Monitoring the risk of sclerotinia infection in UK oilseed rape

Caroline Young, ADAS

AHDB CEREALS & OILSEEDS

ROTHAMSTED RESEARCH

VELCOURT

WARWICK THE UNIVERSITY OF WARWICK

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Introduction

- Sclerotinia outbreaks are difficult to predict
- A range of crops are susceptible
- Occasional major outbreaks with 50-80% loss
- 1-5% incidence every year in affected OSR crops; inoculum build up
- Variable duration of flowering in OSR
- Infection risk phase > 3 weeks
- Good forecasting allows timing of sprays, if needed: 1st and 2nd sprays
- Control currently relies on foliar fungicides

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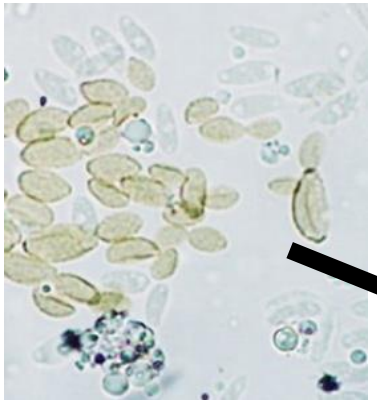
Sclerotinia infection in oilseed rape



Spores

Infection starts

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Stem lesion development

Sclerotia in stems

Apothecia

Forecasting sclerotinia in oilseed rape: risk factors and predictions

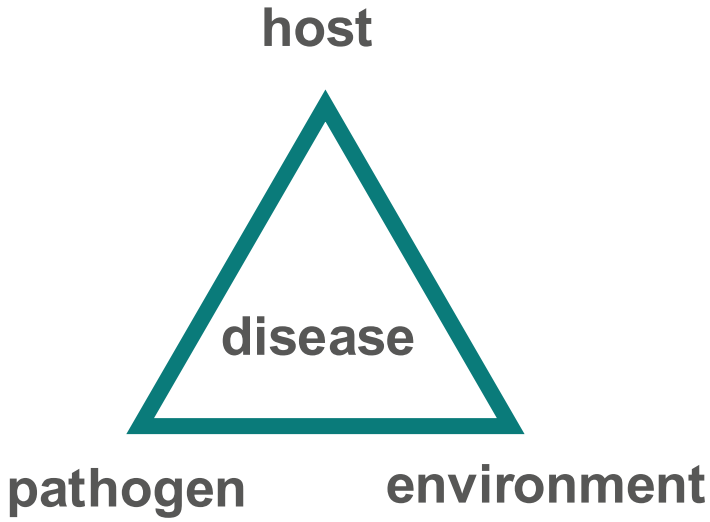
Risk factors

Crop flowering stage

Germinated sclerotia

*Spore inoculum levels: on petals or in air

*Current weather



Predictions

Date of sclerotial germination

*Forecast weather

Weather-based infection alert

- 23 continuous hours ≥ **7ºC** & RH ≥ **80%**
- Criteria based on: Koch *et al*, 2007.

