



January 2025

## **Annual Report**

### **Fungicides for phoma stem canker control in winter oilseed rape**

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## 1. Background

Fungicides for control of phoma leaf spot and stem canker have been evaluated for over ten years at ADAS Boxworth (Cambridgeshire), ADAS Rosemaund (Herefordshire) and ADAS Terrington (Norfolk). In 2017 to 2024, the ADAS Boxworth trial was moved to ADAS Rosemaund (Herefordshire).

All trials are conducted on phoma stem canker 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, plus a completely untreated control. Label restrictions may apply where products are used as part of two-spray programmes and labels should be checked for guidance on maximum individual dose, total dose and application timings.

The first fungicide application is in early autumn (ideally when 10–20% plants are showing phoma leaf spots, usually in October) with a second application 4 to 10 weeks later (November/December) when re-infection is apparent.

Leaf disease assessments are done after each application. Stem canker is assessed in late June (presented as a canker index 0 to 100; with 0 being no infection and 100 equals whole plant dead). 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 2015 and focuses on the efficacy of products that have recently been approved for use in oilseed rape. Products tested included azole solos (Proline 275, Plover and Toledo), SDHI solo (Filan), QoI (Architect), QoI + azole co-formulation (Priori Gold), QoI + SDHI co-formulation (Shepherd) and SDHI + azole co-formulations (Aviator Xpro and Propulse).

More historic data is available via [ahdb.org.uk/fungicide-performance](http://ahdb.org.uk/fungicide-performance)

## 2. Results

### 2.1. Harvest year 2024

Stem canker severity was moderate to high at Terrington (index 65 in untreated) and moderate at Rosemaund (index 47 in untreated) prior to harvest in 2024. The first signs of phoma leaf spot were seen early in Rosemaund from the second week in October 2023, but later at Terrington at the end of November 2023. At Terrington, the first treatments were applied on 6 December 2023 at the 9-leaf stage (8% phoma leaf spot incidence, 0.1% leaf area affected). At Rosemaund, first sprays were applied on 16 October 2023 at the 5-leaf stage (68% phoma leaf spot incidence; 0.2% leaf area affected). The second spray at Terrington was applied on 29 January 2024 at the 9-leaf stage (70% phoma leaf spot incidence; 0.5% leaf area affected) and at Rosemaund on 22 November 2023 at the 9-leaf stage (83% phoma leaf spot incidence; 0.5% leaf area affected). When assessing for phoma stem canker prior to harvest, generally stem canker indices of less than 30 have a minimal impact on yield as the cankers are relatively small, therefore the aim for product performance is to achieve a stem canker reduction of 30 or below as this is when the response in yield benefits of the applications is usually seen.

At the Terrington site, Plover reduced the stem canker index from 65 to 34, Proline and Propulse reduced the stem canker index to between 25 and 29, and Aviator Xpro to 20 when applied at 50% dose (Figure 1a). Yield responses at 50% dose ranged from 0.25 t/ha for Plover, 0.27 t/ha for Propulse, 0.38 t/ha for Proline and 0.39 t/ha for Aviator Xpro (untreated = 2.74 t/ha), and for most of the treatments applying 100% dose showed a small increase in yield of 0.10 t/ha (Figure 1b).

At the Rosemaund site, Plover reduced the stem canker index from 47 to 27, Proline and Propulse reduced the stem canker index to between 14 and 18, and Aviator Xpro to 8 when applied at 50% dose (Figure 2a). Yield responses at 50% dose ranged from 0.10 t/ha for Plover, 0.25 t/ha for Proline, 0.30 t/ha for Aviator and 0.39 t/ha for Propulse (untreated = 3.95 t/ha), with only a minor benefit seen in yield increase at 100% dose (Figure 2b).

