



Fungicide Performance: how do the new products perform?



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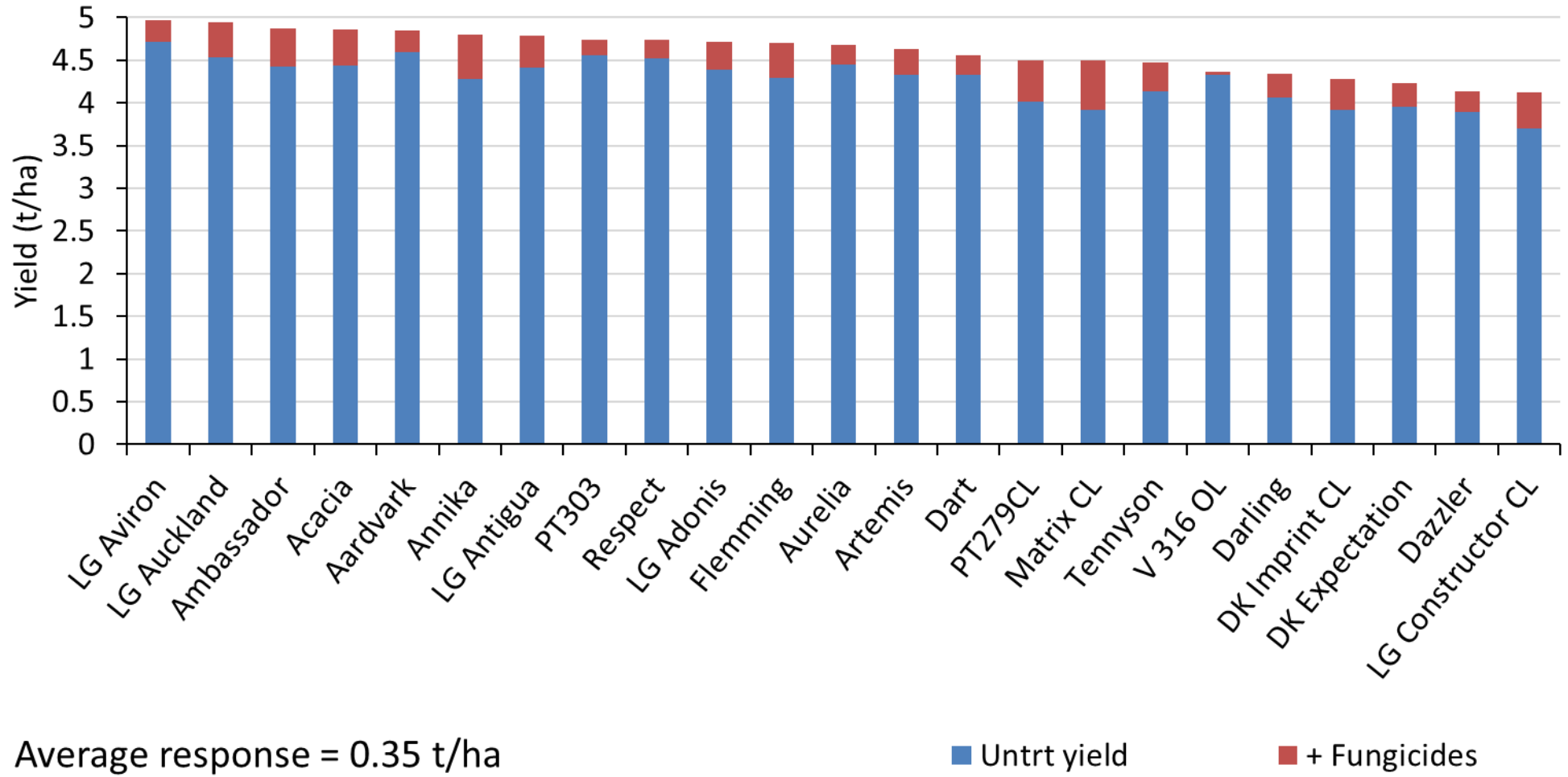
www.adas.uk

Fungicide Performance: how do the new products perform?

- Overview of yield responses to fungicides and fungicide use
- New fungicides for oilseed rape and relevant disease forecasts/monitoring options
- Relevance of new products and fungicide resistance management strategies



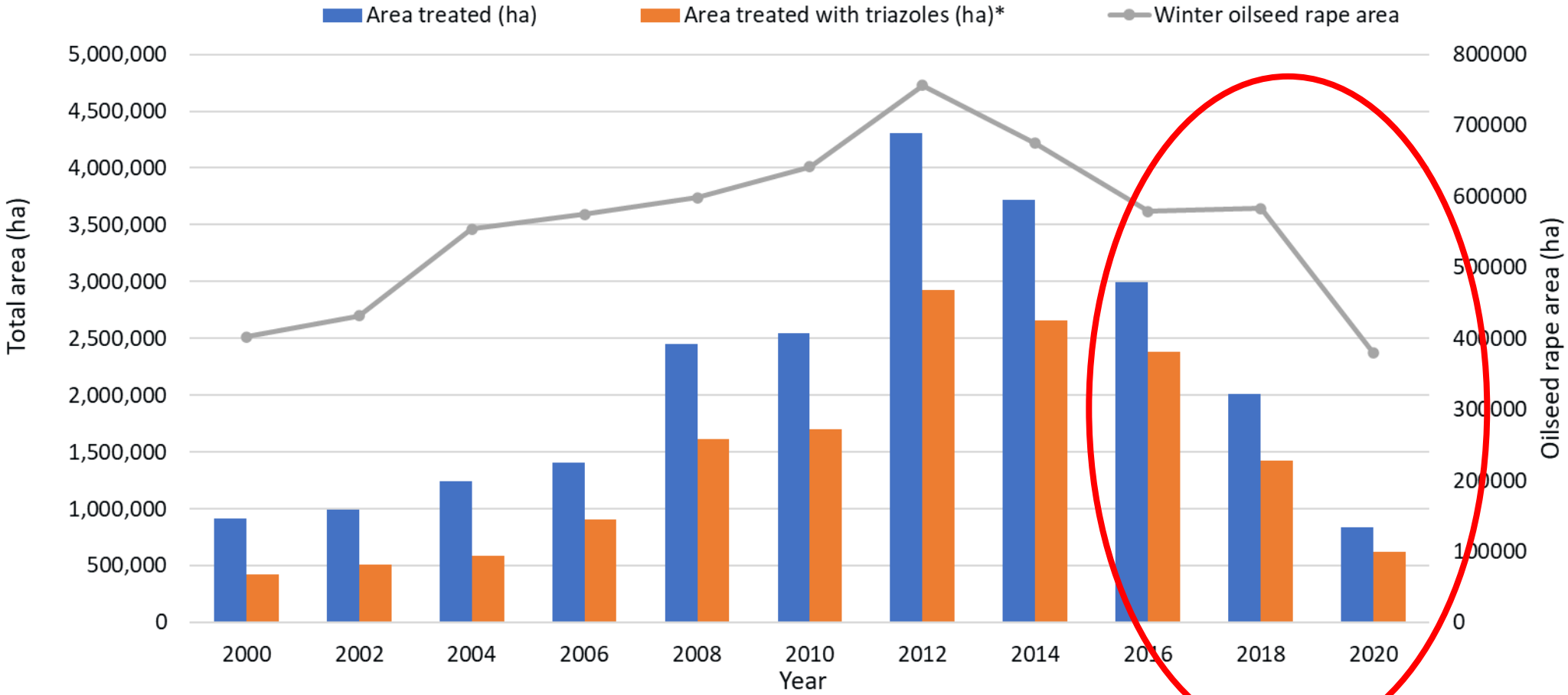
Recommended List untreated and treated trials: 6 sites



Disease pressure nationally has been lower than previous years— OSR area substantially reduced.



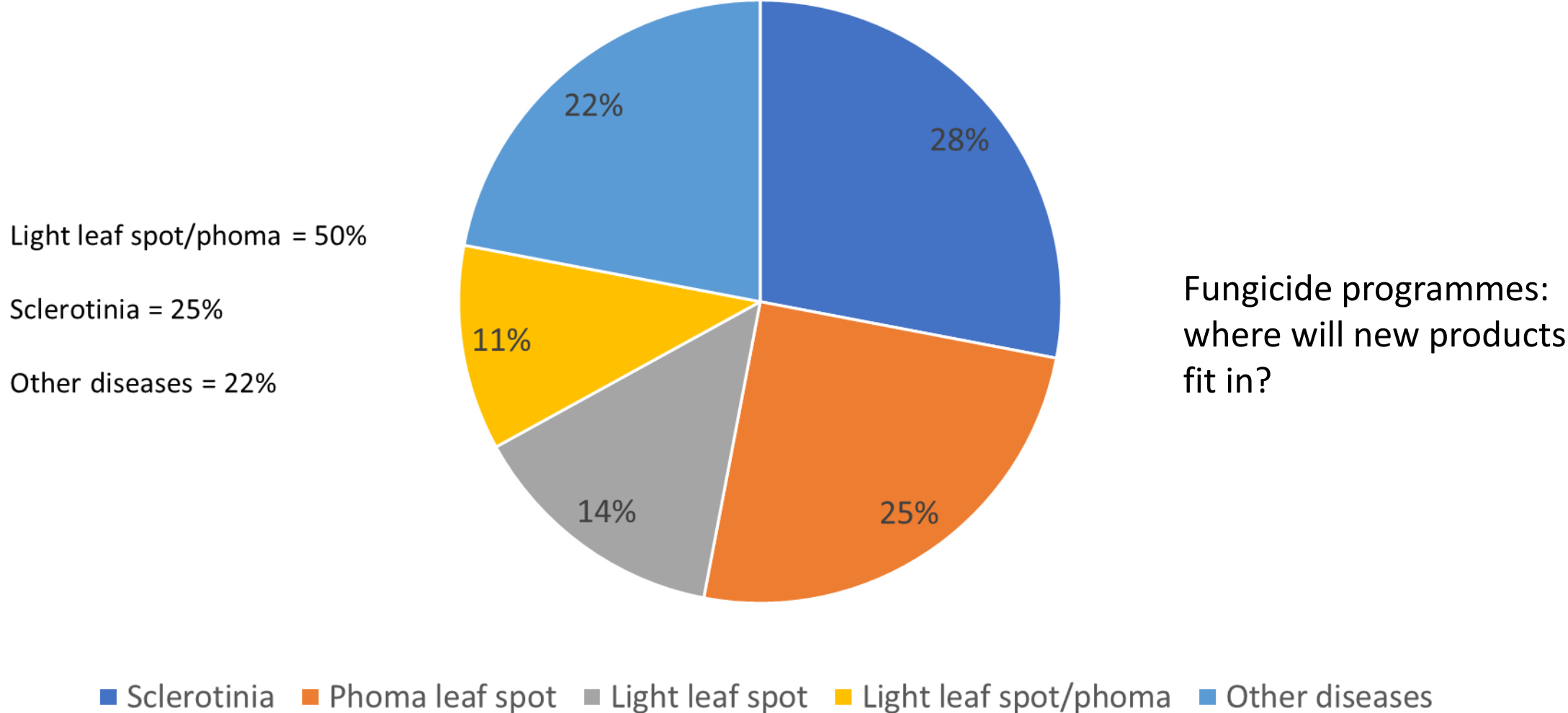
Most fungicides applied to winter oilseed rape in England and Wales were triazoles: fungicide resistance management?



