

December 2019



Summary report

**Fungicides for light leaf spot control in
winter oilseed rape**

Faye Ritchie (ADAS), Philip Walker (ADAS), Fiona Burnett (SRUC),
Stuart Knight (NIAB) and Catherine Harries (AHDB)

Summary of AHDB fungicide projects
2010–2014 (RD-2007-3457) and 2015–2018 (214-0006)

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Background

Fungicides for control of light leaf spot have been evaluated over the last ten years at ADAS High Mowthorpe, North Yorkshire, by SRUC near Edinburgh, Midlothian or in Aberdeenshire and from 2015 to 2017 there was an additional site with NIAB in Dorset. All trials are carried out on susceptible varieties (usually AHDB RL list ratings for the target disease of 5 or below – a variety with a rating of 6 was used at the Dorset site in 2017, as an alternative was not available). Since 2014, all new and existing products are tested at four doses ($\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ and full recommended label rate) and compared with a completely untreated control. Until 2016 and from 2018 onwards, 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). 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 in this report starts from 2015 onwards and focuses on the efficacy of products that have recently been approved for use in oilseed rape.

Disease pressure across all sites and years

Disease assessments were carried out in March, April or May depending on when the autumn and spring fungicide application was applied. In 2015, moderate disease development was observed in April in North Yorkshire (c. 13% leaf area affected in untreated plots) and in Dorset, and Midlothian in May (c. 6 to 9% leaf area affected in untreated plots). In 2016, moderate disease was noted at all sites. In North Yorkshire, c. 10% leaf area was affected in untreated plots, in Scotland 9% leaf area was affected in mid-April and 5% at the end of April in Dorset. In 2019, disease severity was similar at both sites with c. 4% leaf area affected in untreated plots in mid-March.

Harvest years 2015 and 2016

Aviator Xpro was included in the 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. At the Malton site, fungicide treatment significantly reduced light leaf spot compared to the untreated control. Yield responses to fungicide application (Untreated = 4.13 t/ha) ranged from 0.08 to 0.31 t/ha. At the Scottish site, there were no significant differences between products and dose for light leaf spot control (data not shown). Despite the apparent absence of differences in disease control, there were significant yield improvements with fungicide application of up to 1.06 t/ha (Untreated = 3.95 t/ha). 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 26 February to cv. Fencer near Edinburgh 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 six experiments conducted in 2015 and 2016 (Figure 1). Yield responses to the two spray fungicide programmes (untreated = 3.41 t/ha) of up to 0.44 t/ha were observed.

