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Annual Report

Fungicides for light leaf spot control in winter oilseed rape

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CONTENTS

1. Background

Fungicides for control of light leaf spot have been evaluated over the last ten years at ADAS High Mowthorpe, North Yorkshire, and by SRUC near Edinburgh, Midlothian. 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 new and existing products are tested at four doses (¼, ½, ¾ and full recommended label rate) and compared with an untreated control. All products were 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). A control treatment for application timing is also included, as a single application of Proline 275 (½ and full recommended label rate) at the autumn timing (no spring application) and a single application at the spring timing (no autumn application), to understand the seasonal effect against light leaf spot that each timing can give to disease control and yield. Label restrictions may apply where products are used as part of two-spray programmes and should be checked for guidelines on maximum individual dose, total dose and application timings. Leaf disease assessments are done after each application and stems and pods assessed pre-harvest. Yield data are 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 were not presented for harvest year 2022 as disease levels were insufficient to determine yield effects. Historic data start from 2015 onwards and focus on the efficacy of products that have recently been approved for use in oilseed rape. Products tested include azole solos (Proline 275 and Toledo), SDHI solo (Filan), QoI solo (Architect), QoI + azole co-formulation (Priori Gold), QoI + SDHI co-formulation (Shepherd) and an SDHI + azole mixture (Aviator Xpro and Propulse). Further historic data are available at: ahdb.org.uk/fungicide-performance

2. Harvest year results

2.1. Harvest years 2015 and 2016

Aviator Xpro, Architect and Proline were included in trials 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 observed early in North Yorkshire and fungicides were applied before 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 for light leaf spot control and yield across all five experiments was 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.

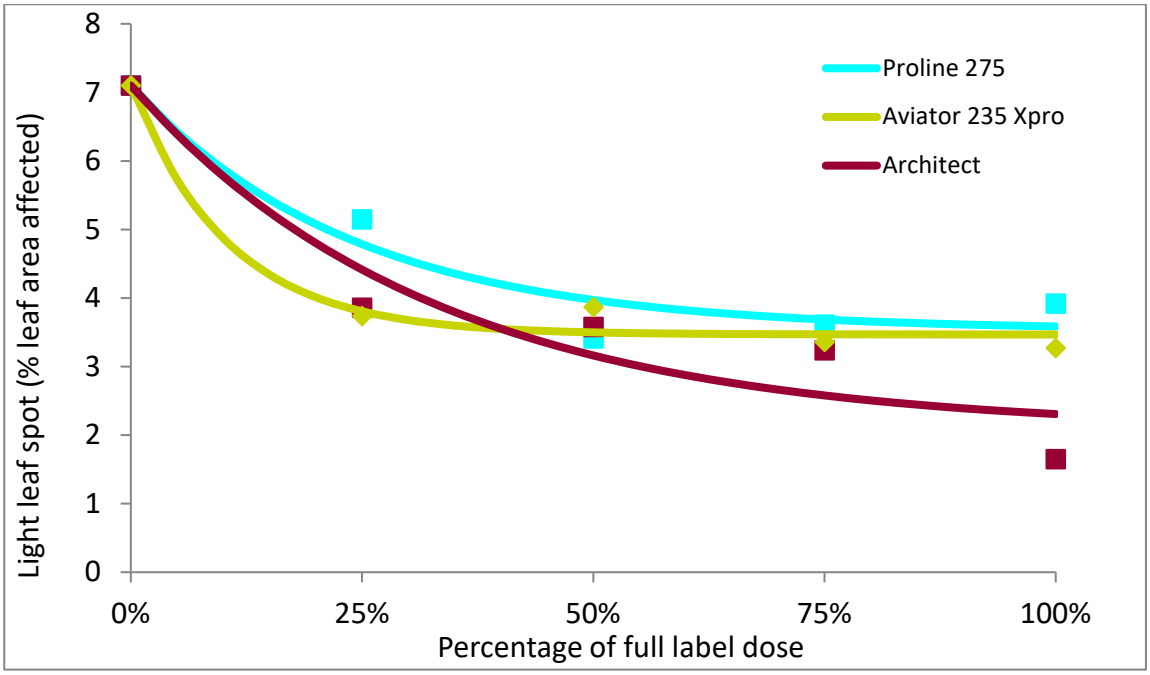
2.2. Harvest years 2019 to 2021

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 severity compared to the untreated control (Figure 2a). Yield responses to fungicides (untreated control = 3.50 t/ha) ranged from 0.3 to 0.6 t/ha (Figure 2b).