*excludes the 'other fungicides' therefore azole use likely to be slightly higher.

Source: DEFRA Pesticide usage survey in England and Wales, DEFRA Farming statistics

Fungicide use in winter oilseed rape in England and Wales, 2020



Fungicide inputs can be high: are they needed?

2018*: average 3 fungicides applied

2020*: average 2 fungicides applied

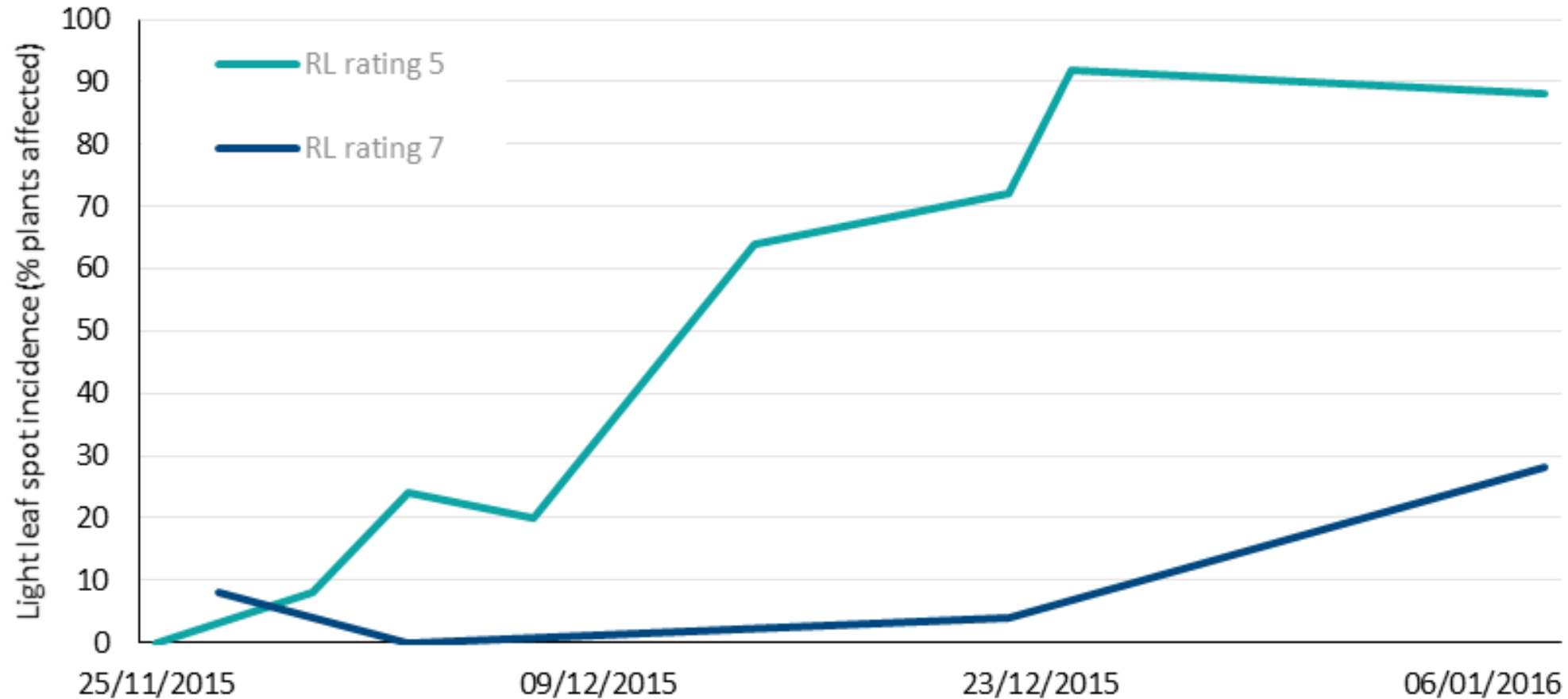
Typical timings

- Autumn/winter: Phoma and light leaf spot
- Pre/at stem extension: light leaf spot
- Yellow bud: light leaf spot/sclerotinia
- Flowering application(s): sclerotinia/light leaf spot

- Variety choice influencing fungicide input decisions?

*information from DEFRA pesticide usage surveys 284 and 295

Benefits to using more light leaf spot resistant varieties: slow the disease epidemic and less reliant on fungicides for yield



Recommended list (RL) ratings: 9 = most resistant

Assessed on untreated plants near ADAS Rosemaund, Herefordshire, 2015-16

Fungicide Performance in Oilseed Rape: sites for season 2020/2021

Site	Target Disease	Variety
Herefordshire (ADAS)	Phoma stem canker	Flamingo
Norfolk (ADAS)	Phoma stem canker	Flamingo
North Yorkshire (ADAS)	Light leaf spot	DK Expedient
Midlothian (SRUC)	Light leaf spot	Campus



Oilseed rape products included in the charts*

Product	Active ingredient(s)
Proline 275	prothioconazole
Priori Gold**	azoxystrobin + difenoconazole
Aviator Xpro	bixafen + prothioconazole
Filan**	boscalid
Architect	mepiquat chloride, prohexadione calcium + pyraclostrobin
Shepherd	boscalid + pyraclostrobin
Plover	difenoconazole
Amistar	azoxystrobin
Pictor	dimoxystrobin + boscalid

*Products go in under code several years before registration and launch.

**Products do not have a label recommendation for light leaf spot control but may be applied at the appropriate time, for the control of other diseases.

Recently registered products: BASF

Shepherd

- Winter and spring oilseed rape
- Full label dose: 0.8 L/ha
- Total dose per crop: 0.8 L/ha
- 150 g/L boscalid + 250 g/L pyraclostrobin
- Autumn and Spring use*
- Phoma leaf spot/stem canker, light leaf spot, sclerotinia and alternaria on label

Architect

- Winter oilseed rape
- Full label dose: 2.0 L/ha
- Total dose per crop: 4.0 L/ha
- 150 g/L mepiquat-chloride, 25 g/L prohexadione calcium and 100 g/L pyraclostrobin
- Autumn and Spring use*
- Phoma leaf spot/stem canker, light leaf spot and growth regulator on label

AHDB phoma forecast

Click button to change page

Predicted infection status

Select year and week to filter map

Year

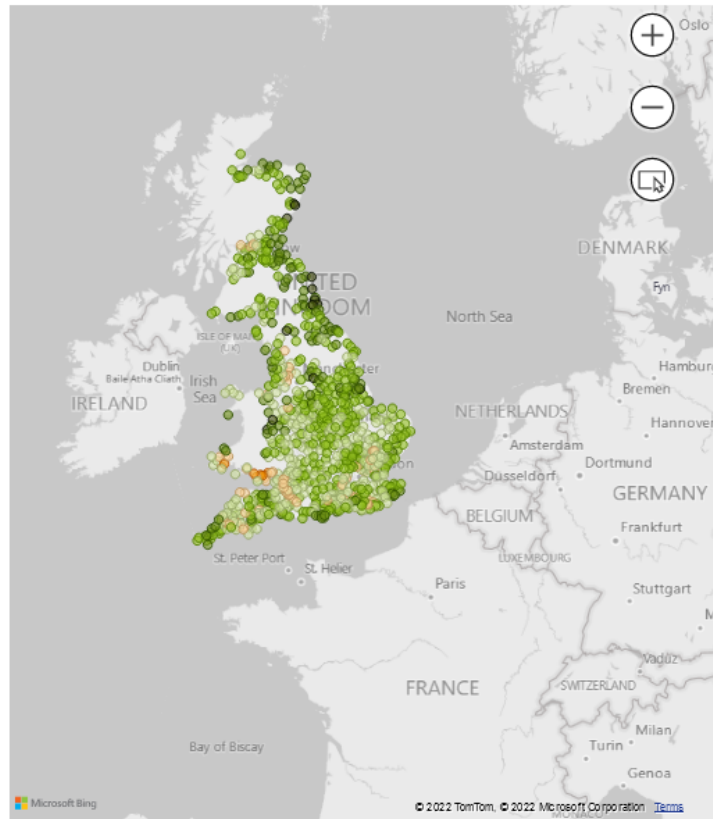
2021
 2020
 2019

Predicted week of 10% incidence

● 3 Oct ● 10 Oct ● 17 Oct ● 24 Oct ● 31 Oct ● 7 Nov

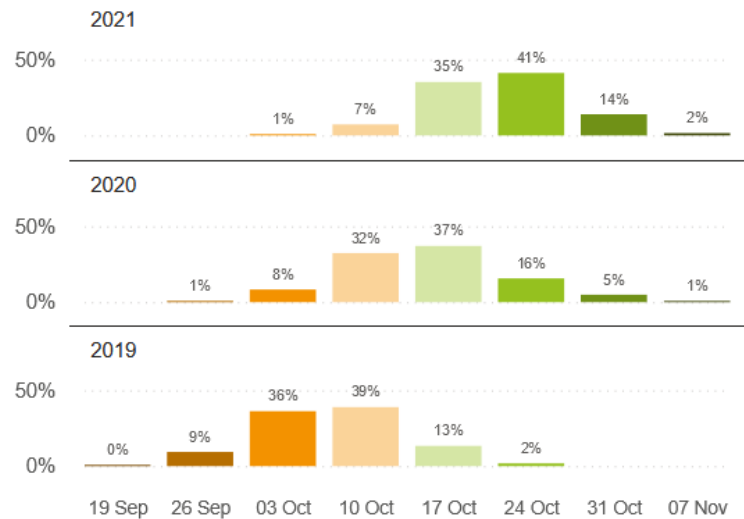
Select country / region to filter rest of dashboard

- England
 - East Midlands
 - East of England
 - London & South East Eng...
 - North East England
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 - South West England
 - West Midlands
 - Yorkshire & Humber
- Scotland
 - Central Tayside & Fife
 - Dumfries, Galloway, Lothi...
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 - Highland & Eilean Siar
 - Strathclyde
- Wales
 - Wales



Data courtesy of Environment Agency, SEPA, Natural Resources Wales and Met Office