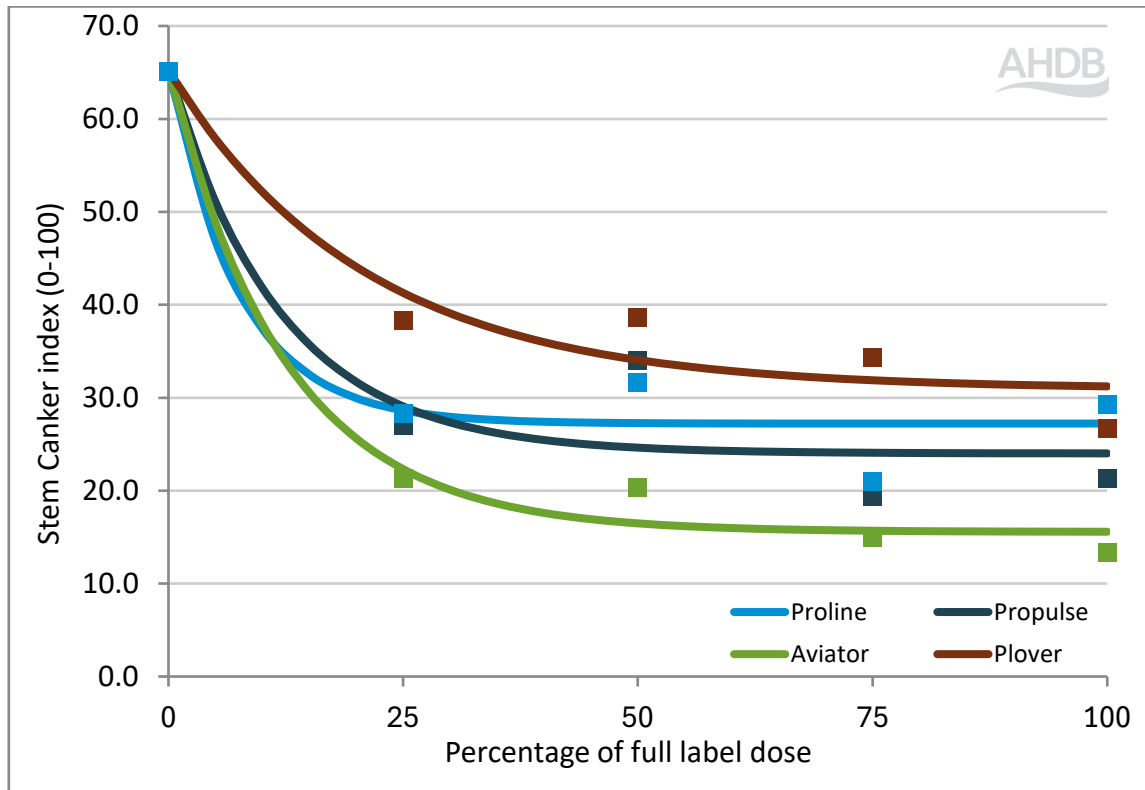
A cross-site analysis for both sites showed a mean untreated stem canker index of 55 with a reduction for Plover to 30, Proline and Propulse between 18 and 22, and Aviator Xpro to 10 when applied at 50% dose (Figure 3a), and yield responses at 50% dose of 0.17 t/ha for Plover, 0.32 t/ha for Proline and Propulse, and 0.34 t/ha for Aviator Xpro

(untreated = 3.34 t/ha) (Figure 3b). There was only a small additional increase in yield seen at 100% dose ranging from 0.05 to 0.13 t/ha across the treatments.

## **2.2. Cross-site analysis (2015 to 2024)**

A cross-site analysis was conducted using data from sixteen trials harvested from 2015 to 2024 (Figure 4a). Stem canker indices were decreased following application of Plover, Proline and Priori Gold to between 13 and 27 (depending on product and dose), for Propulse and Filan to between 10 and 17, and for Aviator Xpro, Architect and Shepherd indices were decreased to between 5 and 14. Cross site analysis showed that yield responses to fungicides at the 50% dose for Plover and Filan was 0.25 to 0.30 t/ha, Priori Gold and Proline was 0.30 to 0.35 t/ha, Propulse and Architect 0.40 t/ha, and Aviator Xpro and Shepherd 0.45 t/ha (untreated = 3.56 t/ha) (Figure 4b). For all products, little or no further increases in yields or stem canker reduction were observed at the 100% dose.

a.



b.

