Agronomists' Induction, October 2019

Recommended Lists disease ratings

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CEREALS & OILSEEDS

Purpose

- To understand
  - How to diagnose diseases, and accept when you can’t
  - The data behind the Recommended Lists ratings
- Outcome
  - Some RL disease ratings from your data!

Winter wheat 2019/20

Yield, agronomy and disease resistance

AHDB RECOMMENDED

	KWS Zyatt	Skyfall	KWS Trinity	RGT Illustrious	Crusoe	KWS Siskin	KWS Extase	KWS Lili	LG Detroit	KWS Firefly	KWS Barrel	Elicit	KWS Basset	Zulu	LG Skyscraper	LG Spotlight	KWS Jackal	Elation	Bennington	LG Sundance	LG Motown	Leeds	Myriad	Revelation	Viscount	Average	LSD (5%)
End-use group	nabim Group 1					nabim Group 2				nabim Group 3					Soft Group 4												
Scope of recommendation	UK	UK	UK	UK	UK	UK	UK	UK	E&W	UK	UK	UK	UK	UK	UK	UK	N	UK	E&W	UK	UK	N	N	UK	N		
		C	*			C	NEW		NEW	NEW				C	NEW	NEW							*				
Fungicide-treated grain yield (% treated control)																											
United Kingdom (11.2 t/ha)	101	99	98	97	97	102	101	100	100	102	101	101	99	98	106	104	102	102	102	101	100	99	98	97	97	2.0
East region (11.2 t/ha)	100	99	98	97	96	102	101	100	100	103	101	101	99	98	106	103	103	103	102	101	100	100	98	98	97	2.3
West region (11.3 t/ha)	101	99	97	98	97	102	102	100	102	103	100	100	99	97	106	105	101	102	103	101	100	98	97	96	96	2.6
North region (11.2 t/ha)	99	98	98	94	93	100	[102]	103	[95]	[99]	105	102	99	100	[104]	[101]	104	103	99	102	100	101	100	98	101	3.1
Untreated grain yield (% treated control)																											
United Kingdom (11.2 t/ha)	86	81	76	83	74	85	95	72	77	86	72	82	74	72	84	82	77	79	84	86	84	68	63	80	73	5.3
Agronomic features																											
Resistance to lodging without PGR (1–9)	7	8	8	7	7	6	7	7	8	8	7	7	7	6	7	7	7	7	7	6	6	7	7	7	7	0.5
Resistance to lodging with PGR (1–9)	8	8	8	8	8	7	8	8	7	8	8	8	8	7	7	8	7	8	8	7	6	8	7	8	8	0.5
Height without PGR (cm)	83	82	81	88	81	83	89	81	84	81	82	84	84	88	90	91	85	81	90	86	83	85	88	85	80	1.7
Ripening (days +/- JB Diego, -ve = earlier)	0	0	+1	+1	+1	+1	0	+2	+1	+1	+1	+1	+2	+1	0	+1	+1	+1	+2	+2	0	+2	+2	+3	+1	0.6
Resistance to sprouting (1–9)	[5]	5	6	[6]	6	[5]	-	7	-	-	[6]	[5]	[6]	5	-	-	[5]	[6]	[5]	[4]	[6]	6	6	5	5	1.1
Disease resistance																											
Mildew (1–9)	7	5	8	6	6	8	6	8	5	5	6	6	5	7	7	6	7	7	7	7	7	3	5	6	6	1.1
Yellow rust (1–9)	8	5	9	9	9	9	9	7	9	9	9	9	8	5	8	8	9	9	6	9	9	6	4	9	7	0.7
Brown rust (1–9)	6	8	7	6	3	5	7	4	5	8	5	7	5	7	5	6	5	6	7	6	7	7	6	8	9	0.9
Septoria nodorum (1–9)	[6]	[6]	[6]	[6]	6	[7]	-	[6]	-	-	[5]	[6]	[6]	[6]	-	-	[5]	[6]	[7]	[7]	[6]	[6]	[5]	[6]	[6]	0.7
Septoria tritici (1–9)	6.4	5.9	5.5	6.1	6.5	6.7	8.1	5.9	5.7	7.0	4.5	6.0	5.1	5.2	5.2	5.2	4.9	4.3	6.3	7.9	5.7	4.6	5.6	6.3	4.8	0.7
Eyespot (1–9)	7@	6@	5	6@	5	4	[4]	5	[5]	[4]	4	4	5	4	[4]	[5]	4	4	4	3	4	4	4	8@	4	1.1
Fusarium ear blight (1–9)	6	7	6	6	6	5	6	6	7	5	6	7	6	6	6	7	6	6	6	7	6	7	6	7	6	0.5
Orange wheat blossom midge	-	R	-	-	-	-	-	-	R	R	R	R	R	R	R	R	R	R	-	R	R	R	R	-	R	