Annual distribution



Individual locations

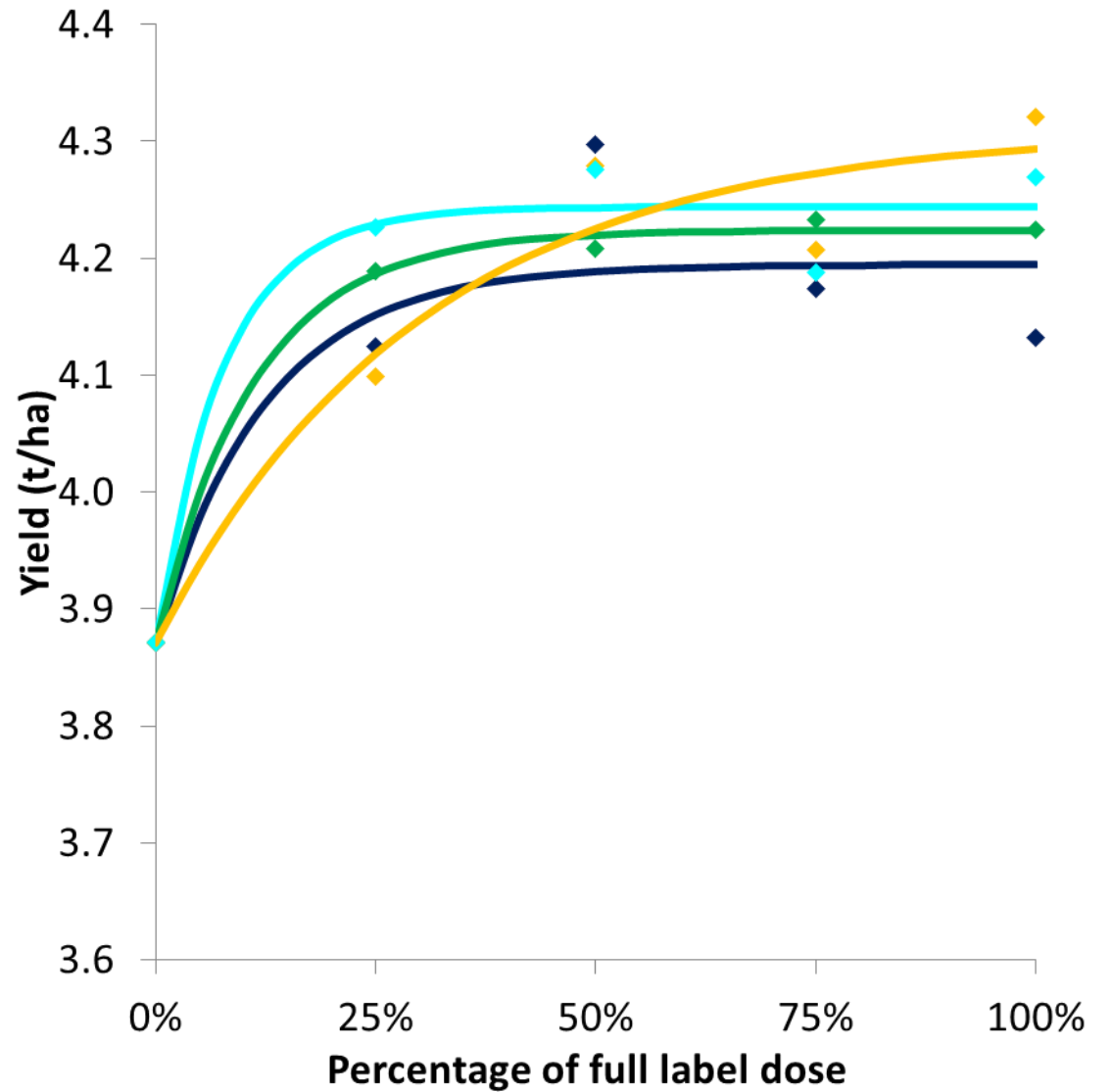
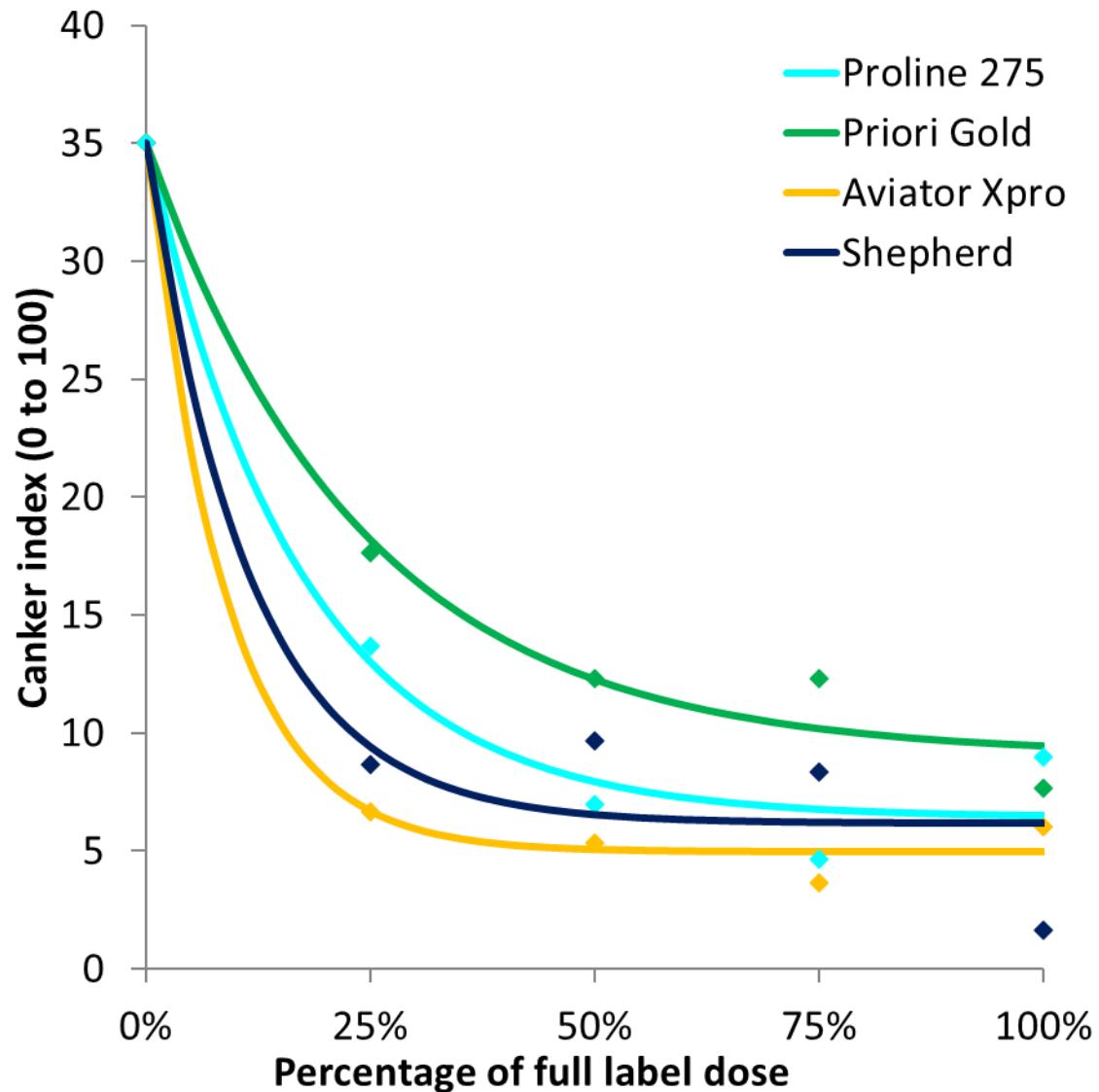
Location ID	2021	2020	2019
000008	24 Oct	17 Oct	3 Oct
000075TP	10 Oct	17 Oct	26 Sep
000076TP	24 Oct	10 Oct	10 Oct
000180TP	10 Oct	17 Oct	10 Oct
000181TP	17 Oct	10 Oct	10 Oct
000182TP	24 Oct	10 Oct	10 Oct
000900	31 Oct	24 Oct	10 Oct
000997	7 Nov	31 Oct	
003232	31 Oct	24 Oct	10 Oct
004942	7 Nov	24 Oct	