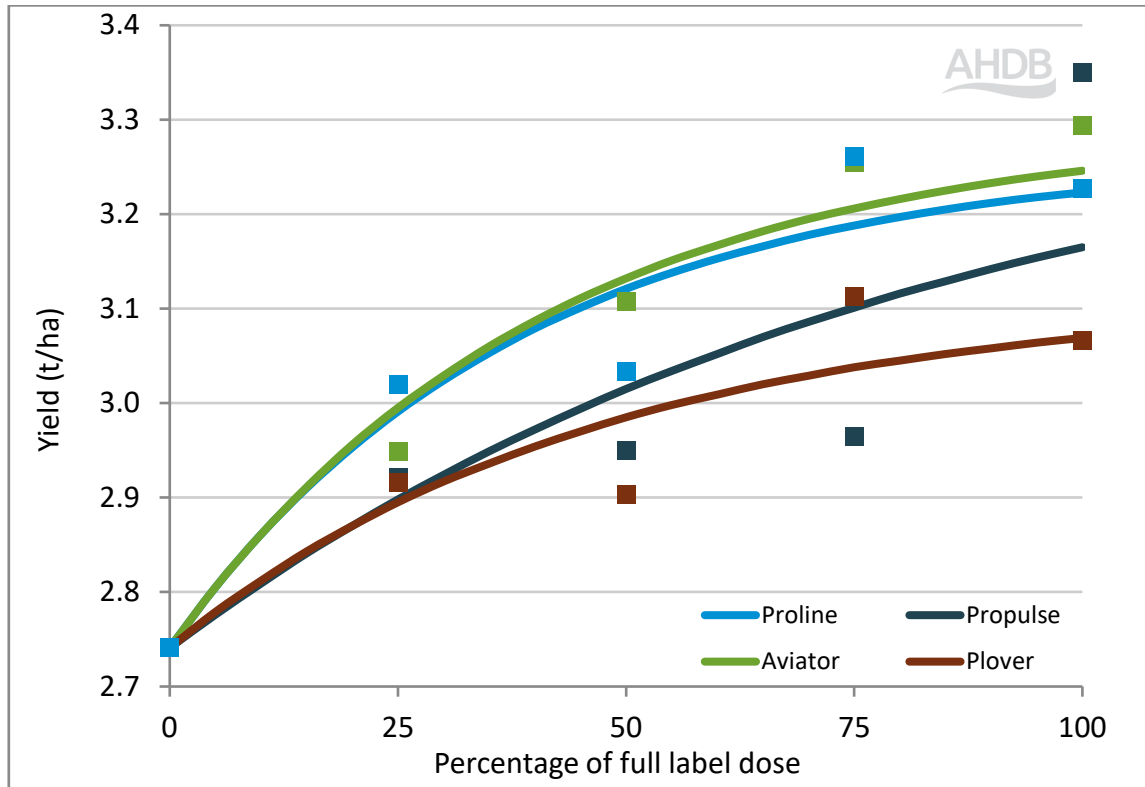
