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Annual Report

Fungicides for phoma stem canker control in winter oilseed rape

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

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1. Background

Fungicides for the control of phoma leaf spot and stem canker have been evaluated for over ten years at ADAS Boxworth, Cambridgeshire and ADAS Terrington, Norfolk. During 2017–21, the ADAS Boxworth trial was located at ADAS Rosemaund, Herefordshire.

- All trials are conducted on phoma susceptible varieties with good resistance to light leaf spot
- Products are tested at four doses ($\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ and full label rate) as two-spray programmes and compared with an untreated control
- The first fungicide application is in early autumn (ideally, 20–40% plants affected, usually October), with a second application 4–10 weeks later (when re-infection is apparent, November/December)
- Leaf disease assessments are conducted after each application, with stem canker assessed in late June (presented as a canker index 0 to 100; with 0 and 100 representing no infection and whole plant dead, respectively)
- Combine harvested 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 2016 and focuses on the efficacy of products that have recently been approved for use in oilseed rape. Products tested included:

- Azole solo (Proline 275 and Plover)
- SDHI solo (Filan)
- QoI (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

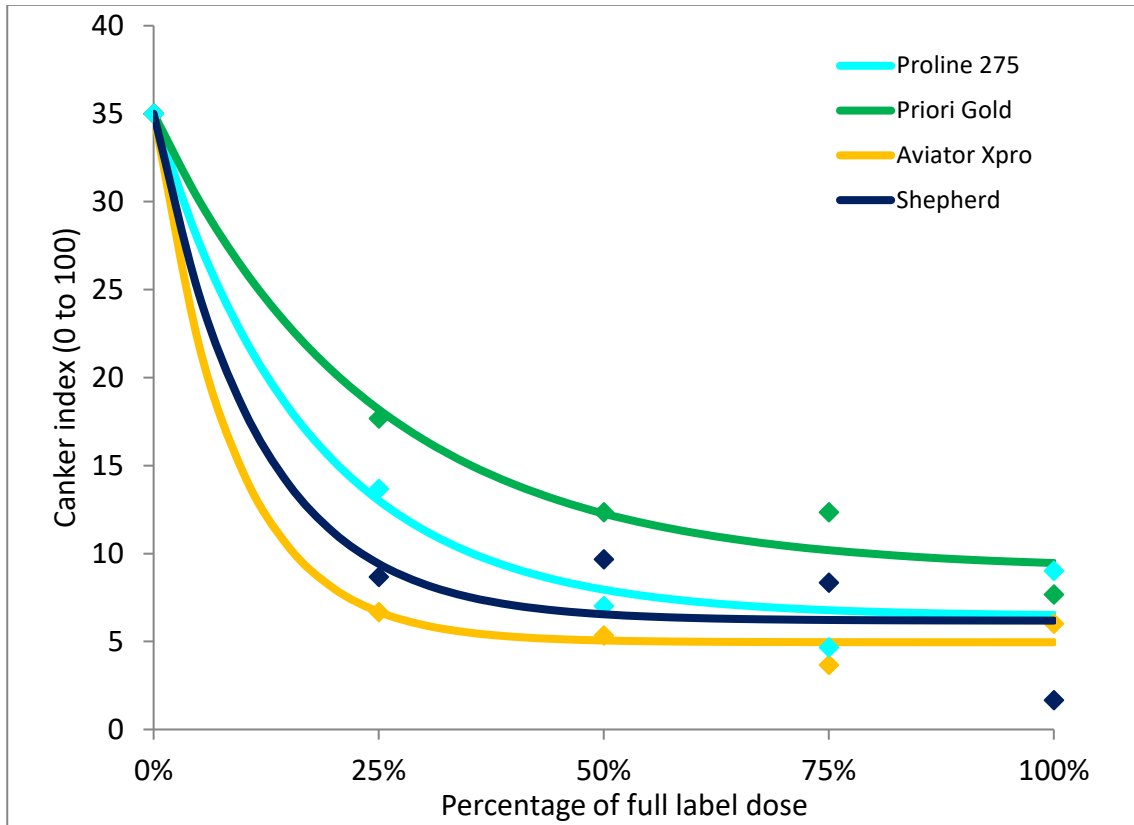
2. Harvest year 2021 and cross-site analysis (2017 to 2021)

Stem canker severity was moderate at Terrington (index 43, untreated) and moderate at Rosemaund (index 35, untreated) prior to harvest in 2021. The first signs of phoma leaf spot were seen at both sites between middle and the end of October. At Terrington, the first treatments were applied on 6 November 2020 at the 9-leaf stage (22% phoma leaf spot incidence, 0.1% leaf area affected). At Rosemaund, first sprays were applied on 4 November 2020 at the 6-leaf stage (22% phoma leaf spot incidence; 0.2% leaf area affected). The second spray at Terrington was applied on 10 December 2020 at BBCH 19 (59% phoma leaf spot incidence; 0.2% leaf area affected) and at Rosemaund on 9 December 2020 at the 18-leaf stage (68% phoma leaf spot incidence; 0.43% leaf area affected).