Microsoft Power BI

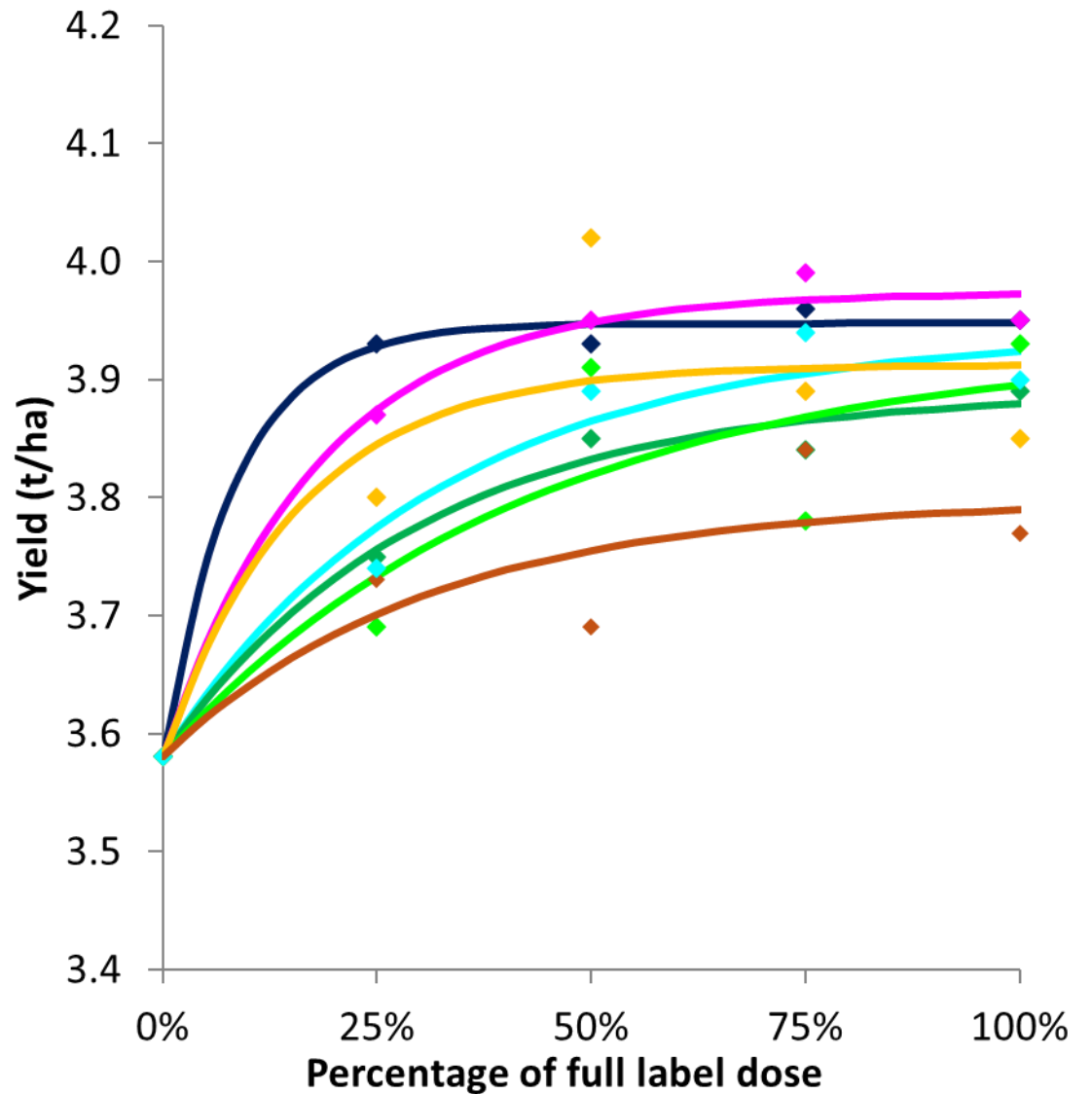
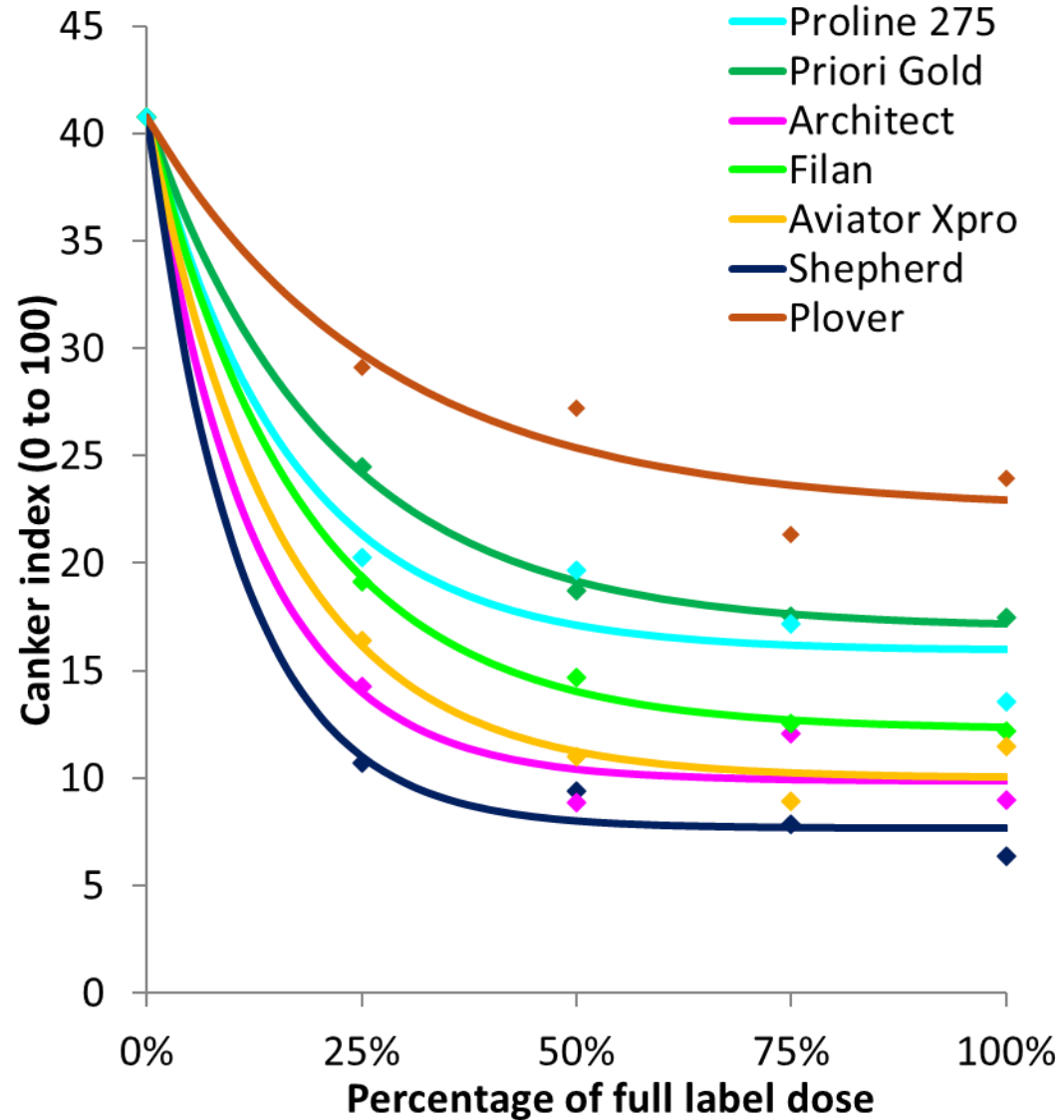
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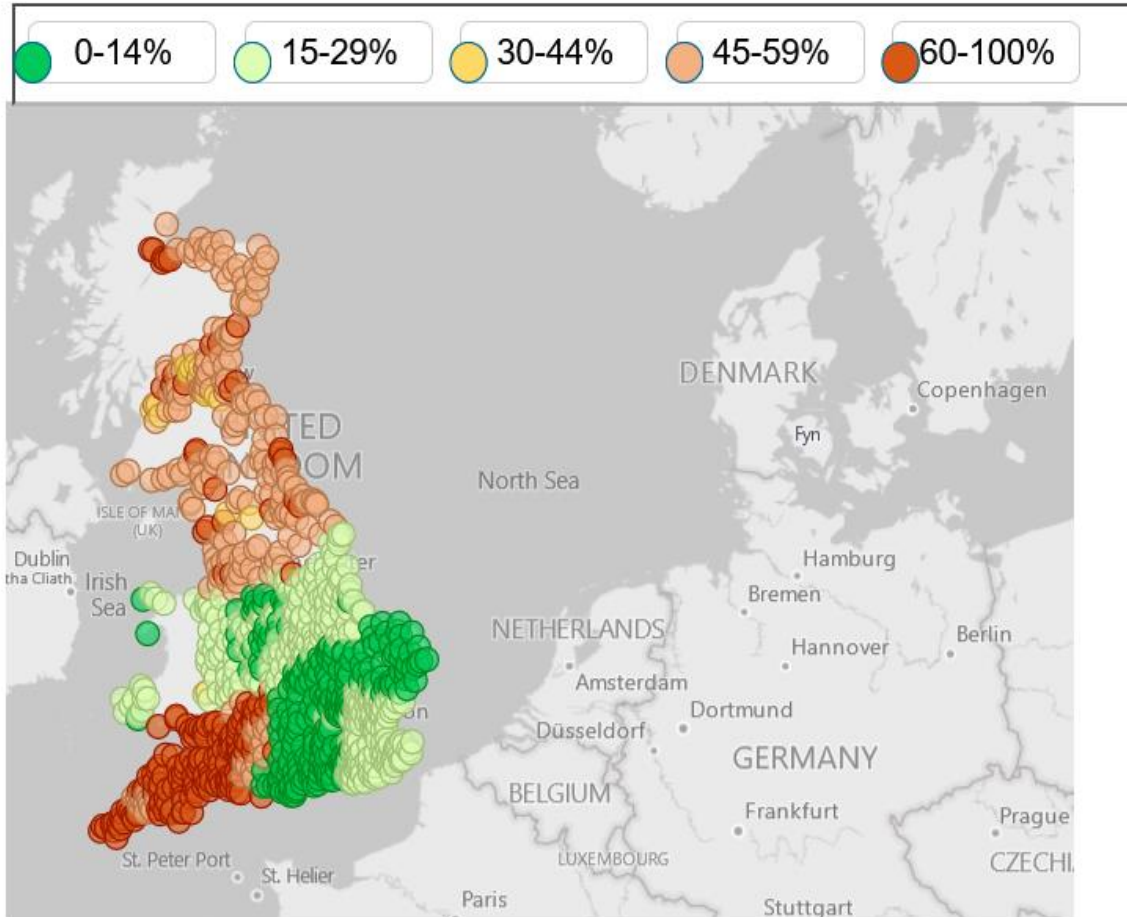
Phoma stem canker and yield (Herefordshire) 2021



Phoma stem canker and yield (2015-2021: 9 Trials)