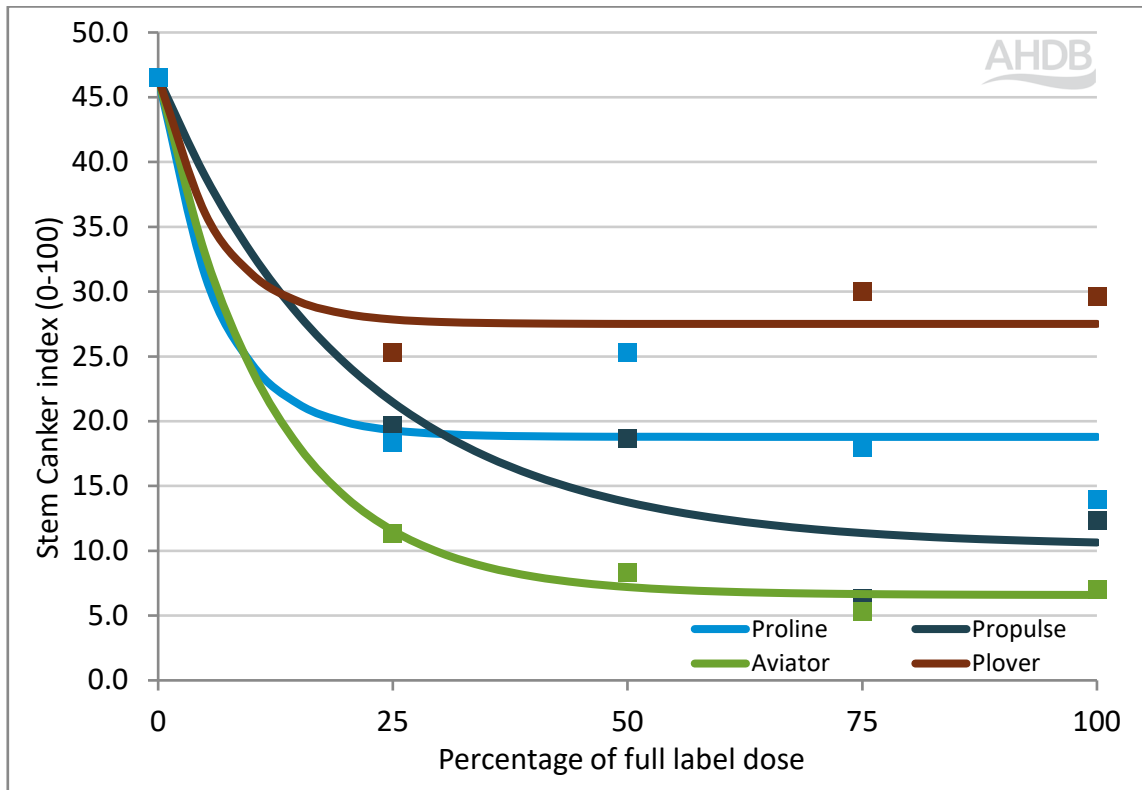