2.3. Harvest year 2023

Light leaf spot severity was moderate in North Yorkshire in 2023, with *c.* 3.5% leaf area affected in untreated plots in mid-April. Fungicides were applied on 30 November 2022 and 27 March 2023 to cv. Darling. All treatments reduced light leaf spot compared to the untreated control and provided similar control at the 100% dose (Figure 3a). Yield responses to fungicide application (untreated control = 2.70 t/ha) ranged from 0.2 t/ha (Toledo and Priori Gold), to 0.3 t/ha (Proline 275 and Propulse) and to 0.4 t/ha (Aviator Xpro) (Figure 3b). A fungicide timing effect was seen where the November applied fungicide gave a greater response, in terms of both light leaf spot severity reduction and yield, compared to the March application timing, however, both timings provided a contribution to the final yield. For the Edinburgh site in this season, the nature of the disease pressure (early) meant disease control effects for the products tested were not seen.

a.



b.

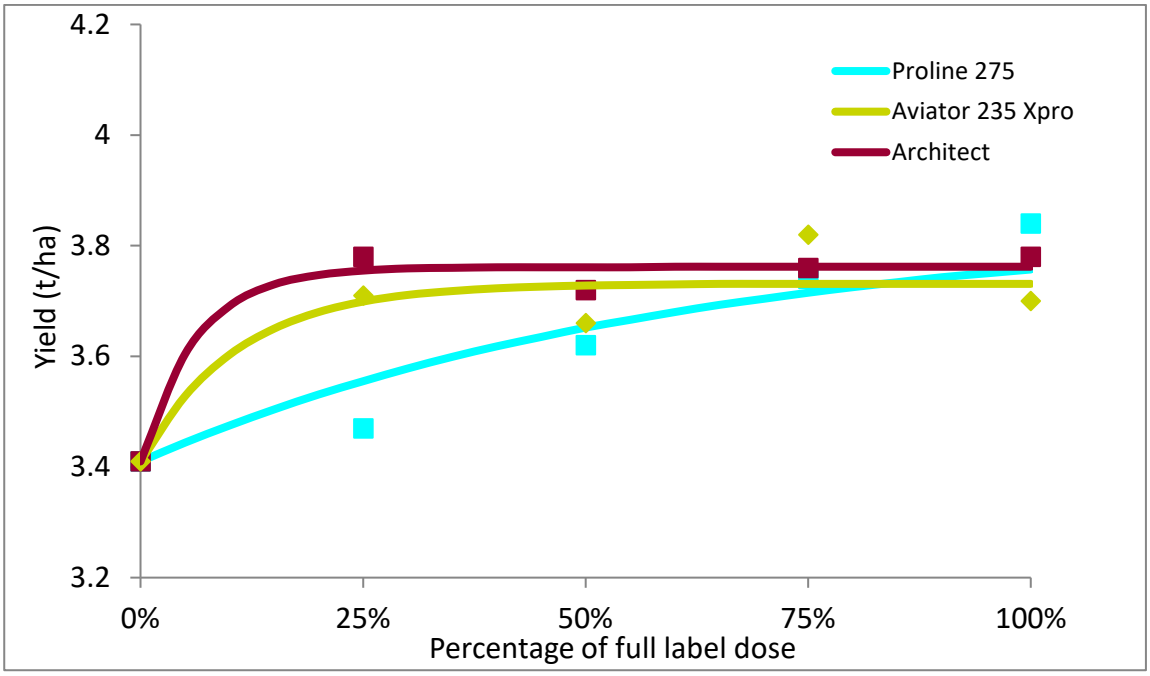
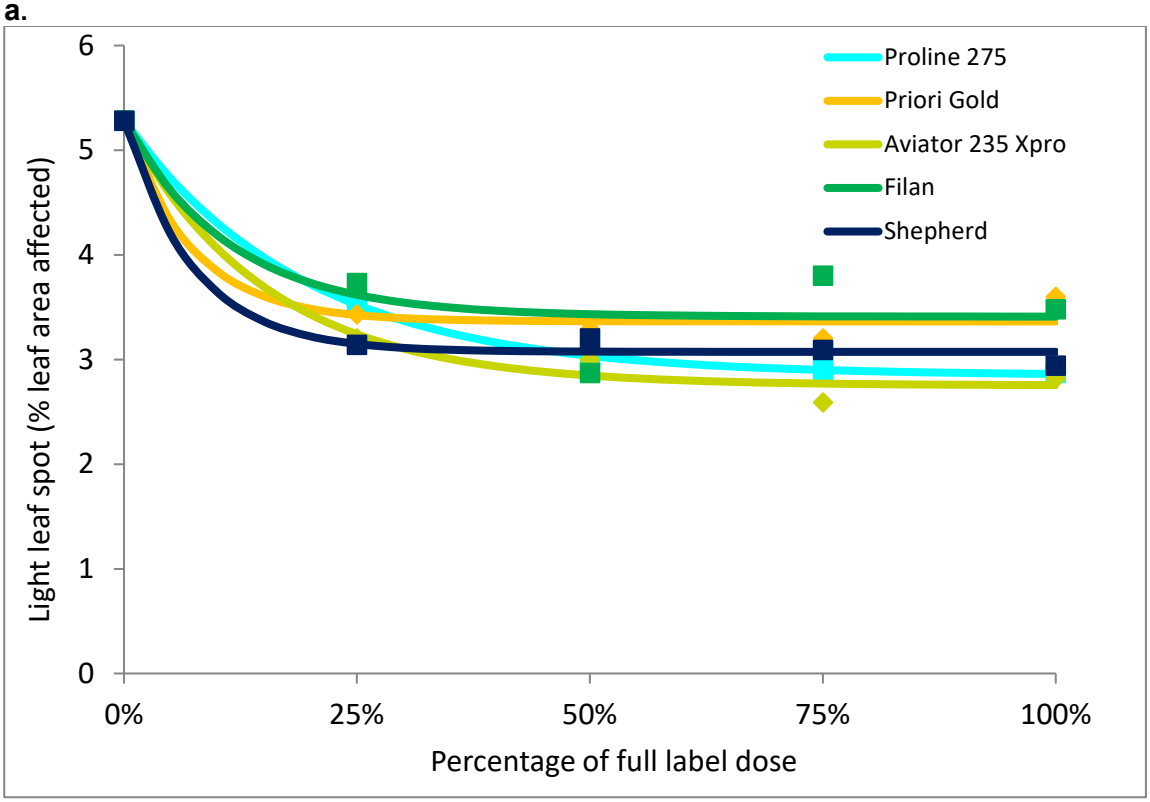