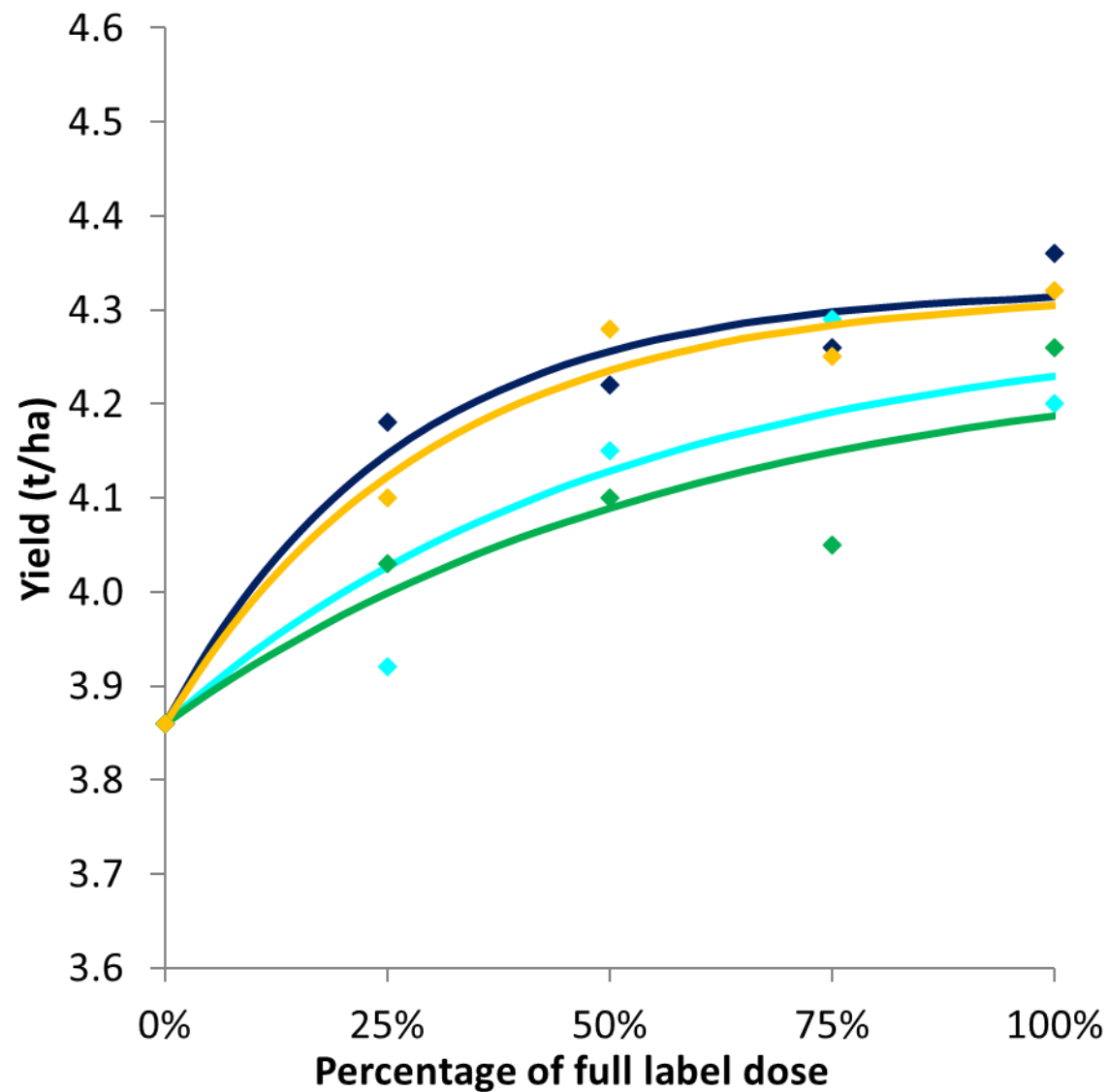
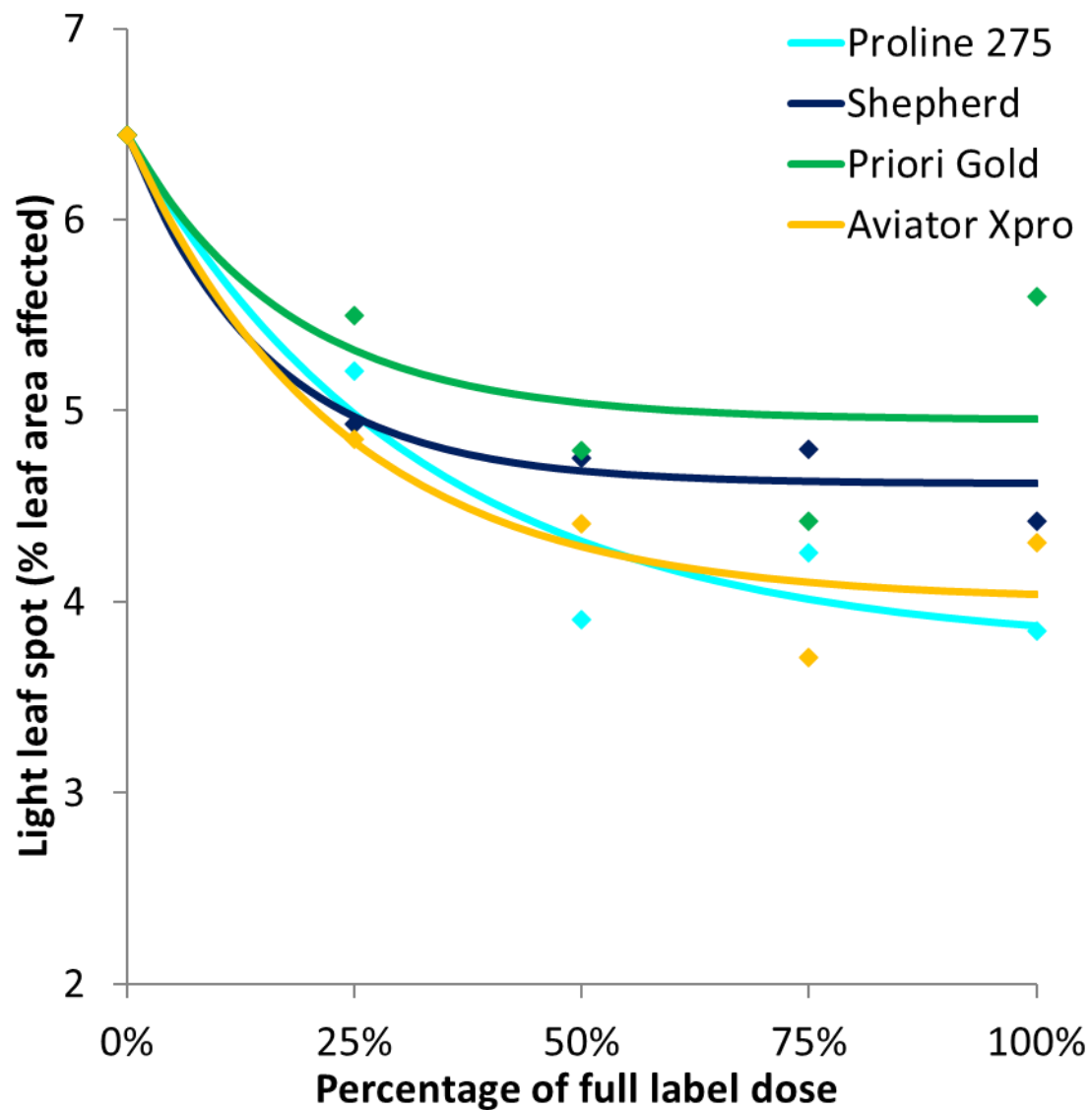
Regional risk: light leaf spot forecast - AHDB



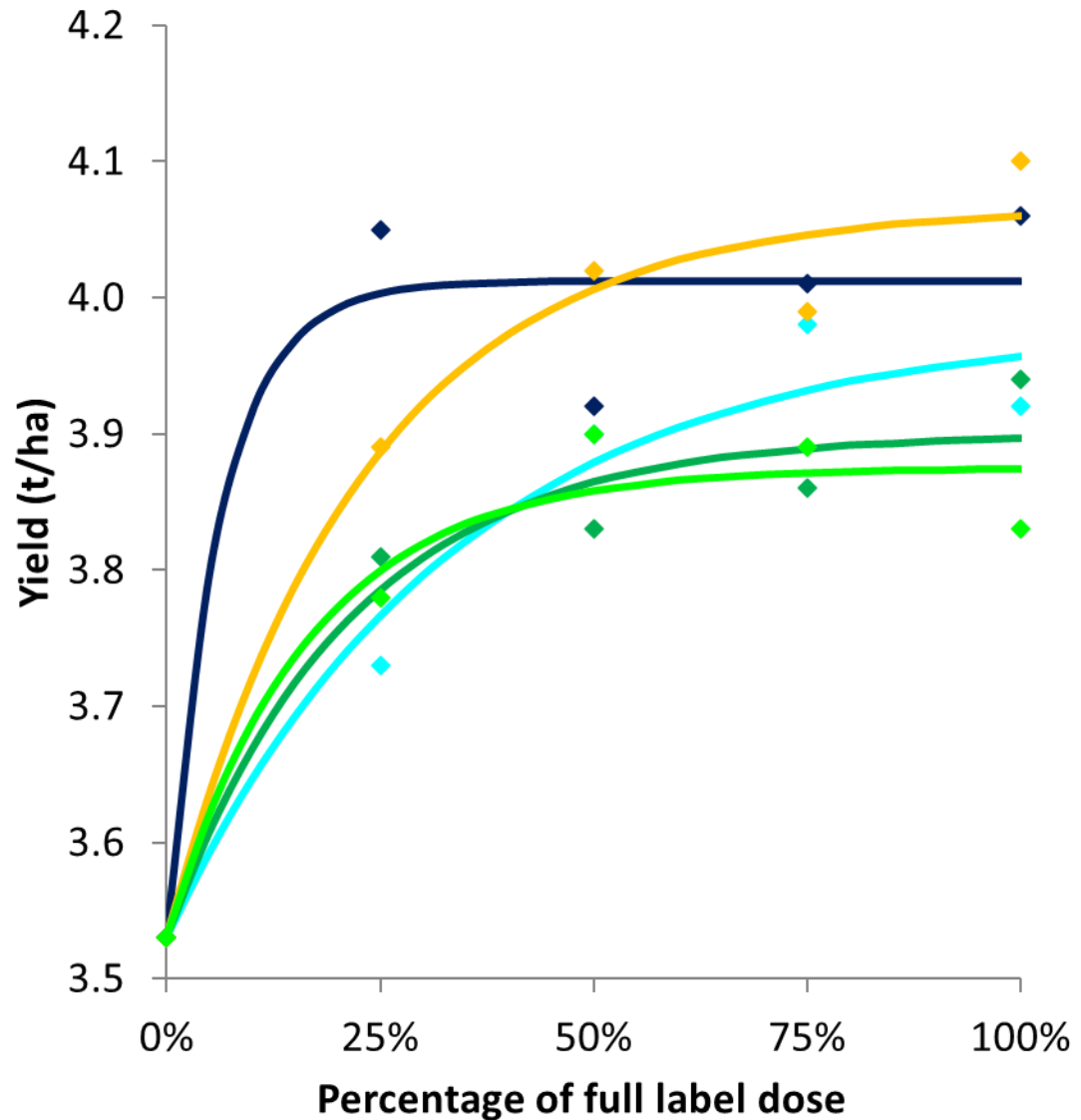
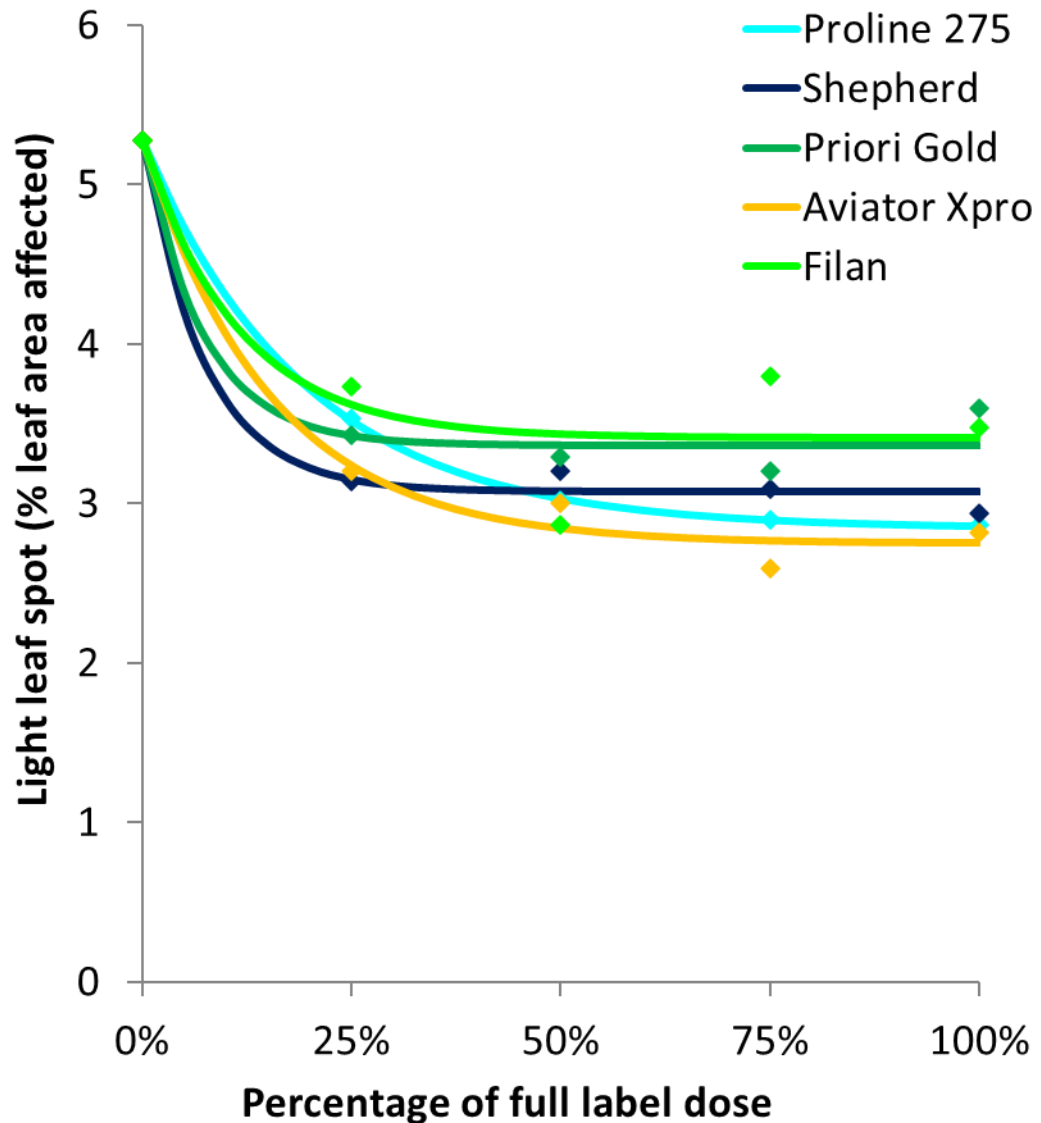
- Predicts the number of crops with more than 25% of plants affected in spring
- Based on weather/disease from the previous season – temperature and rainfall
- Not a ‘real time’ forecast
- Cannot be adjusted for variety/sowing date at the moment
- In-field monitoring – incubation (occurs in patches)