At the Terrington site, Proline, Priori Gold, Aviator Xpro and Shepherd reduced the stem canker index from 43 to between 8 and 12 (data not shown). At the Rosemaund site, the index was reduced from 35 to between 5 and 10 (Figure 1a). At harvest 2021, yield was only collected at the Rosemaund site, with yield responses for Proline, Priori Gold, Aviator Xpro and Shepherd at 50 to 100% dose of between 0.3 and 0.4 t/ha (untreated = 3.90 t/ha) (Figure 1b).

A cross-site analysis was conducted using data from nine trials harvested from 2017 to 2021 (Figure 2a). Stem canker index was decreased following application of Proline, Priori Gold and Filan, which decreased the index to between 14 and 19, and Aviator Xpro, Architect and Shepherd, which decreased the index to between 9 and 11. Cross-site analysis showed that yield responses to fungicides at the 50% dose for Plover, Filan and Priori Gold were 0.1 to 0.2 t/ha and for Proline 275, Aviator Xpro, Architect and Shepherd 0.3 to 0.4 t/ha (untreated = 3.6 t/ha) (Figure 2b). For all products, little or no further increases in yields were observed at the 100% dose rate.

a.



b.

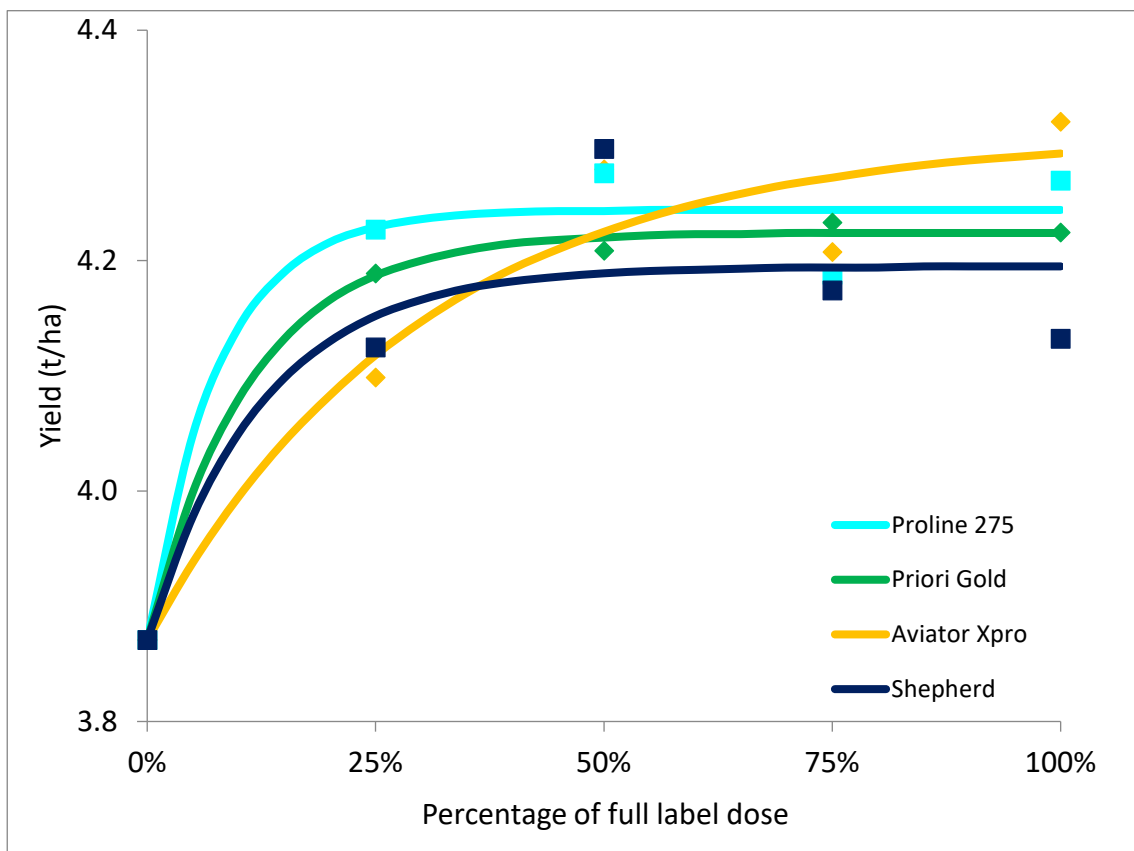
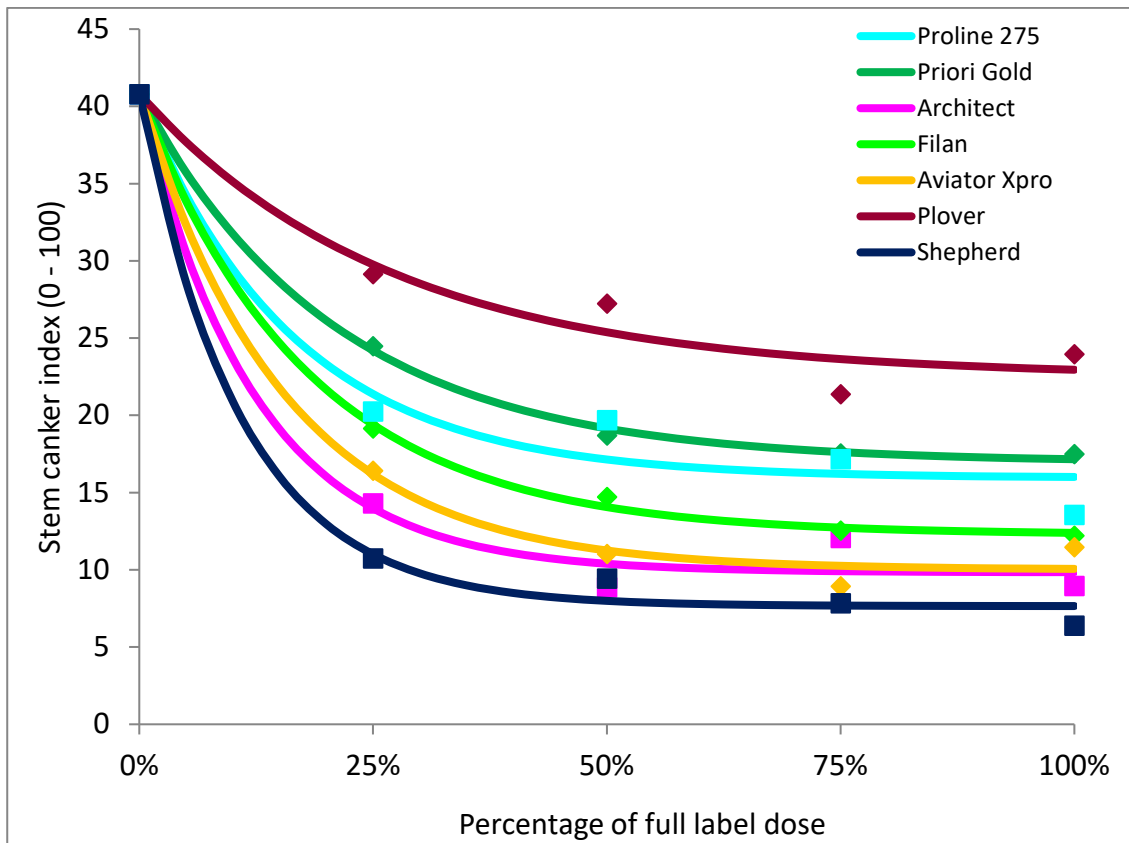


Figure 1. Phoma stem canker control (a.) and yield (b.) response, at 91% dry matter in relation to fungicide dose in Herefordshire in one trial conducted 2020–21.

a.



b.