Figure 1. Phoma stem canker control (a.) and yield (b.) response, at 91% dry matter in relation to fungicide dose at Terrington in Norfolk in one trial conducted 2023/24.

a.



b.

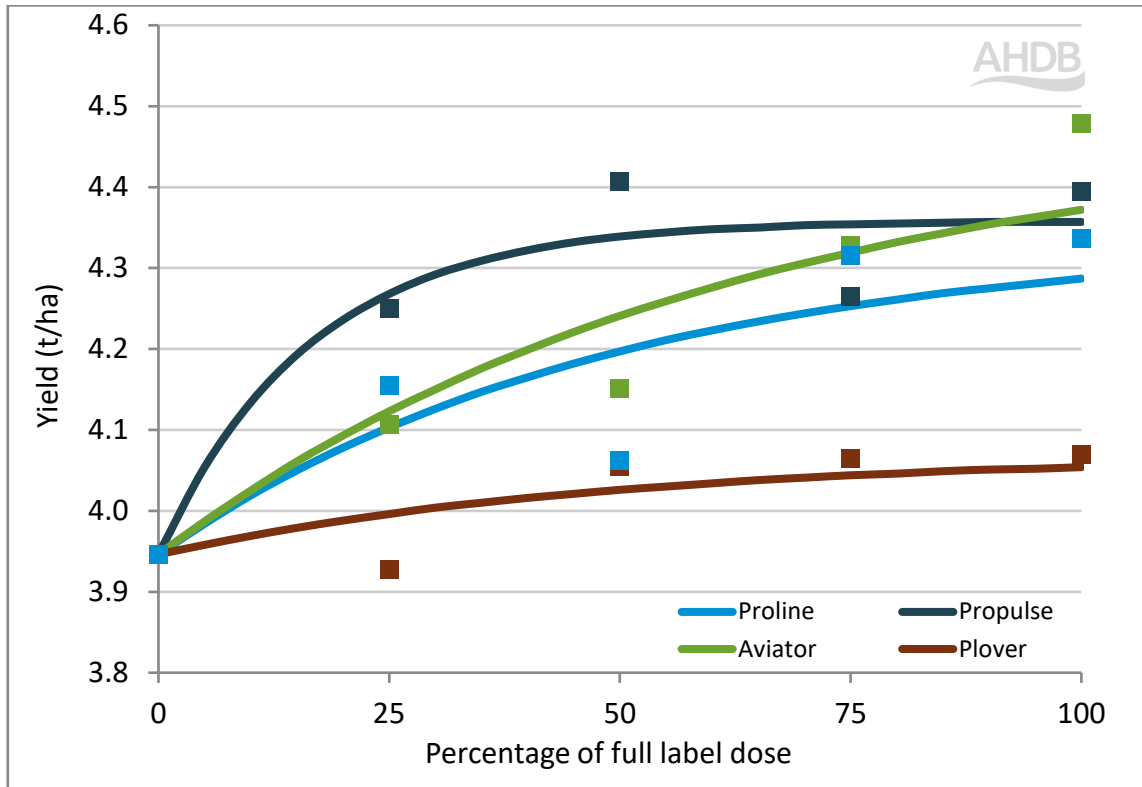
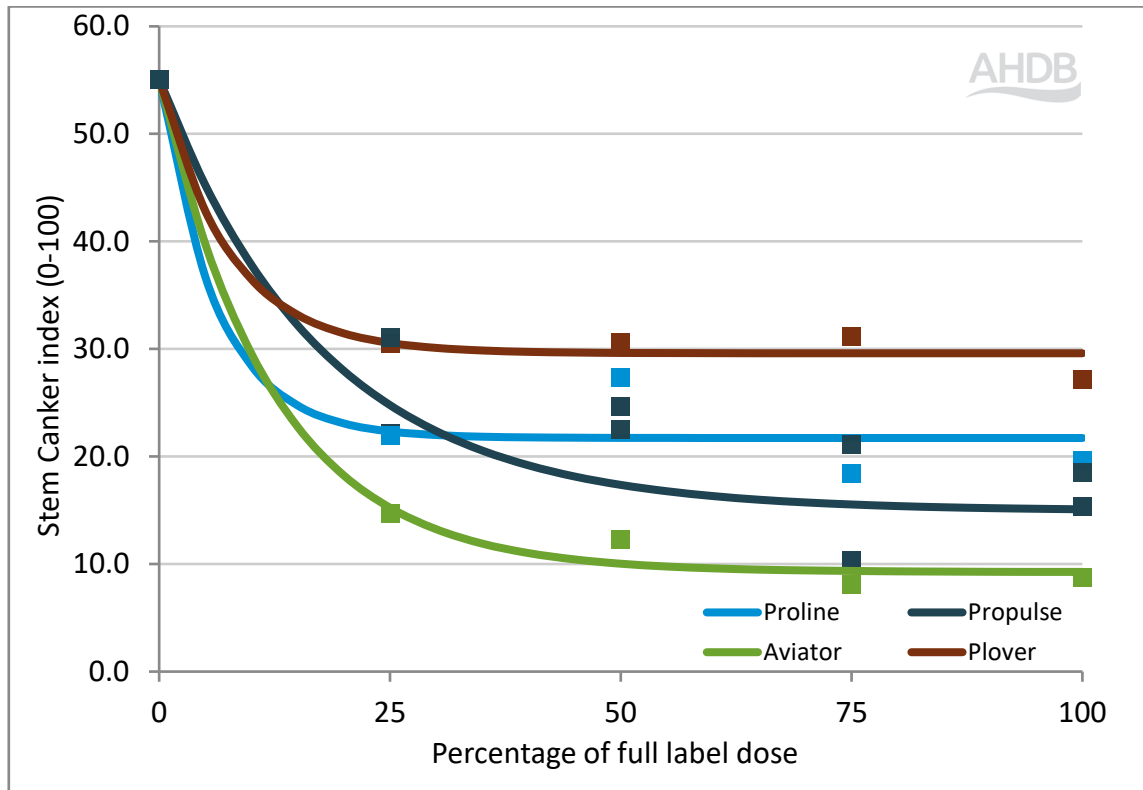