<https://ahdb.org.uk/light-leaf-spot-forecast>

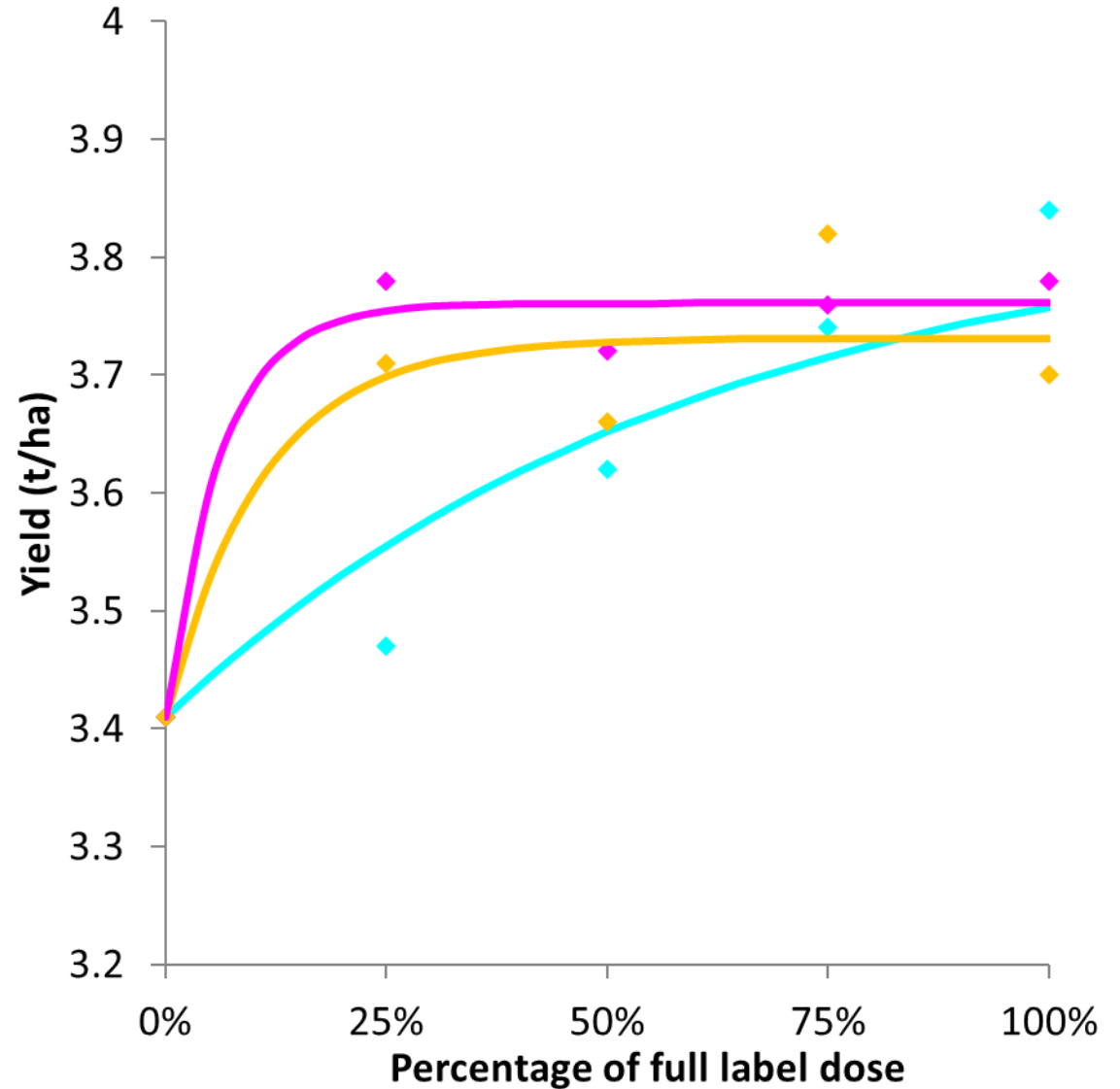
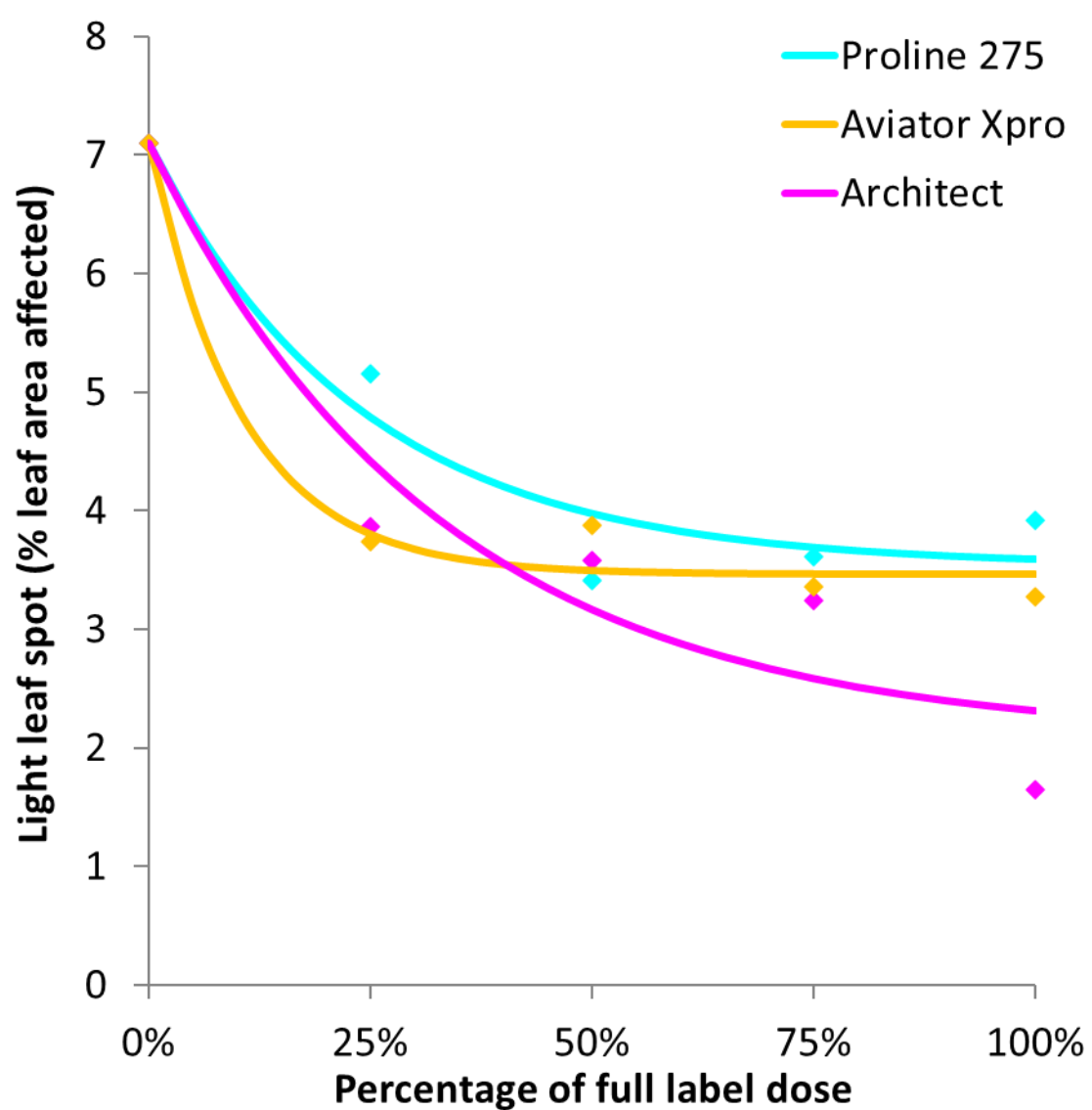
Light leaf spot disease and yield (2021: 2 Trials)



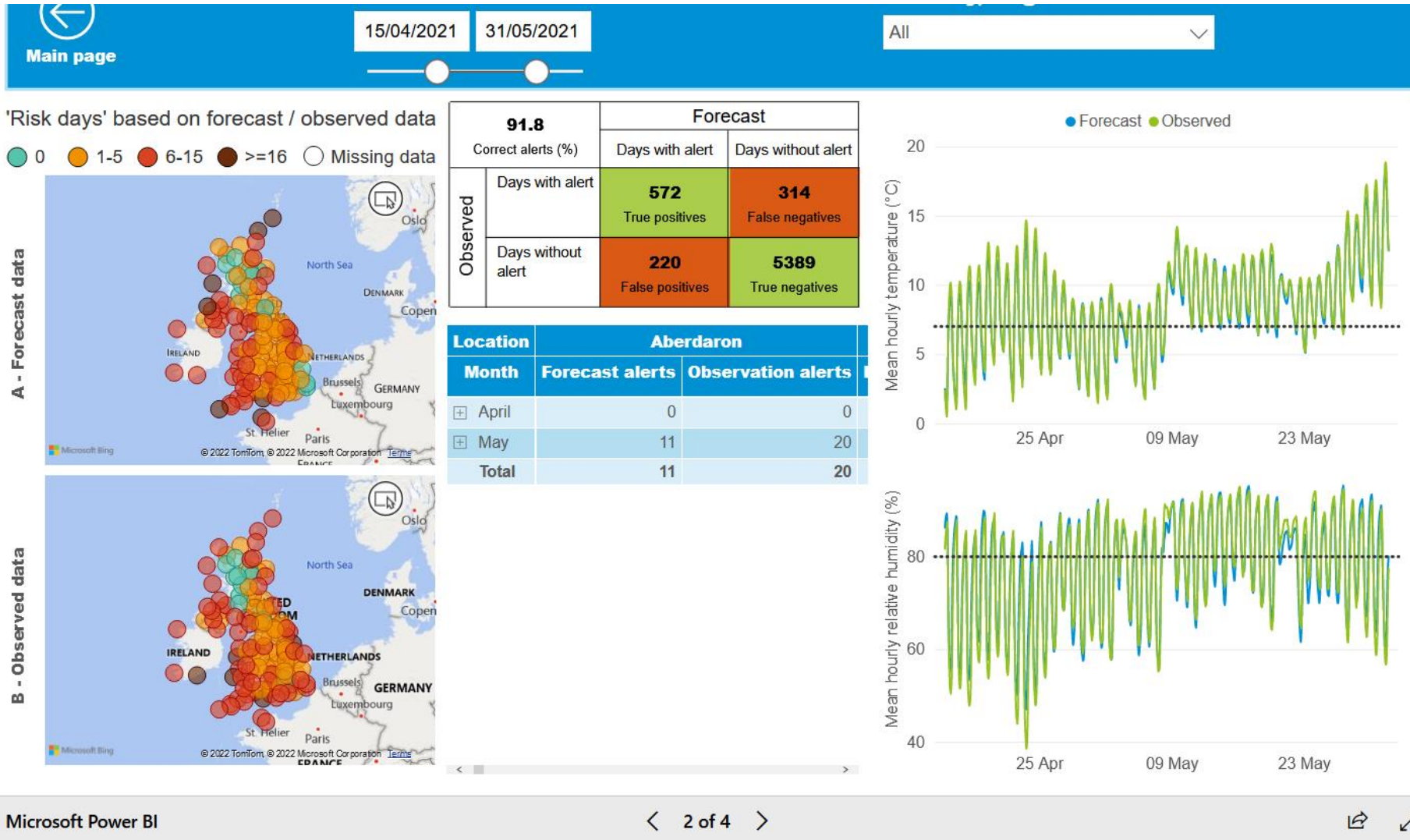
Light leaf spot disease and yield (2019 to 2021: 5 Trials)



