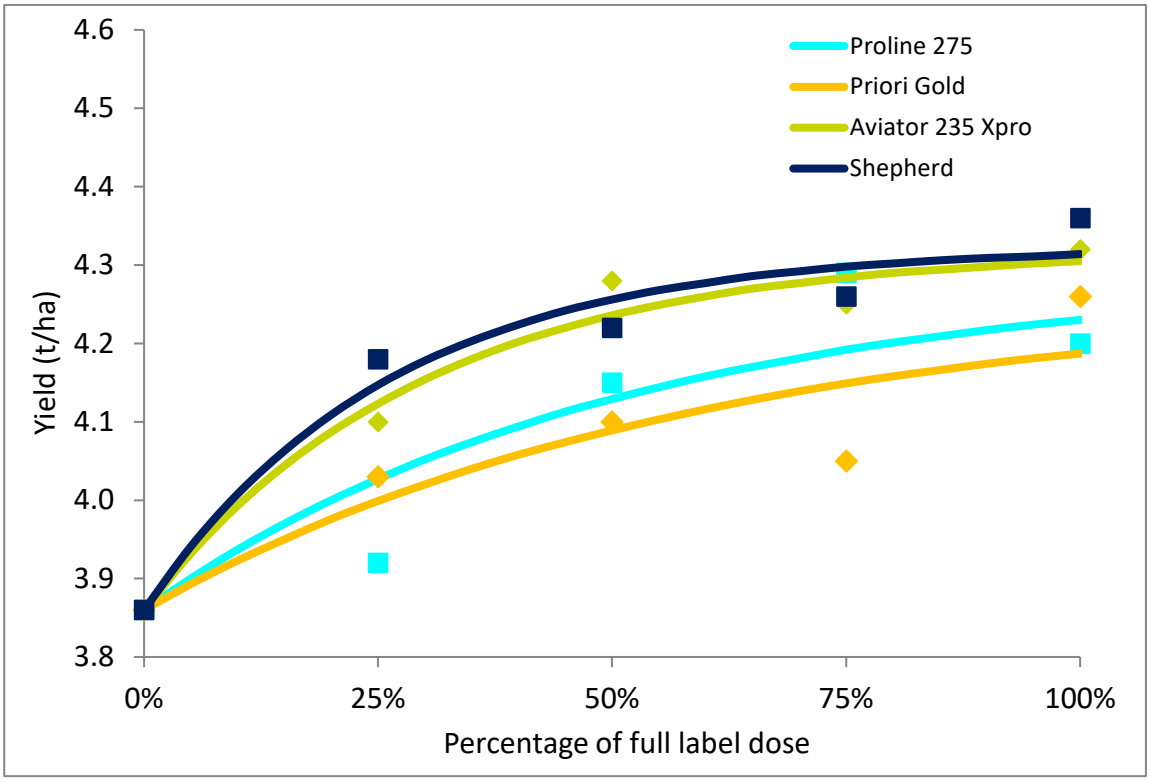
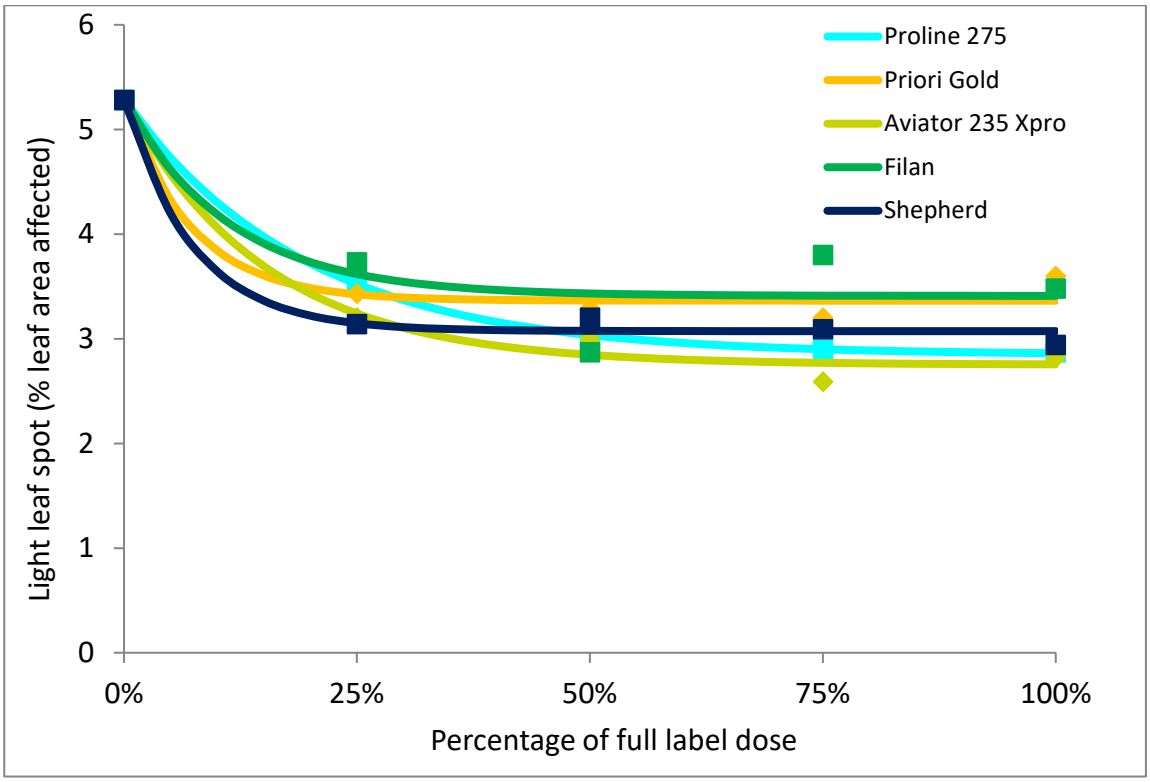


Figure 3. Light leaf spot severity control (a.) and yield (b.) response, at 91% dry matter in relation to fungicide dose in two trials conducted 2021. Note: Priori Gold does not have a label recommendation for light leaf spot, however, as it is likely to be used when control of this disease will be required,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

a.



b.