1. Commission trials

2. Gather data

3. Chuck out rubbish

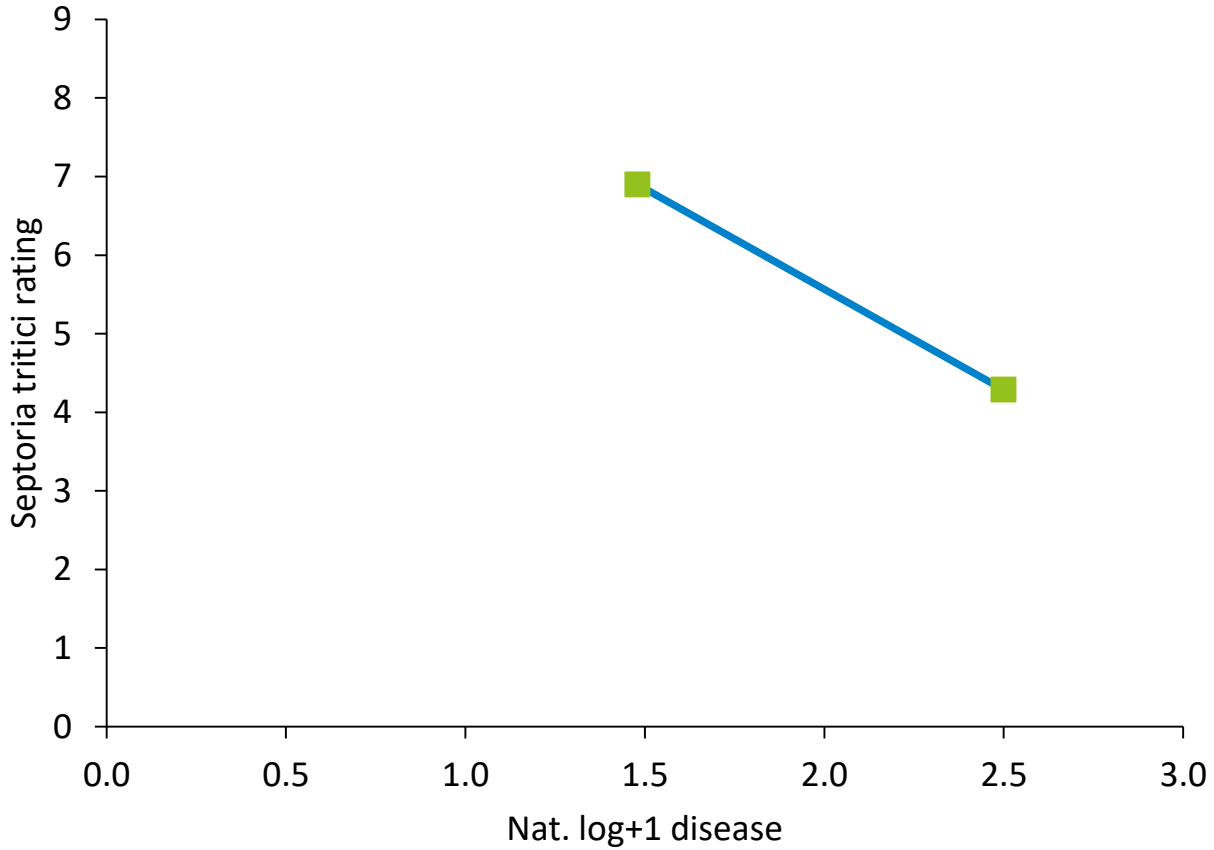
4. Take an average

5. Calculate rating

Excel

RL Septoria tritici disease ratings

Disease rating calculation

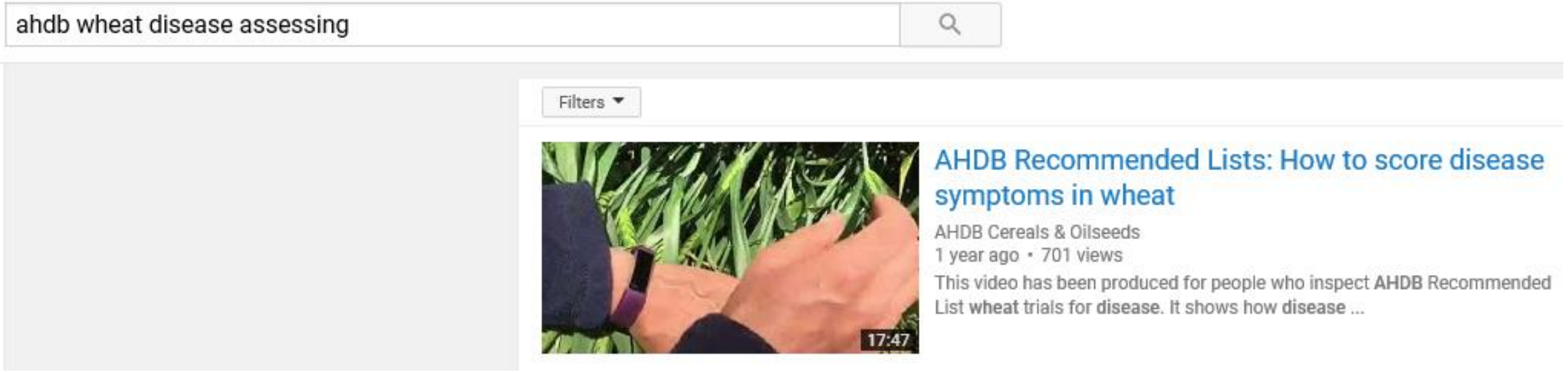


Let’s have a go!

But first….

Disease ID

- Pustules = yellow rust
- Picnidia = septoria
- Dead leaf = could be anything → SCORE GREEN LEAF AREA



Septoria

Yellow rust

Old yellow rust

Septoria + yellow rust + brown rust

Septoria picnidia + yellow rust telia

???

Assessment key (print out for their tables)

- ***Foliar disease assessment key***

- Examine top 4 leaves. If top leaf has been fully expanded for less than 14 days, refer to 2nd leaf as 'top leaf'.
- Ignore all naturally senescent leaf tissue.
- Include all chlorosis and necrosis attributable to disease.
- Record % infection; use interpolated values (e.g. 3%) if necessary.
- If foci present, record average over the plot as a whole.

Assessment key

1-9 scale	% Infection	MILDEW	YELLOW RUST	BROWN RUST
1	0		No infection observed	
2	0.1	3 pustules per tiller	1 stripes per tiller	25 pustules per tiller
3	1	5 pustules per leaf	2 stripes per leaf	100 pustules per leaf
4	5	2 lower leaves appear ¼ infected	Most tillers infected but some top leaves uninfected	Top leaf - numerous pustules but leaves appear green overall
5	10	2 lower leaves appear ½ infected	All leaves infected but leaves appear green overall	Top leaf - pustules sufficiently dense to give brown appearance in patches
6	25	Leaves appear ½ infected ½ green		
7	50	Leaves appear more infected than green		
8	75	Very little green leaf tissue left		
9	100	Leaves dead - no green tissue left		

