Fungicides for phoma control in winter oilseed rape

Summary of HGCA fungicide project 2010–2014 (RD-2007-3457)

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HGCA is the cereals and oilseeds division of the Agriculture and Horticulture Development Board.
Background

Fungicides for control of phoma leaf spot and stem canker have been evaluated over the last five years at ADAS Boxworth, Cambridgeshire and ADAS Terrington, Norfolk on the susceptible variety, Catana. Fungicides have been tested mainly at half and full label dose applied at disease onset (ideally 10–20% plants affected) with a second application about 4 to 10 weeks later when re-infection at a similar threshold is apparent. Leaf disease assessments were done after each application and stem canker was assessed in late June (presented as a canker index 0–100). Combine harvested yield data are adjusted to 91% dry matter.

Results

There were late phoma epidemics in autumn 2009 and autumn 2011 but phoma leaf spot developed relatively early and very rapidly in October 2010. In autumn 2012, there was very slow development of phoma leaf spotting from mid-October onwards and the main epidemic developed from January through to March. These experiments were discussed in the previous HGCA phoma updates issued in October 2012 and October 2013. In autumn 2013, phoma leaf spotting developed rapidly in early November with re-infection occurring less than four weeks later at Boxworth and five weeks later at Terrington.

In the 2014 harvest experiment, canker severity was low (index 27) at Terrington and moderate (index 42) at Boxworth. This reflected the differences in the speed of epidemic development and the severity of infection at each site. Phoma leaf spot incidence at Boxworth was high when first sprays were applied to larger plants at the 11-leaf stage on 7 November (68% plants affected) while Terrington had 84% of plants affected at the 6-leaf stage on 8 November. Second sprays were applied on 12 December at Terrington (87% incidence; 0.5% leaf area affected) and 26 November at Boxworth (100% incidence; 2.0% leaf area affected). Picoxystrobin + penthiopyrad (as Refinzar) was included for the first time in phoma experiments in 2014. Plants at the Boxworth site were larger than average but there was a significant reduction in stem canker and a significant yield response to fungicides of up to 0.81 t/ha (untreated 3.37 t/ha) (Figure 1). There was no significant effect of treatments on yield at Terrington, which was a high-yielding site (untreated 4.83 t/ha). There was a significant reduction in canker from some treatments at Boxworth but not at Terrington, although most treatments had less canker than the untreated control.

These data, particularly those from Terrington in 2014, are consistent with previous results as small cankers have little effect on yield (canker indices less than 30). Fungicides may still produce benefits through plant growth regulatory effects on rooting and canopy regulation; however, yield trends at Terrington in 2014 suggested higher rates of growth regulatory fungicides (>0.5 label
rate) generally had a negative impact on yield when applied to small plants. At Boxworth, canker indices were significantly higher where some products with growth regulatory properties were applied compared to others, however, there was little or no negative impact on yield. It is likely that the autumn growth regulation of larger plants contributed to this yield benefit and this effect has been observed in previous oilseed rape fungicide performance trials.

Figure 1. Phoma canker control (bars) and yield (points) at Boxworth with moderate canker severity in 2014. Pale bars and points indicate no statistically significant response to treatment.

**Mean data for 2010–2014**

These results are presented in Figure 2. Good control of phoma leaf spot and stem canker was obtained with well-timed two-spray programmes, particularly with prothioconazole (e.g. Proline, Prosaro). Yield responses have averaged about 0.3 t/ha from two sprays at half dose, and were larger in years with moderate or severe stem canker epidemics. Metconazole and tebuconazole gave smaller responses than other products and are known to be less effective when used in eradicant compared to protectant situations from previous experiments, e.g. in 2013. Experiments have been done on crops with various plant sizes and negative yield effects can be seen when products with growth regulatory activity are used on small plants in the autumn, particularly at greater than half dose.
Figure 2. Phoma canker control (bars) and yield (points) averaged over eight experiments during 2011 to 2014 with a range of canker severities. *Orius 20EW data based on two years’ data.

Phoma forecast autumn 2014


Key points

- Use the phoma forecast on the Rothamsted Research website (linked from the HGCA website) to guide crop monitoring and for planning fungicide applications.

- Treatment timing is important and the first application should be made (HGCA Recommended List resistance rating 7 and below) when 10–20% of plants have phoma leaf spot and the second application when re-infection is evident (4 to 10 weeks later). Note that some varieties with high resistance ratings for stem canker (HGCA Recommended List resistance 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 should be considered when planning autumn programmes.

- Good control of phoma leaf spot and stem canker can be achieved with two sprays at half 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. Late epidemics can be very damaging if plants are small in late autumn or winter.

• All triazoles offer protection when applied prior to infection, though product choice will also be influenced by requirements for curative activity (e.g. with prothioconazole products) when small plants are infected. Conversely, products with plant growth regulatory activity (e.g. metconazole or tebuconazole) may be favoured in a protectant situation where plants are large and reach six leaves in early/mid-October. An SDHI + strobilurin co-formulation (as Refinzar) is available for the first time this autumn. It was applied as a two-spray programme in these trials to determine efficacy against phoma leaf spot and stem canker in these trials relative to current commercial products. However, it is restricted on the label to one application per season at the full label rate (1.0 L/ha) with a latest application timing of GS30 (stem extension).

• Note that after 12th Oct 2014, flusilazole can no longer be applied on farm.