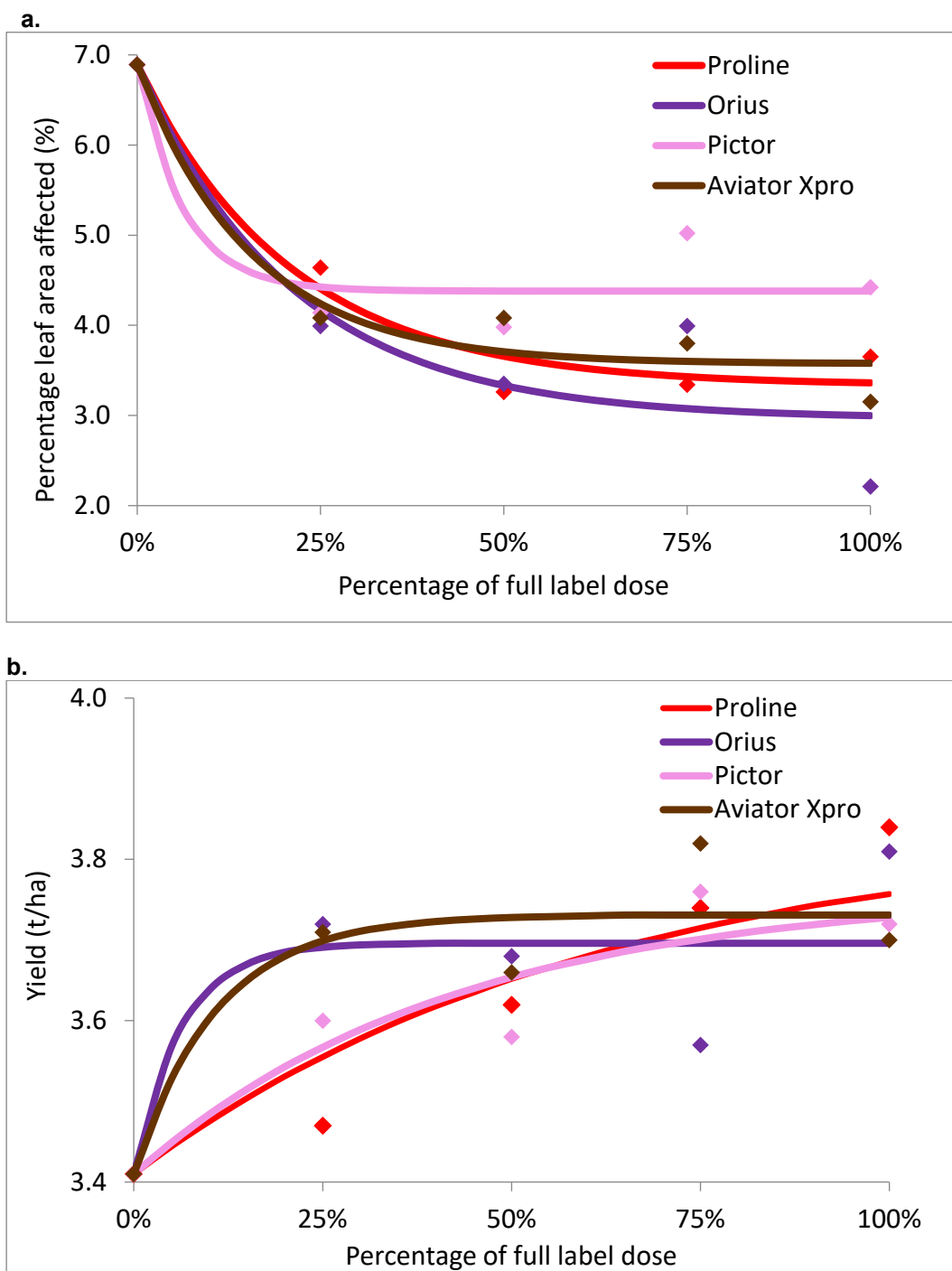
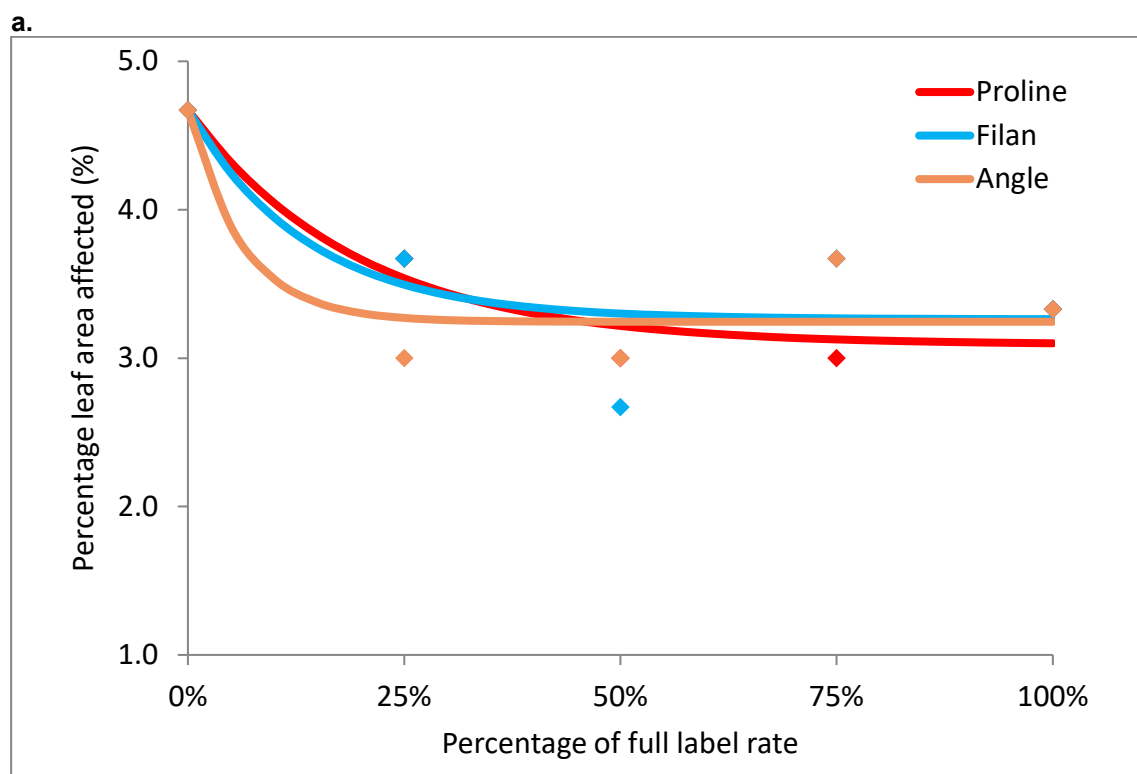


Figure 1. Cross-site and year analysis [Six sites – three sites in 2015 and three sites in 2016 (Midlothian, Dorset and North Yorkshire)] for light leaf spot control for disease (a.) and yield (b.). Note: Pictor cannot be applied prior to 1st February or GS20 in year of harvest.