Assessment key

1-9 scale	% Infection	SEPTORIA	RHYNCHOSPORIUM	NET BLOTCH
1	0		No infection observed	
2	0.1	1 lesion per 10 tiller	1 lesion per 10 tillers	1 small lesion per 10 tillers
3	1	2 small lesions per tiller	1 lesion per tiller	1 small lesion per tiller
4	5	Small lesions beginning to form areas of dead tissue across width of leaf	Discrete lesions on most tillers, about 2 per leaf	2 lower leaves appear ¼ infected. Other leaves - few lesions
5	10	2 lower leaves - large areas of diseased tissue some covering 1/3 of leaf	Lesions coalescing but leaves appear green overall	2 lower leaves appear ½ infected. Other leaves - numerous lesions
6	25	Leaves appear ½ infected ½ green		
7	50	Leaves appear more infected than green		
8	75	Very little green leaf tissue left		
9	100	Leaves dead - no green tissue left		

NIAB-TAG, Cambridge CB3 OLE

Variety 1

Variety 2

Variety 3

Variety 4

Variety 5

Variety 6

Variety 7

Variety 8

Variety 9

Variety 10

Variety 11

Variety 12

Variety 13

Variety 14

Variety 15

Variety 16

Variety 17

Variety 18

Variety 19

Variety 20

Variety 21

Variety 22

Variety 23

Variety 24

Variety 25

Variety 26

Variety 27

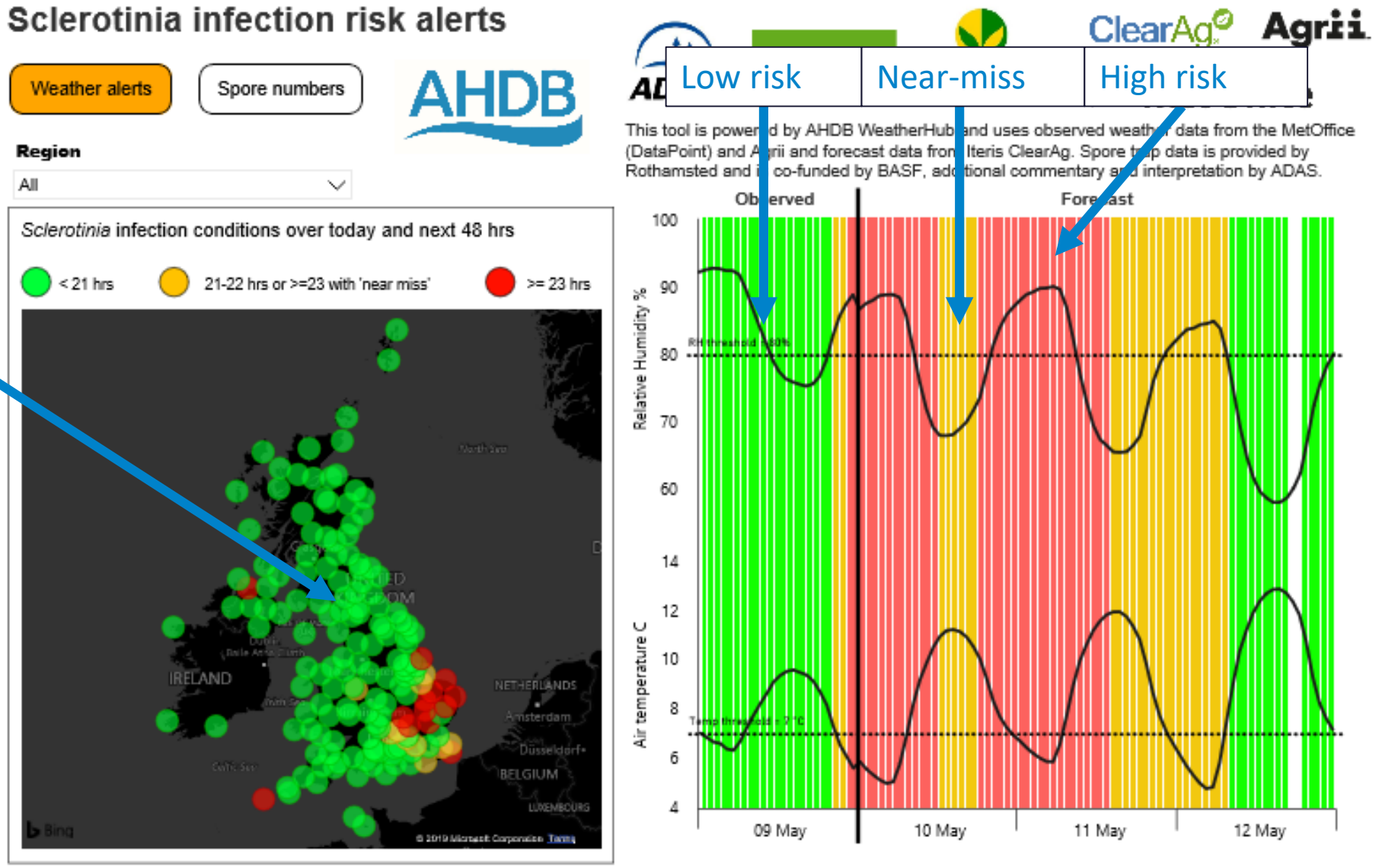
Sclerotinia forecasting

Risk period

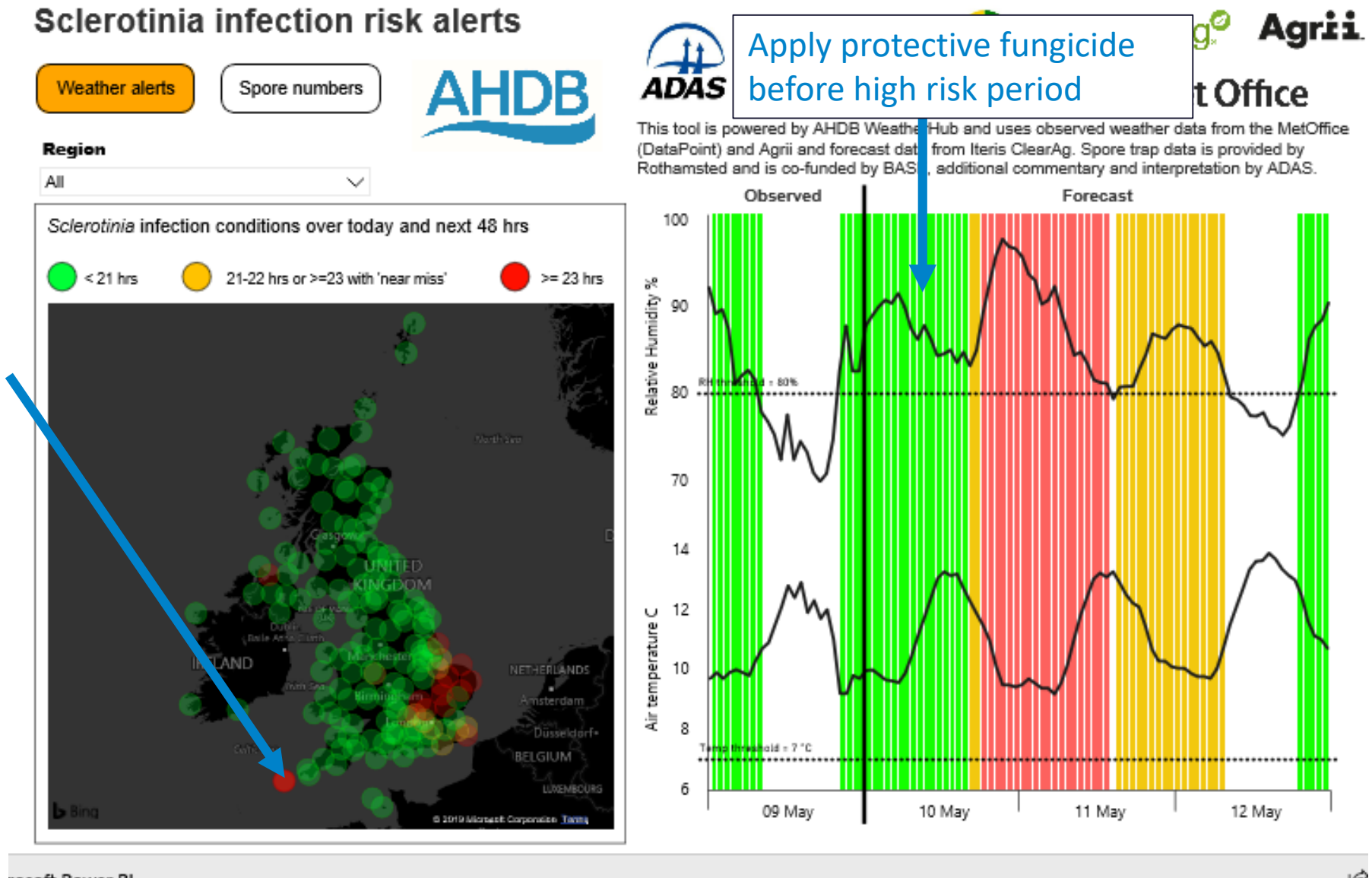
- Relative humidity >80% + air temperatures are at, or above, 7°C for more than 23 hours