Figure 1. Cross-site and year analysis [Five sites – three sites in 2015 (Midlothian, Dorset and North Yorkshire) and two sites in 2016 (Dorset and North Yorkshire)] for light leaf spot control for disease (a.) and yield (b.)

a.



b.

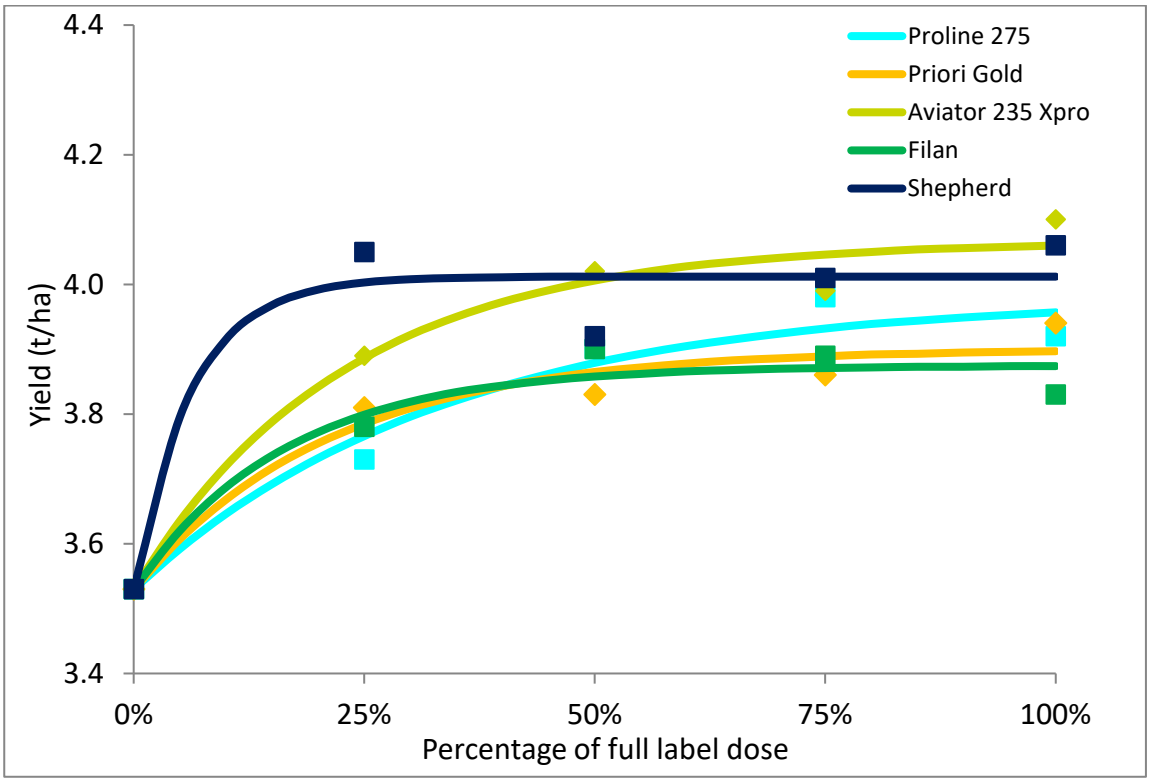
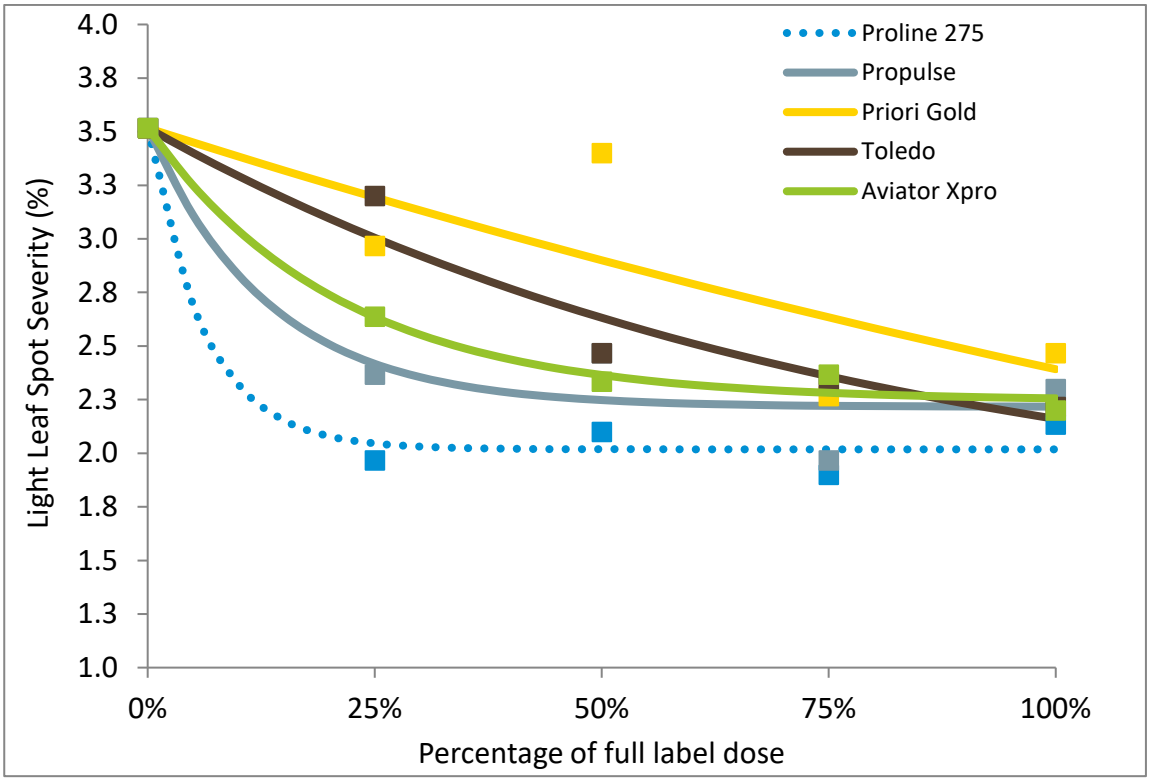


Figure 2. Light leaf spot severity control (a.) and yield (b.) response, at 91% dry matter in relation to fungicide dose in five trials conducted 2019 to 2021. Note: Neither Filan nor Priori Gold have a label recommendation for light leaf spot, however, as they are likely to be used when control of this disease will be required, the information is presented

a.



b.