Harvest year 2019

Filan and Angle were included in the trials conducted in the 2018/2019 season. Neither product 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 here. Fungicides were applied on 4 December 2018 and 22 February 2019 to cv. Fencer at the trial site near Malton, North Yorkshire and 3 December 2018 and 25 February 2019 at the trial site near Edinburgh, Midlothian. At both sites c. 4% leaf area was affected in untreated plots in mid-March. At both sites, light leaf spot was not observed in the field until mid-February. In North Yorkshire, yield responses to fungicide application (untreated control = 2.86 t/ha) ranged from 0.09 to 0.57 t/ha, with both application timings showing a contribution to yield. At the Scottish site yield responses were as high as 0.89 t/ha (untreated control = 3.70 t/ha).

At both sites all treatments significantly reduced light leaf spot compared to the untreated control, with all products performing similarly (Figure 2a and b). A cross site analysis was conducted for yield in both trials with responses (untreated = 3.30 t/ha) of up to 0.40 t/ha were observed with no differences between products and doses (Figure 2c).



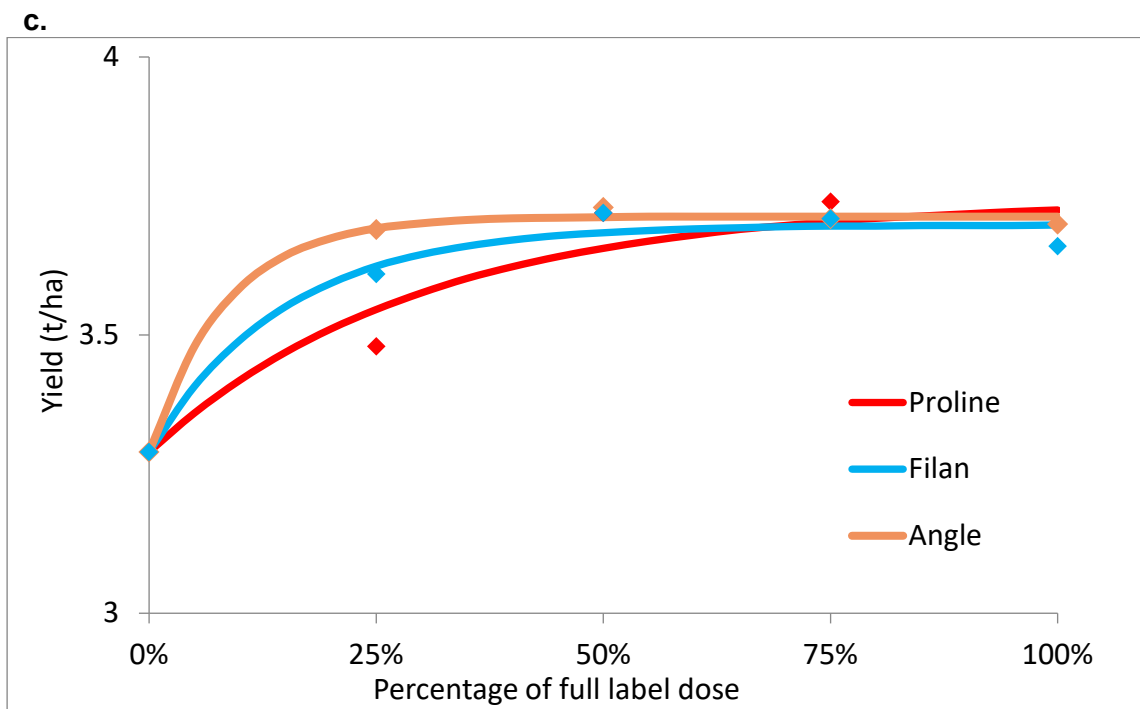
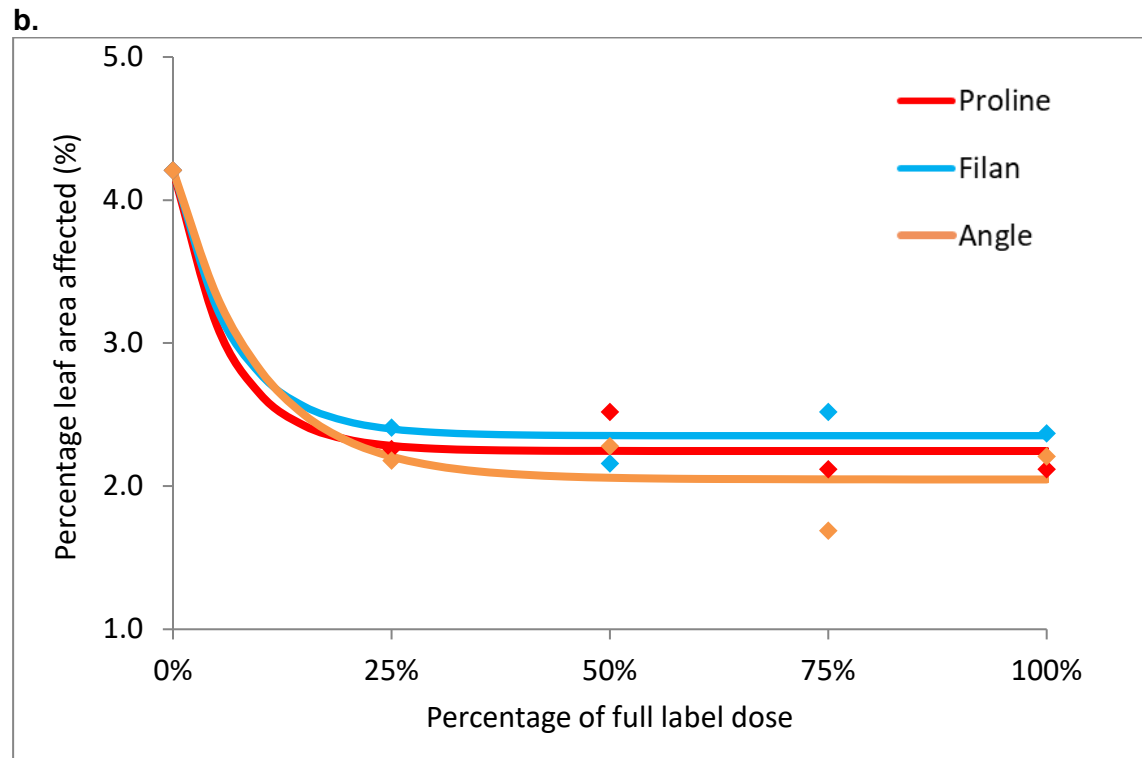