Design for 2019 – weather-based forecast

~150 weather-based forecast locations



Design for 2019 – weather-based forecast



Apply protective fungicide before high risk period

Select location

Design for 2019 – spore trap data

Sclerotinia infection risk alerts

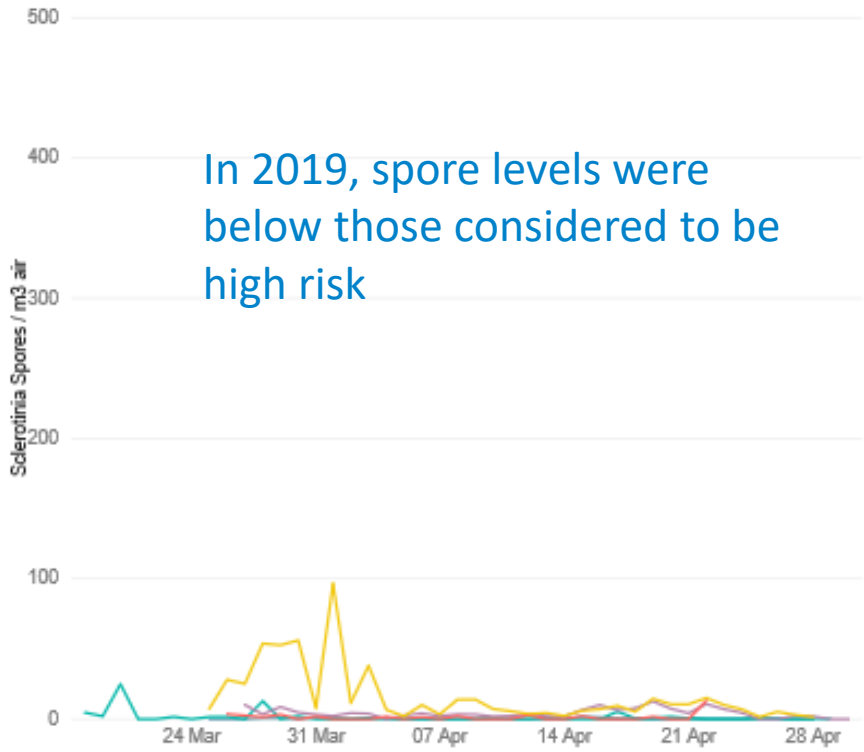
Weather alerts | Spore numbers

AHDB

ADAS | BASF | ROTHAMSTED RESEARCH | ClearAg | Agrii | Met Office

This tool is powered by AHDB WeatherHub and uses observed weather data from the MetOffice (DataPoint) and Agrii and forecast data from Iteris ClearAg. Spore trap data is provided by Rothamsted and is co-funded by BASF, additional commentary and interpretation by ADAS.