Figure 2. Phoma stem canker control (a.) and yield (b.) response, at 91% dry matter in relation to fungicide dose at Rosemaund in Herefordshire in one trial conducted 2023/24.

a.



b.

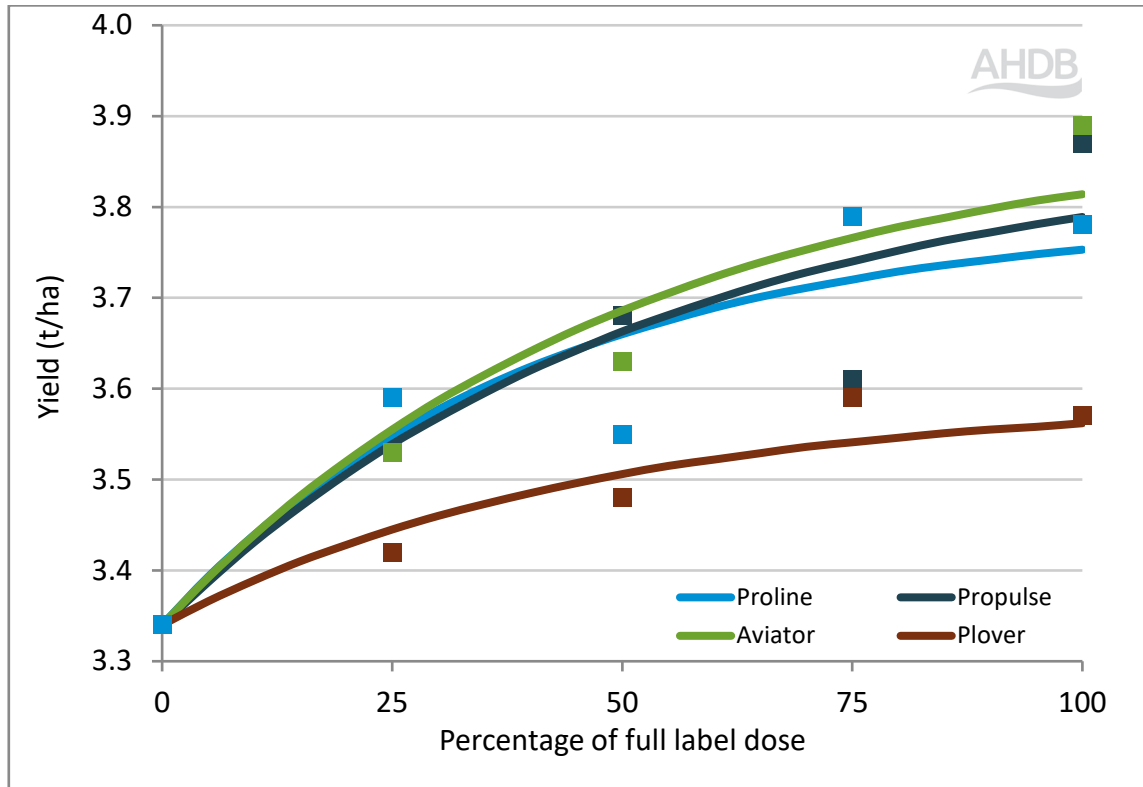
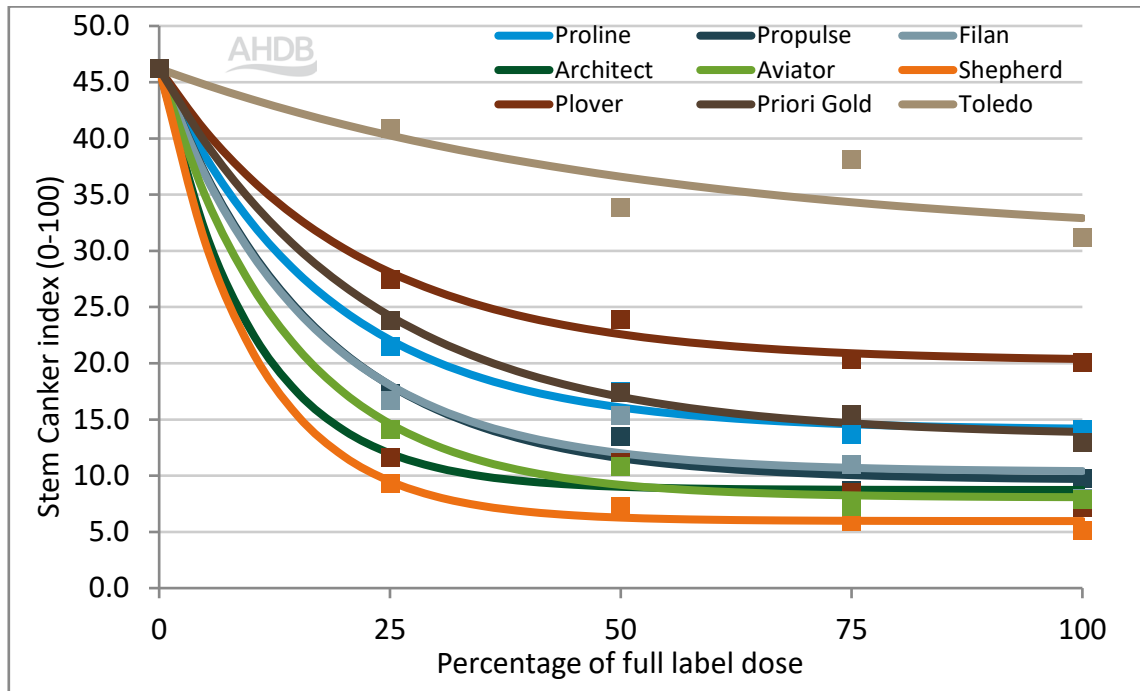


