Fungicides for sclerotinia stem rot control
in winter oilseed rape

Summary of AHDB Cereals & Oilseeds fungicide project
2010–2014 (RD-2007-3457) and 2015 (214-0006)
Background

Fungicides for control of sclerotinia stem rot have been evaluated over the last seven years in commercial crops at sites with a history of sclerotinia in the West Midlands near ADAS Rosemaund, Herefordshire; Ceredigion in Wales; Romney Marsh, Kent and in Essex by ADAS. Most fungicides were tested at half and full label dose applied as a single spray at early to mid-flowering in years 2010 to 2014. From 2015, all products will be tested at four doses (¼, ½, ¾ and full label rate) plus a completely untreated control. Disease assessments were done at the end of flowering and pre-harvest and combine harvested yield data were adjusted to 91% dry matter.

Potential new fungicides are tested within the project and data are made available after product registration and launch in the UK. New products released in 2015 included Symetra (Syngenta) and Pictor (BASF). These products were included in experiments in 2010 and 2012 (Symetra) and 2015 (Pictor) when sclerotinia stem rot levels were moderate to high.
Results

2010

In 2010, fungicides were applied at mid-flowering on 13 May to the experiment near Rosemaund, Hereford (cv. DK Cabernet). The main sclerotinia epidemic was late and occurred in late May and early June with moderate disease levels recorded in the untreated control (43% stems affected). All fungicide treatments significantly improved yield relative to the untreated control, with responses to fungicides in excess of 1 t/ha. An average of 5.30 t/ha was achieved where half rate fungicides were applied and 5.45 t/ha when full rate fungicides were applied although the actual response varied depending on the product applied (Figure 1).

Figure 1. Sclerotinia stem rot (bars – as severity on main stems) on 19 July and yield (points – adjusted to 91% dry matter) on 18 August in Herefordshire, near ADAS Rosemaund in 2010. LSD for disease = 6.84, LSD for yield = 0.32.
In 2012, fungicides were applied on the 12 May at the site near Rosemaund in Herefordshire (cv. DK Sequoia). There were several infection events during flowering, with about 20% of plants infected in early May prior to fungicide application. Fungicide performance therefore relates to control of further infection (approximately 40%) that occurred in late May/early June. Sclerotinia stem rot incidence in the untreated was high (62% when assessed on 10 July). All fungicide treatments significantly decreased sclerotinia stem rot relative to the untreated control, however, there were no statistically significant differences between products and all treatments gave significant yield increases. An average of 3.55 t/ha was achieved where half rate fungicides were applied and 3.73 t/ha when full rate fungicides were applied although the actual response varied depending on the product applied (Figure 2).

![Figure 2](image-url) 

**Figure 2.** Sclerotinia stem rot (bars – as severity on main stems) on 10 July and yield (points – adjusted to 91% dry matter) on 15 August in Herefordshire, near ADAS Rosemaund in 2012. LSD for disease = 7.73, LSD for yield = 0.27.
In 2015, fungicides were applied on 23 April at the site in Ceredigion, Wales (cv. PT229CL). Sclerotinia stem rot levels were moderate (20% plants affected) in the untreated control when assessed on 19 June. All fungicides and doses significantly decreased sclerotinia stem rot giving over 90% control and yield responses in excess of 1 t/ha (Figure 3).

![Graph](image_url)

**Figure 3.** Sclerotinia in relation to fungicide dose, in Ceredigion, Wales in 2015. a) stem rot severity as sclerotinia index on 19 June and b) yield on 8 August (adjusted to 91% dry matter). All products significantly decreased sclerotinia stem rot and improved yields relative to the untreated control. There were no statistically significant differences between products for sclerotinia control or yield.

It should be noted that the effectiveness of fungicide dose and resulting yield responses are dependent on the timing of onset and disease development in the crop. For example, in 2015 infection was likely to have occurred very shortly after fungicides were applied as there were no differences between doses for disease control or yield. At sites where sclerotinia was severe (2006 to 2008) and infection was occurring frequently during the season, there is a clear benefit to applying higher fungicide doses (Figure 4).
Figure 4. Effectiveness of fungicide dose when sclerotinia stem rot was low/moderate (<30% plants affected) and high (>80% plants affected) for sclerotinia stem rot control. Yields were adjusted to 91% dry matter. Data taken from AHDB-funded Fungicide Performance trials conducted in 2006 to 2008.

Information on fungicide efficacy – New products

Pictor is an SDHI + strobilurin co-formulation (200g/L boscalid + 200g/L dimoxystrobin: BASF) with phoma/stem canker, light leaf spot, sclerotinia stem rot and alternaria dark leaf and pod spot on the label. It is for use in winter oilseed rape and cannot be applied to the crop before 1 February or prior to growth stage BBCH 20 (no side shoots visible) in year of harvest. The maximum label rate for Pictor is 0.5 L/ha and it can be applied twice up to when 50% pods have reached final size (GS75). Data are available from 2015 experiments.

Symetra is an SDHI + strobilurin co-formulation (200g/L azoxystrobin + 125g/L izopyrazam: Syngenta) and is registered for use against sclerotinia stem rot in winter and spring oilseed rape. It can be applied from early (BBCH61 – 10% flowers on main raceme open) to mid-flowering (BBCH65 – full flowering: 50% flowers on main raceme open) with a latest application timing at end of flowering (BBCH69). The maximum label rate for Symetra is 1.0 L/ha and it can be applied once per crop. Data are available from moderate disease years in 2010 and 2012 experiments.

Note: label recommendations can change – consult latest version before use.
Summary – Key points for sclerotinia stem rot control

Fungicide timing is important for good control as products available to control sclerotinia stem rot are protectants and have little or no curative activity.

The optimum timing for a single spray is usually just before mid-flowering on the main raceme and prior to significant petal fall. Treatments provide good control for about 3 weeks. Two sprays may therefore be required to protect crops at high risk sites throughout the flowering period.

Fungicides differ in their physiological effects on the crop and also efficacy against other diseases that may require control during flowering e.g. light leaf spot. Whether additional disease control or growth regulation, e.g. to decrease lodging risk, is required should be considered when selecting products.

Strategies are required to minimise the risks of selecting for fungicide resistant strains of sclerotinia and other pathogens. No resistance to fungicides has been reported in sclerotinia the UK, but resistance is present in France and likelihood of it occurring can be decreased by using mixtures, co-formulated products and products with a different mode of action. It is now recommended that boscalid (as Filan) is restricted to two applications per crop and is used in tank-mix with another mode of action with good efficacy against sclerotinia stem rot.