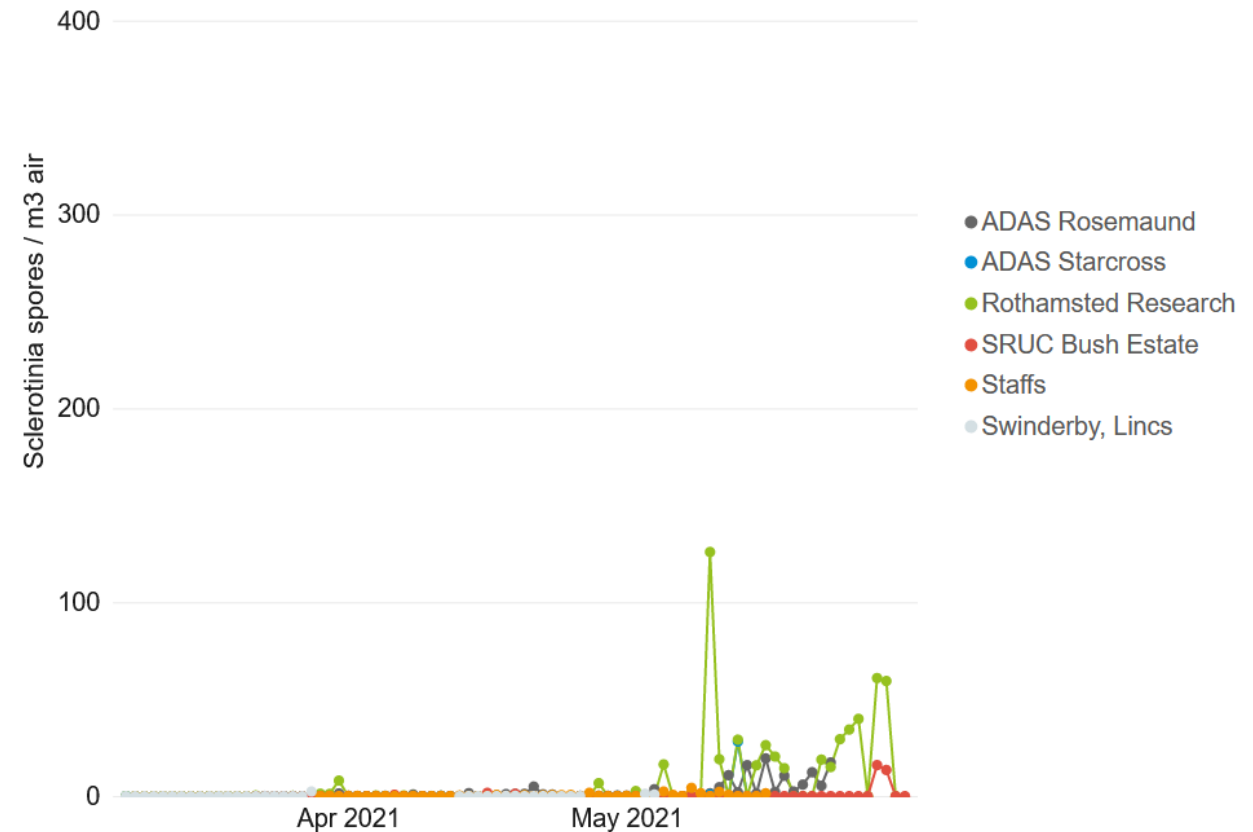
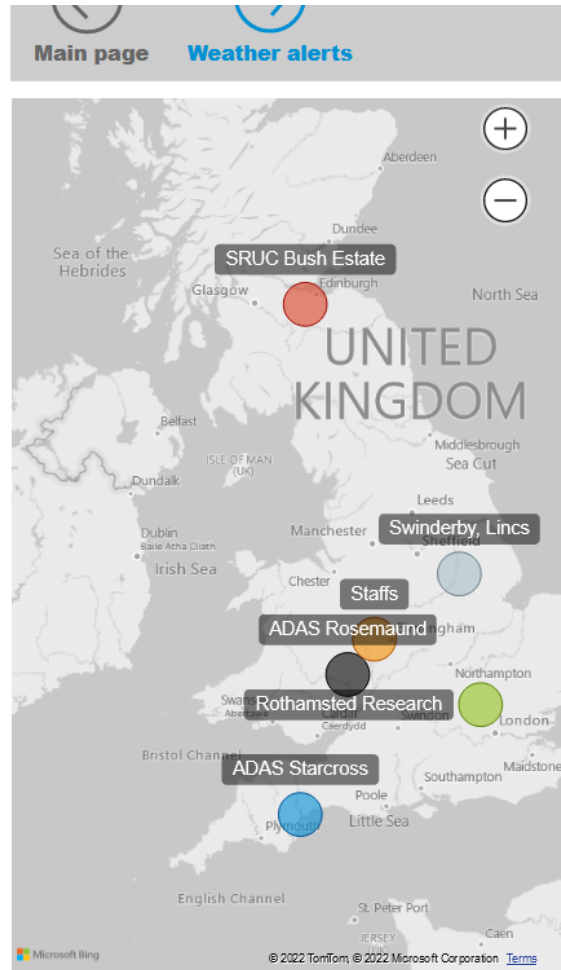
Light leaf spot disease and yield (2015 and 2016: 5 Trials)



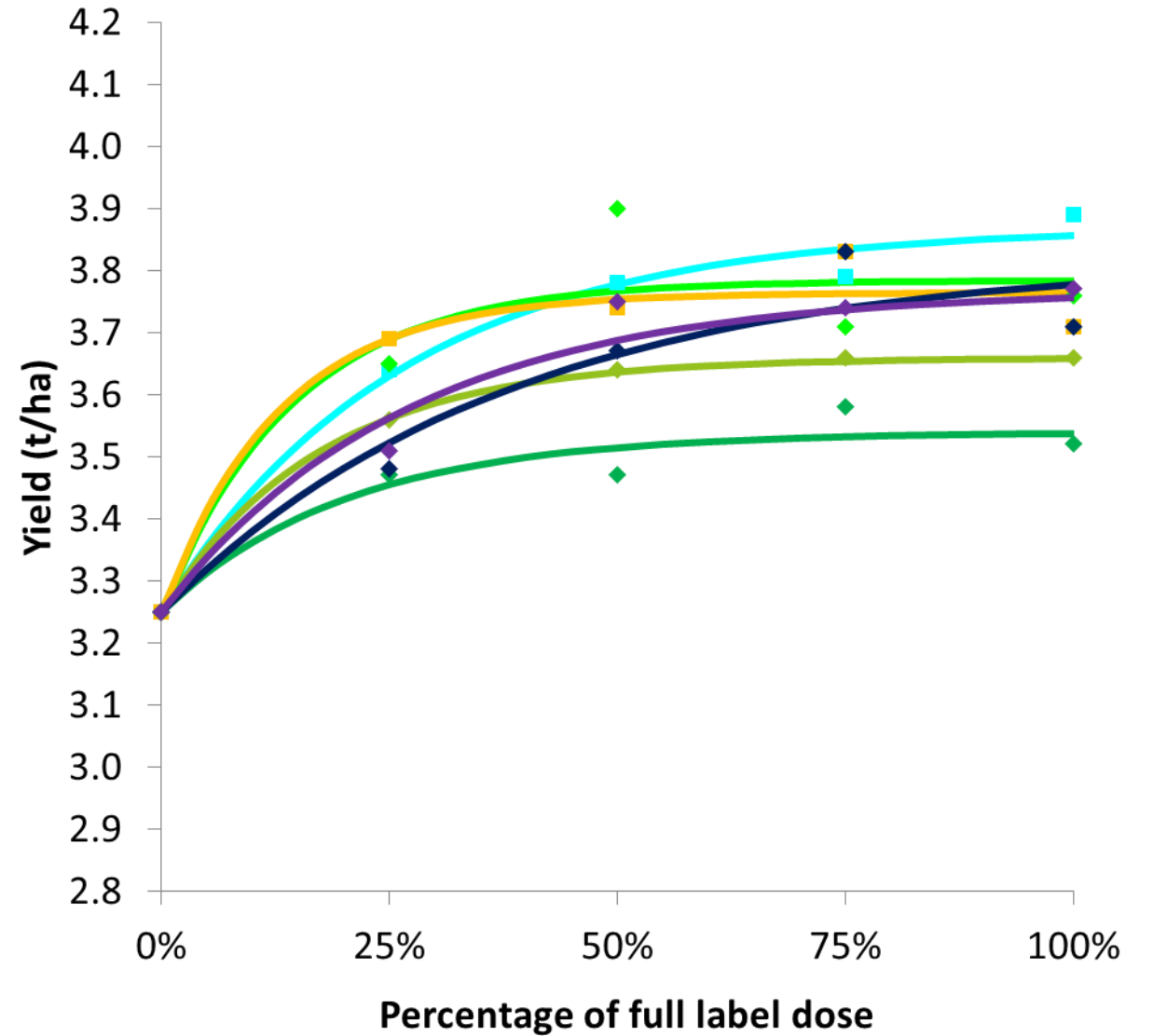
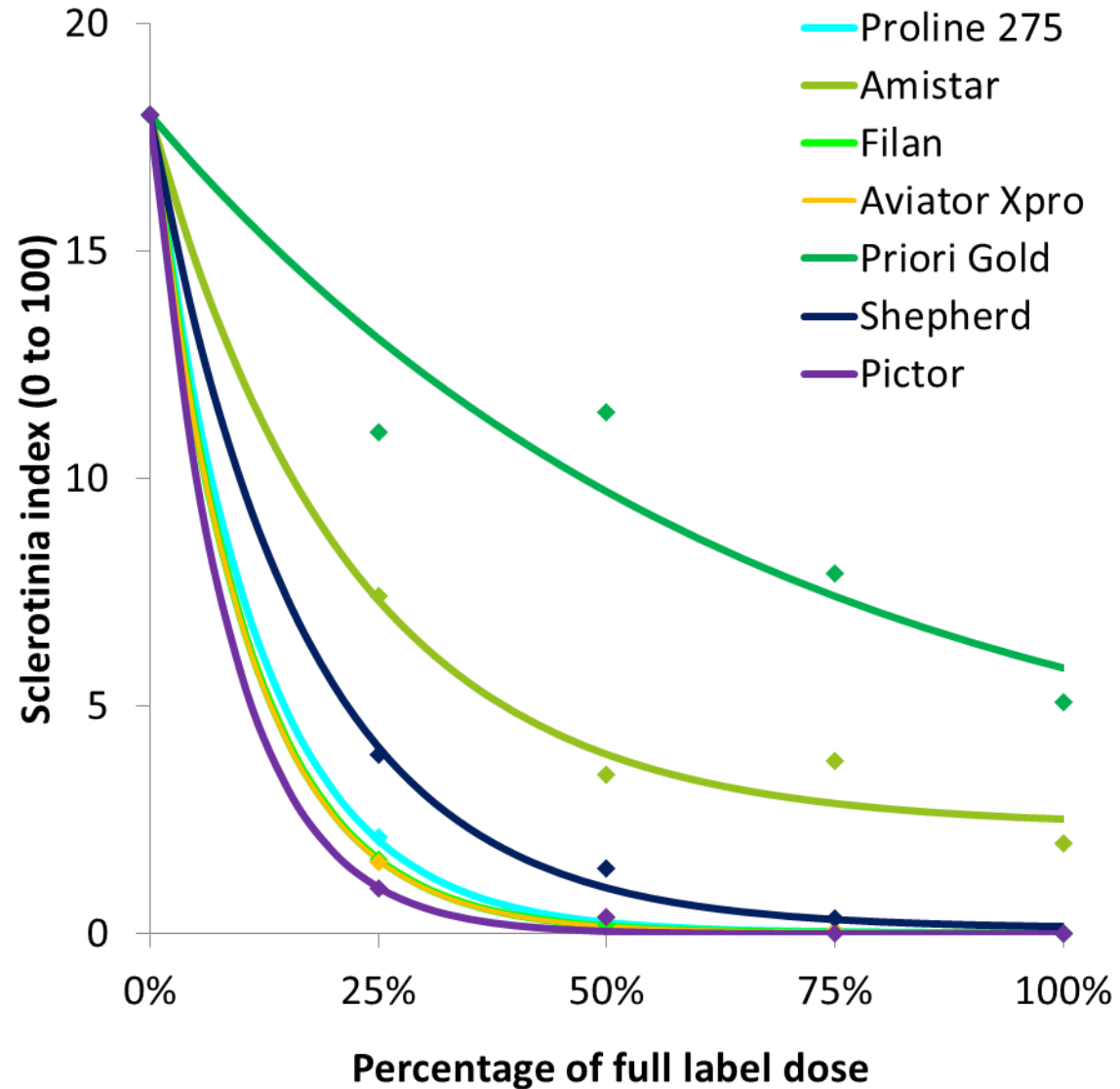
AHDB Sclerotinia forecast