6 spore trap locations



In 2019, spore levels were below those considered to be high risk

osoft Power BI

Phoma forecasting

Phoma forecast

Benson, Oxfordshire

Site

Benson, Oxfordshire

Prediction date 2018/19

10/6/2018

current date

10/24/2018

Diff

-18

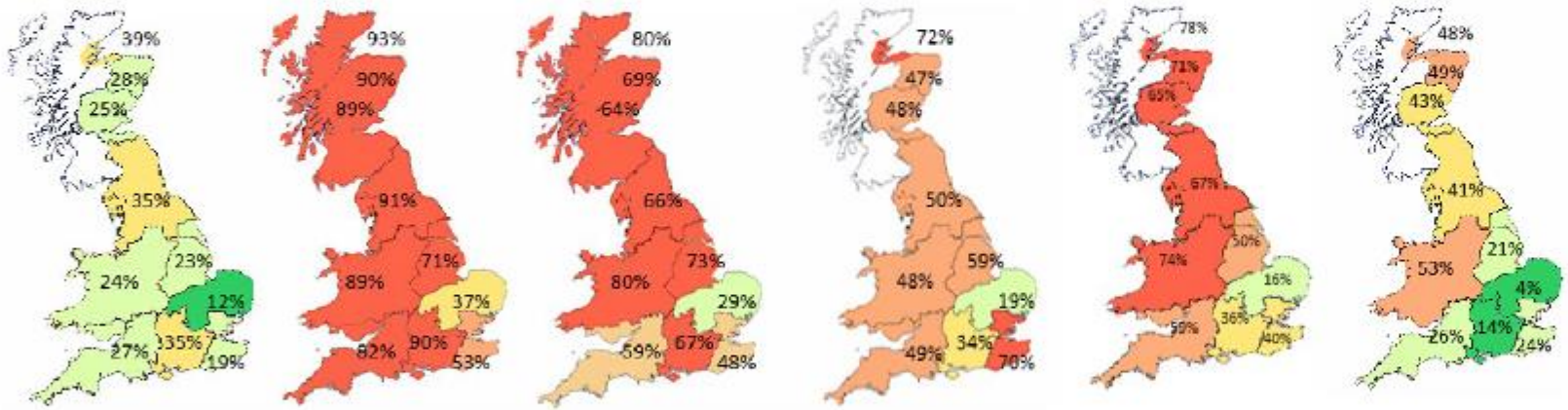
Tag

10% incidence predicted

Light leaf spot forecast

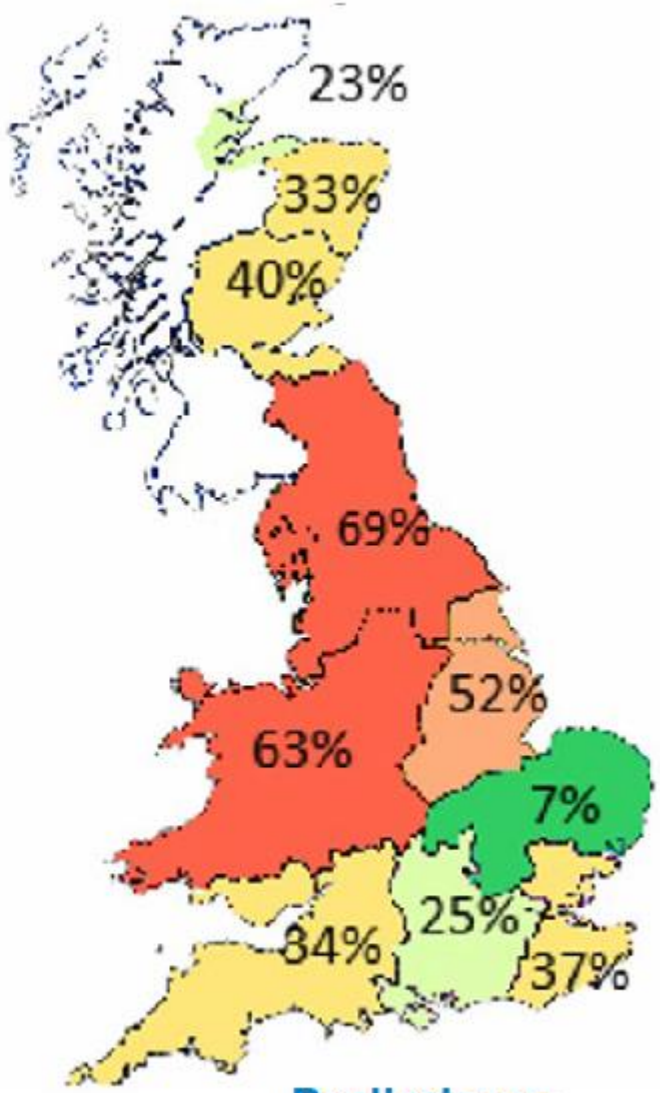
Light leaf spot forecast data

- Final forecasts (2013–19)
- Preliminary forecast (2019/20)



2013/14 2014/15 2015/16 2016/17 2017/18 2018/19

0–14 15–29 30–44 45–59 >60



Preliminary 2019/20

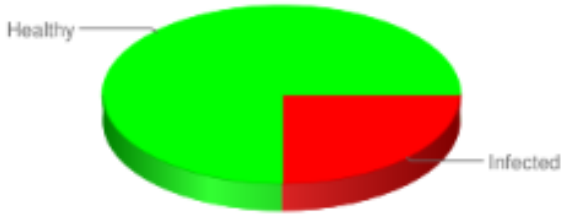
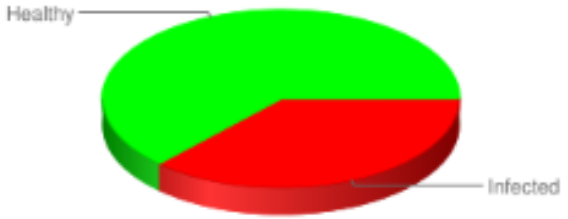
Light leaf spot forecast

Step 4 - Light Leaf Spot Forecast in Winter Oilseed Rape

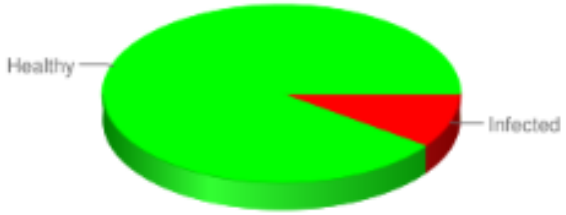
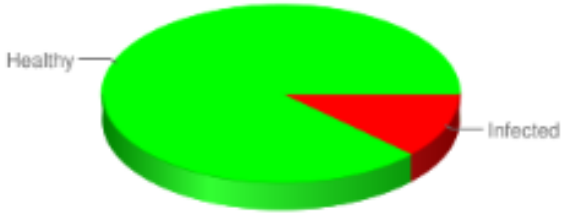
Customized forecast for a farm in Wales and the West of England

Cultivar	Barbados
Resistance Rating	7
Week Sown	21th August - 27th August

If no Autumn fungicide spray applied

Percent of Plants Infected.	Percent of Crops Infected.
	
About **25 %** of the plants will be infected.	About **37 %** of the crops will have more than 25% of plants affected by light leaf spot.

If Autumn fungicide spray was applied

Percent of Plants Infected.	Percent of Crops Infected.
	
About **10 %** of the plants will be infected.	About **12 %** of the crops will have more than 25% of plants affected by light leaf spot.

Thank you

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‘Inspiring our farmers, growers and industry to succeed in a rapidly changing world’

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