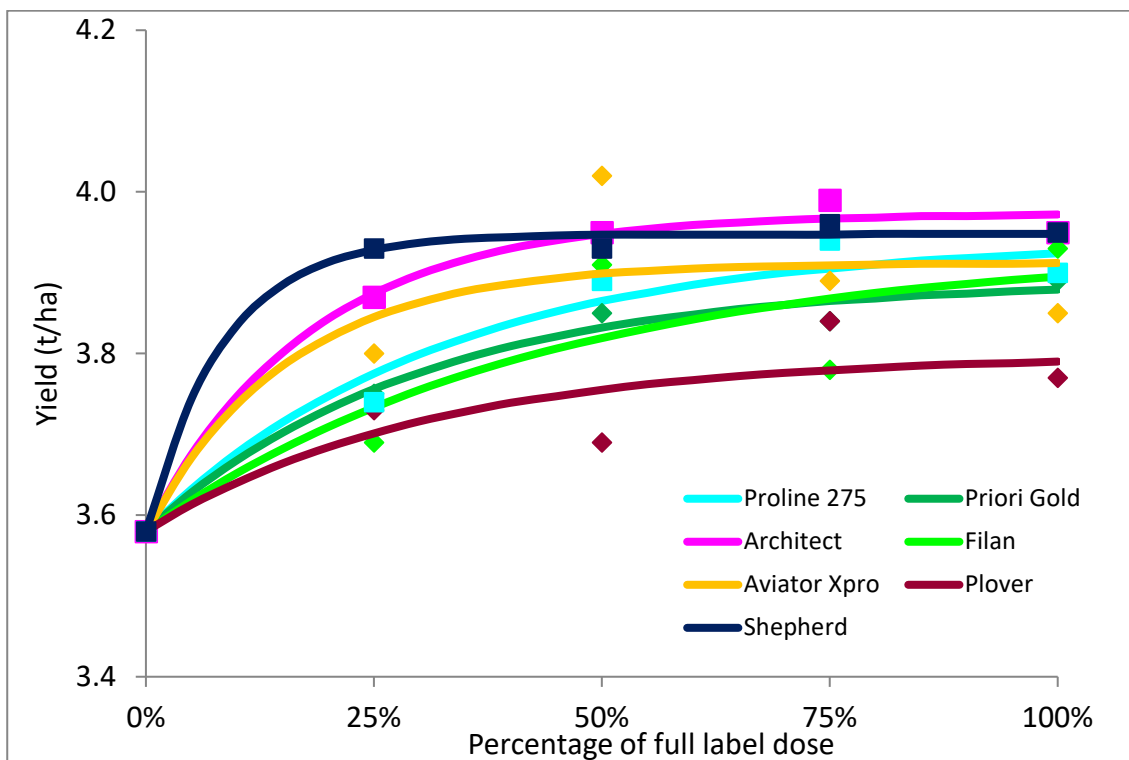


Figure 2. Phoma stem canker control (a.) and yield (b.) response, at 91% dry matter in relation to fungicide dose in Norfolk and Herefordshire in nine trials conducted in 2017–21.

Note: Plover is restricted by a maximum total dose that is equivalent to a single full rate application. Therefore, the two-spray programmes exceeding 2 x ½ rate are above the maximum recommended dose.

3. Key points for managing phoma (harvest year 2022)

- Early phoma epidemics are the most damaging to yield and, typically, put 0.5 t/ha of yield at risk, although rapid re-infection in the autumn can also reduce yields
- Later drilled crops often result in smaller plants over the winter and are at a higher risk when infections occur
- Late epidemics, occurring in February/March, can be very damaging, if plants are small in late autumn or winter
- Fungicide application timing is important – the first application should be made (RL rating 7 and below) when 10 to 20% of plants have phoma leaf spot, with a second application made when re-infection is evident (4 to 10 weeks later)
- Note: some varieties with high resistance ratings for stem canker (RL rating 8 and above) also have good resistance to phoma leaf spot and may not require a phoma fungicide, unless the 20% threshold is exceeded
- Some varieties are likely to require an autumn fungicide (November) for light leaf spot control if there is a risk and this should be considered when planning autumn programmes
- Good control of phoma leaf spot and stem canker can be achieved with two sprays at half the label recommended rate
- It should be noted that all modes of action offer protection when applied prior to infection
- Using a variety of modes of action, in alternation or as mixtures/co-formulations, throughout the fungicide programme is necessary, as part of a robust fungicide resistance management strategy to prevent the selection for fungicide insensitive strains
- There is now a range of modes of action available, including azole and non-azole options, for the control of phoma leaf spot/stem canker
- The latest oilseed rape fungicide resistance management guidelines are available: ahdb.org.uk/frag
- To guide crop monitoring and fungicide applications, use the AHDB phoma forecast: ahdb.org.uk/phoma-leaf-spot-forecast
- In most areas, the first leaf spotting was observed between the end October and early November in 2021, which is later than last year
- Many crops have already reached threshold with the first fungicides applied, therefore field monitoring for re-infection from now onwards will be important