Figure 3. Phoma stem canker control (a.) and yield (b.) response, at 91% dry matter in relation to fungicide dose in Norfolk and Herefordshire in two trials conducted 2023/24.

a.



b.

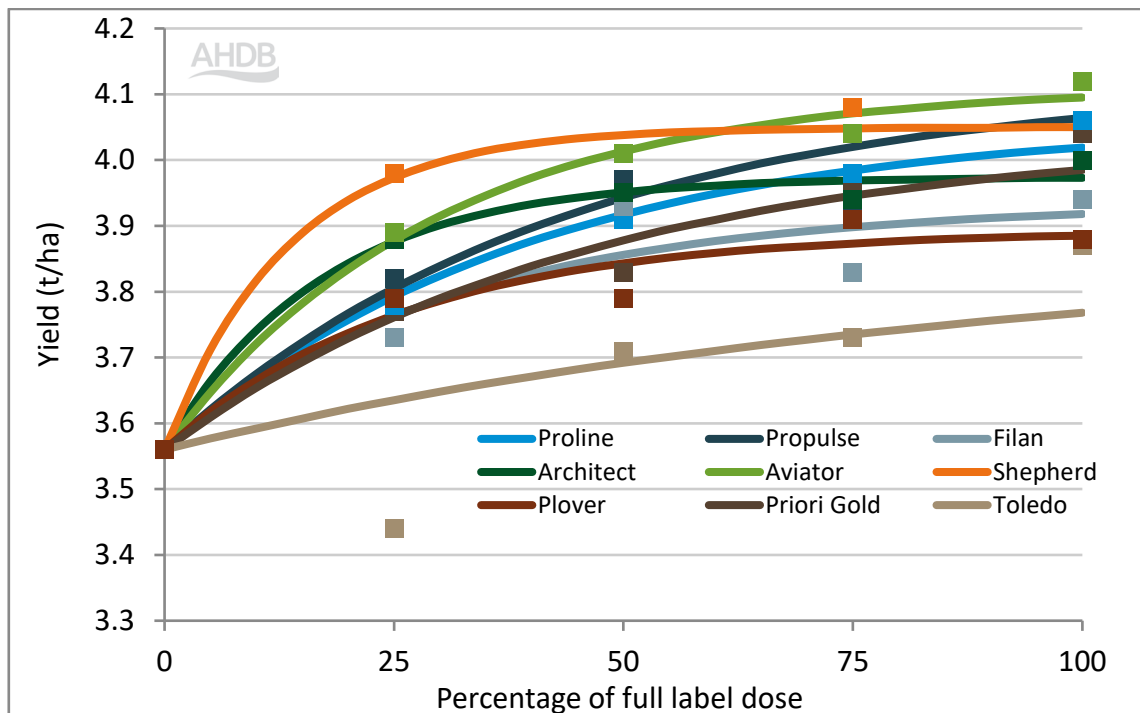


Figure 4. Phoma stem canker control (a.) and yield (b.) response, at 91% dry matter in relation to fungicide dose in Cambridgeshire (2015-2016), Norfolk (2015-2024) and Herefordshire (2017-2024) in sixteen trials conducted in 2015 to 2024. *Note fungicide products included for testing in the following years: Proline 2015-2024, Architect 2015-2018, Filan 2016-2018, Priori Gold 2016-2021, 2023, Aviator 2017-2018, 2021-24, Shepherd 2017-2022, Plover 2018-2020, 2023-2024, Propulse 2023-2024, Toledo 2023.*

### **3. Managing phoma leaf spot/stem canker risk (harvest year 2025)**

Use the phoma forecast on the AHDB website ([ahdb.org.uk/phoma-leaf-spot-forecast](https://ahdb.org.uk/phoma-leaf-spot-forecast)) to guide crop monitoring and plan fungicide applications.

In most areas, the first leaf spotting was observed in mid-October in 2024. This is similar to the previous year but earlier than 2022, when leaf spotting was observed early to mid-November.

Many crops were at threshold when the first fungicides were applied. On susceptible varieties, second applications were applied when re-infection was seen at the end of November onwards. Where phoma epidemics have occurred later and on very small plants, field monitoring for re-infection from now onwards will be important. 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, and the first application should be made on relatively susceptible crops – AHDB Recommended Lists (RL) rating 7 and below – when 10 to 20% of plants have phoma leaf spots. Plan a second application when re-infection is evident (4 to 10 weeks later).

Some varieties with high resistance ratings for stem canker (RL rating 8 and above) may also show good resistance to phoma leaf spot and may not require a 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.

Although phoma leaf spot is detected in some Scottish crops, local conditions mean it seldom develops to the damaging canker-forming stages and light leaf spot remains the main target of sprays. In areas where phoma leaf spot is noted in crops at threshold level, both diseases may need to be considered when deciding on autumn application timings.

Good control of phoma leaf spot and stem canker can be achieved with two sprays at half the label recommended rate.

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. It should be noted that all modes of action offer protection when applied prior to infection.

Using a range of different 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 fungicide resistance management guidelines are available via [ahdb.org.uk/frag](http://ahdb.org.uk/frag)