Figure 2. Individual site analysis for disease in Midlothian (a.) and Yorkshire (b.) and a cross site analysis for both sites for yield (c.). Note: Neither Filan and Angle has a label recommendation for light leaf spot, however, as they are likely to be used when control of this disease will be required, the information is presented.

Assessing and managing light leaf spot risk in harvest year 2020

Light leaf spot incidence has been relatively low for the past three years compared to previously observed levels. The latest light leaf spot forecast for 2019/2020 indicates a moderate risk across Scotland, Wales and most of England, with the exception of the South East of England which is low. Air-borne spores are produced on the previous year's crop debris therefore the presence of pod and stem lesions in previous crops increases the risk on farm as the disease develops on crop stubbles and debris. Note that late emerging crops may be less severely affected than earlier sowings.

Use a spray in autumn (November) at high risk sites. After the autumn treatment, inspect crops regularly on a field-by-field basis for light leaf spot from January onwards. If phoma sprays are being used, check crops in winter and early spring to determine if phoma sprays have given adequate control of light leaf spot. Treatment timing is important: be prepared to apply fungicide as soon as light leaf spot is found (weather conditions permitting). Prior to stem extension, there is no threshold so it is therefore necessary to react to the presence of light leaf spot by spraying as soon as it is seen. Note product restrictions in relation to application date and growth stage when considering options at this timing.

Summary – key points for light leaf spot control

Where light leaf spot is known to have been a problem in recent years, consider using more resistant varieties (resistance rating of at least 6). Non-azoles are now available for light leaf spot control which is important for fungicide resistance management and it is recommended that a range of products representing different modes of action groups are used throughout the fungicide programme. This includes timings where light leaf spot is not the main target but is likely to be present. 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 in trials yet. There are opportunities to use azole/non-azole co-formulations and mixtures 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. The latest oilseed rape [fungicide resistance management guidelines](#) are available. Using a range of different 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 recent fungicide experiments indicate that good control of light leaf spot is difficult to achieve. 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. The trials in 2017 to 2019 demonstrated that autumn applications can be important for controlling light leaf spot. 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.

Yield increases in response to product dose were variable between sites and years. Optimum dose is very 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 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. Some negative responses were noted at sites where fungicides with PGR products were used at high doses particularly in Scotland and in stressed crops.