Presence of spores important as well as weather: did these fit with weather alerts?



Sclerotinia stem rot and yield (2015 to 2017: 5 Trials)



Where do the new products fit in: fungicide resistance management

- Avoid repeated use of the same product or fungicide having the same mode of action.
- Use products in mixtures, alternate products and follow label recommendations.
- Target fungicides where risk is high – use disease forecasts, crop monitoring information and thresholds.
- Ensure fungicide are well timed and appropriate dose used.
- Use varieties with good disease resistance.

Fungicide Resistance Management in Oilseed Rape



Fungicides are used for disease control and, in some cases, for plant growth regulation and other physiological effects. Stem canker, light leaf spot and sclerotinia are the most serious diseases of oilseed rape against which fungicides are used. Disease development is very variable from year to year and spray timing is critical to ensure effective disease control. Fungal pathogens of oilseed rape are showing reduced sensitivity to some fungicides and there is concern about declines in efficacy. Robust strategies to prevent further deterioration are vital if we are to retain effective fungicides in the future.

General strategy for managing fungicide resistance

An integrated approach to disease and crop management and, hence, a strategy for fungicide resistance management should be followed.

Use disease resistant cultivars. Where possible, varieties should be selected with good resistance ratings to the diseases of most concern on the farm. Reduced fungicide inputs may be possible on such varieties and should reflect overall disease risk.

Target fungicides on crops where there is risk of yield loss. Seasonal variation in risk can be large, so use local guidance. Use disease forecasts, crop monitoring information and thresholds, where available.

Ensure fungicide applications are well-timed and the appropriate dose is used.

Avoid repeated use of the same product or fungicide having the same mode of action. It is important to follow any statutory conditions of approval, which may include a maximum number of product applications per crop or a maximum total for the active ingredient.

Crop residues are a source of inoculum for phoma leaf spot and stem canker (*Leptosphaeria* spp), light leaf spot (*Pyrenopeziza brassicae*) and dark leaf-spot (*Alternaria* spp). Direct drilled crops may,

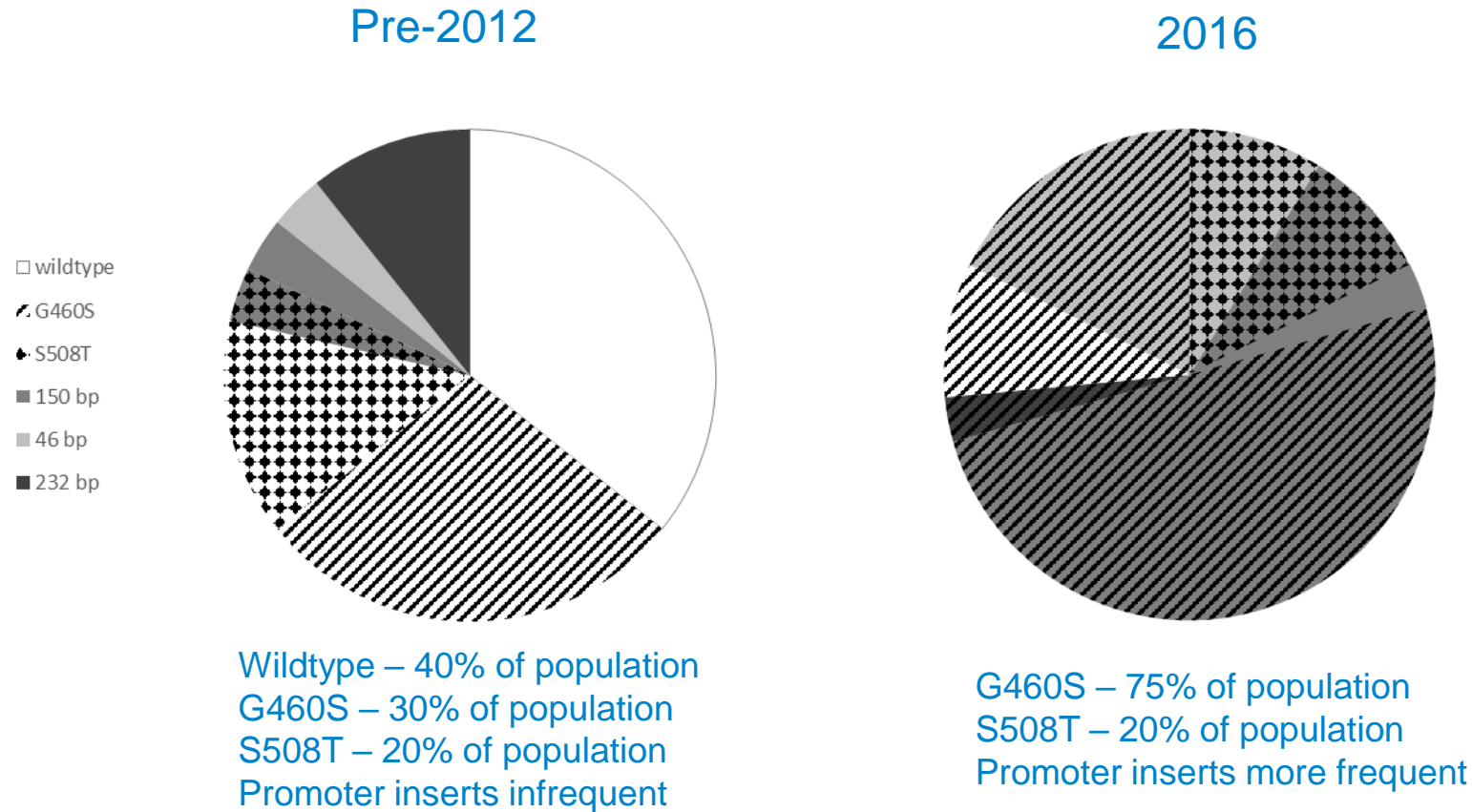
therefore, be at greater risk than crops drilled after deep ploughing. Burying crop residues can help to decrease the production of air- or splash-borne spores. Avoid planting new crops adjacent to the previous year's stubble. Isolate new crops by 200 to 500m, if possible.

Sow by late August so that plants are well-grown prior to the onset of phoma leaf spot. The disease is less damaging and easier to manage on plants with large leaves than on small plants. Early drilling, however, can increase the risk of light leaf spot, therefore all crops should be walked regularly and monitored carefully.

Oilseed rape rotations are often shorter than ideal. The risk of soil-borne diseases such as clubroot (*Plasmodiophora brassicae*) and sclerotinia (*Sclerotinia sclerotiorum*) will be reduced by extending rotations to at least one in four and preferably longer. Trash-borne disease risk (light leaf spot and phoma) will also be reduced in extended rotations.

Biological control with *Coniothyrium minitans* can be considered as a biological treatment as part of an integrated pest management (IPM) strategy. It works by colonising and de-activating the soil-borne sclerotia. Application may be useful after severe attacks of sclerotinia to reduce the risk of yield loss in future crops.

Why is having a range of modes of action important for oilseed rape disease management?



Fungicide performance: how are new products performing?

Phoma stem canker and light leaf spot

- Architect and Shepherd performing similarly to current standards.
- Offer non-azole options for autumn disease control.

Sclerotinia stem rot

- Shepherd providing similar levels of disease control and yield to standards.

Resistance management

- Follow Fungicide Resistance Action Group guidelines.
- Use fungicides in tank mixtures, co-formulations and alternation.
- Consider how the new products can fit into the fungicide programme for resistance management.

Acknowledgements

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