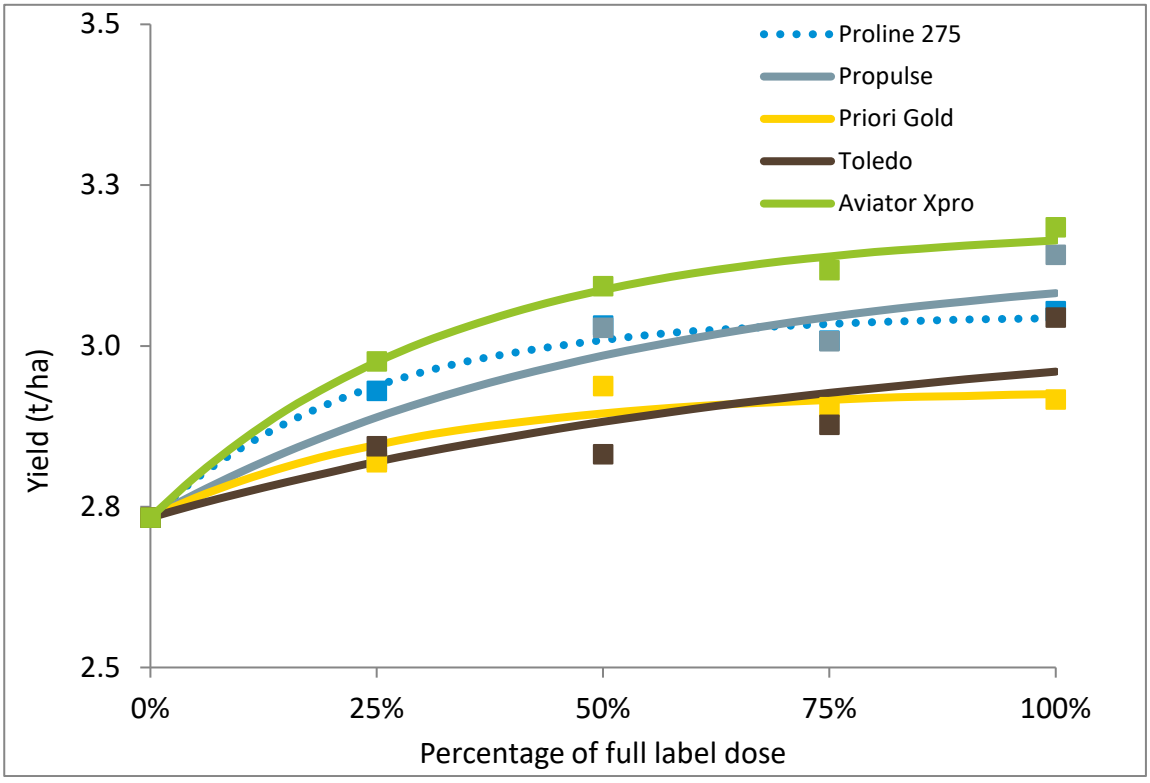


Figure 3. Light leaf spot severity control (a.) and yield (b.) response, at 91% dry matter in relation to fungicide dose in one trial conducted in North Yorkshire 2023. Note: Priori Gold has no label recommendation for light leaf spot, however, as it is likely to be used when control of this disease will be required, the information is presented

3. Key message for 2024

Light leaf spot incidence has been moderate to high for the past two years, but leaf severities have varied depending on geographical location. The development of light leaf spot epidemics is dependent on local weather. Close monitoring of crops from the autumn is advised. 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. Wet and warm summers also increase the risk. 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 and high-risk regions, such as the north east of Scotland. Note that there are product restrictions in relation to application date and growth stage when considering options at this timing.

3.1. Light leaf spot control summary

Where light leaf spot is known to have been a problem in recent years, consider using more resistant varieties (resistance rating of 7 or above). 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 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, yet. 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. The latest fungicide resistance management guidelines are available online: ahdb.org.uk/frag

The recent fungicide experiments indicate that good control of light leaf spot can appear difficult to achieve. However, we still see yield responses to fungicides. 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, regional location 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 the 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. Fungicides with PGR activity can cause reduced plant growth when used at high doses, particularly in later drilled backward and in stressed crops. However, these negative effects were not seen for any of the products tested in the trial datasets presented in this report.