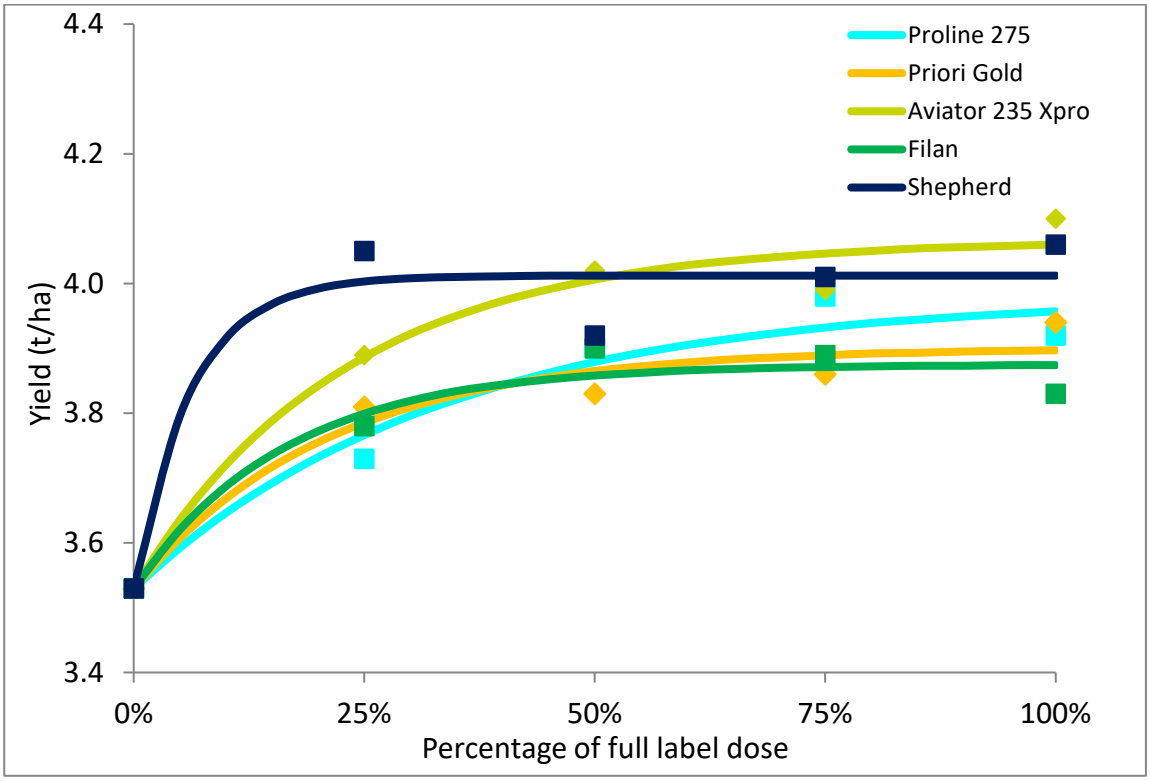


Figure 4. Light leaf spot severity control (a.) and yield (b.) response, at 91% dry matter in relation to fungicide dose in five trials conducted 2019 to 2021. Note: Neither Filan nor Priori Gold have a label recommendation for light leaf spot, however, as they are likely to be used when control of this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

3. Managing light leaf spot risk

Light leaf spot incidence has been low-to-moderate during the last two years, but leaf severities have varied depending on geographical location. The development of light leaf spot epidemics is dependent on local weather conditions. Close monitoring of crops is advised. Air-borne 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 the current crop, increases the risk. Late-emerging crops are generally less severely affected than earlier sowings.

Proximity to volunteers is considered to increase light leaf spot risk. 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 is particularly important when the new crop consists of a susceptible variety (resistance rating of 5 and below) and the crop was drilled early-to-mid August.

The recent fungicide experiments indicate that good control of light leaf spot can appear difficult to achieve (40 to 50% control), however, we still see yield responses to fungicides on the susceptible varieties used (resistance ratings of 5 or lower). When using fungicides, disease control can be improved 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) provide better levels of control than treating heavily diseased crops at the stem extension stage.

On susceptible varieties, use a spray in autumn (November) at high-risk sites and 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. Note that there are product restrictions in relation to application date and growth stage when considering options at this timing. Varieties with resistance ratings of 6 and above are likely to withstand light leaf spot infection better and will be less or not reliant on fungicides for yield.

4. Summary: key points for light leaf spot control

Optimum dose and yield response is site and situation specific and will depend on variety resistance rating, crop growth and disease pressure. Where light leaf spot has been a problem in recent years, use varieties with better resistance (a resistance rating of at least 6). If using fungicides, 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 range of products representing different modes of action groups are used throughout the fungicide programme. This includes for 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, such as 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 to date. The latest oilseed rape fungicide resistance management guidelines are published by FRAG on the AHDB website. 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.

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.