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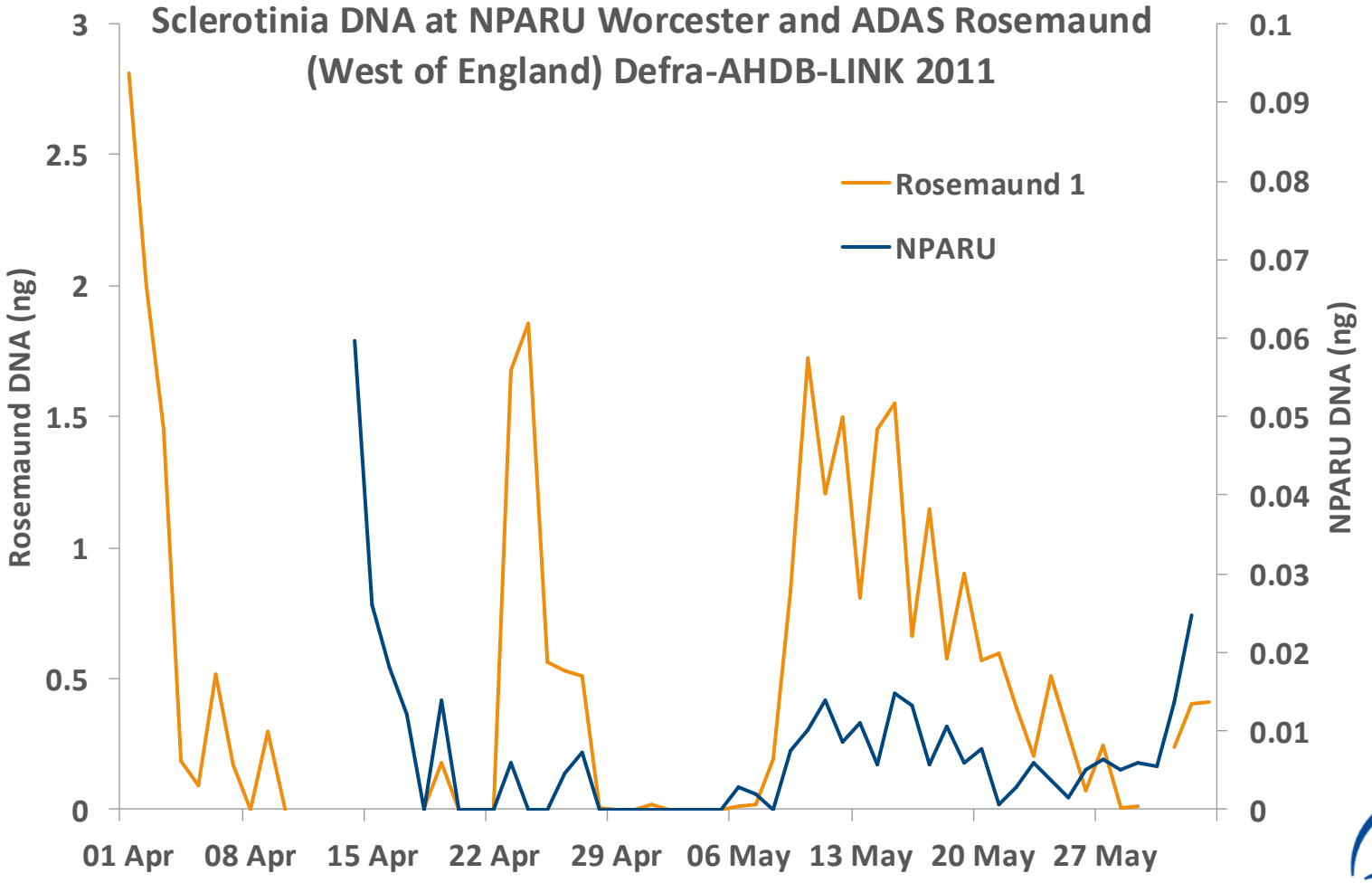
Inoculum: air sampler measurements, 2011



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Weather-based risk alerts, AHDB-ADAS 2019

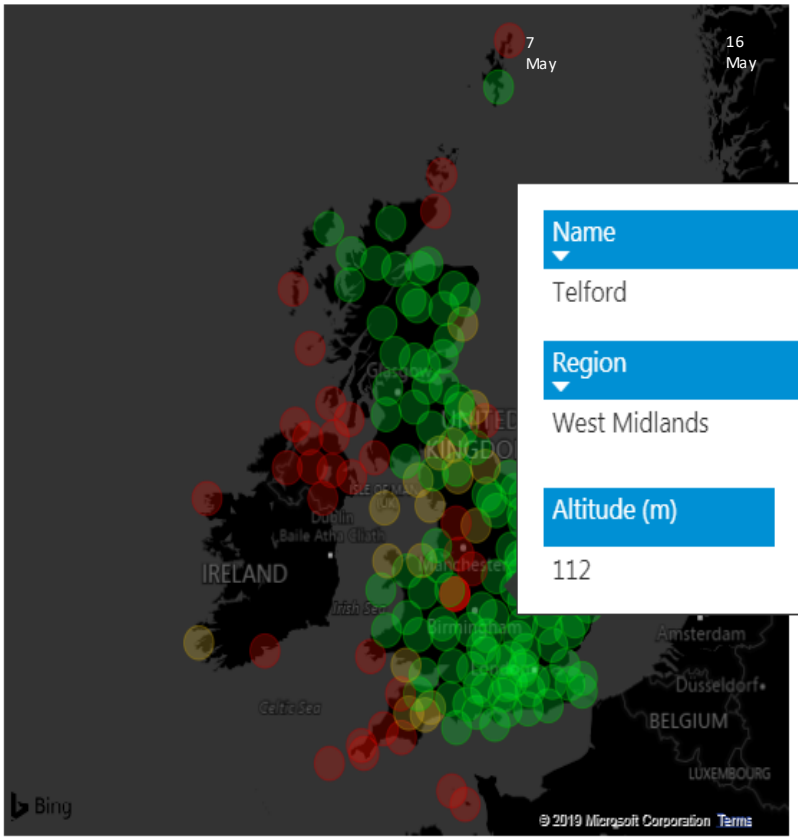
Sclerotinia infection risk alerts

Weather alerts | Spore numbers

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.

< 21 hrs | 21-22 hrs or >=23 with 'near miss' | >= 23 hrs

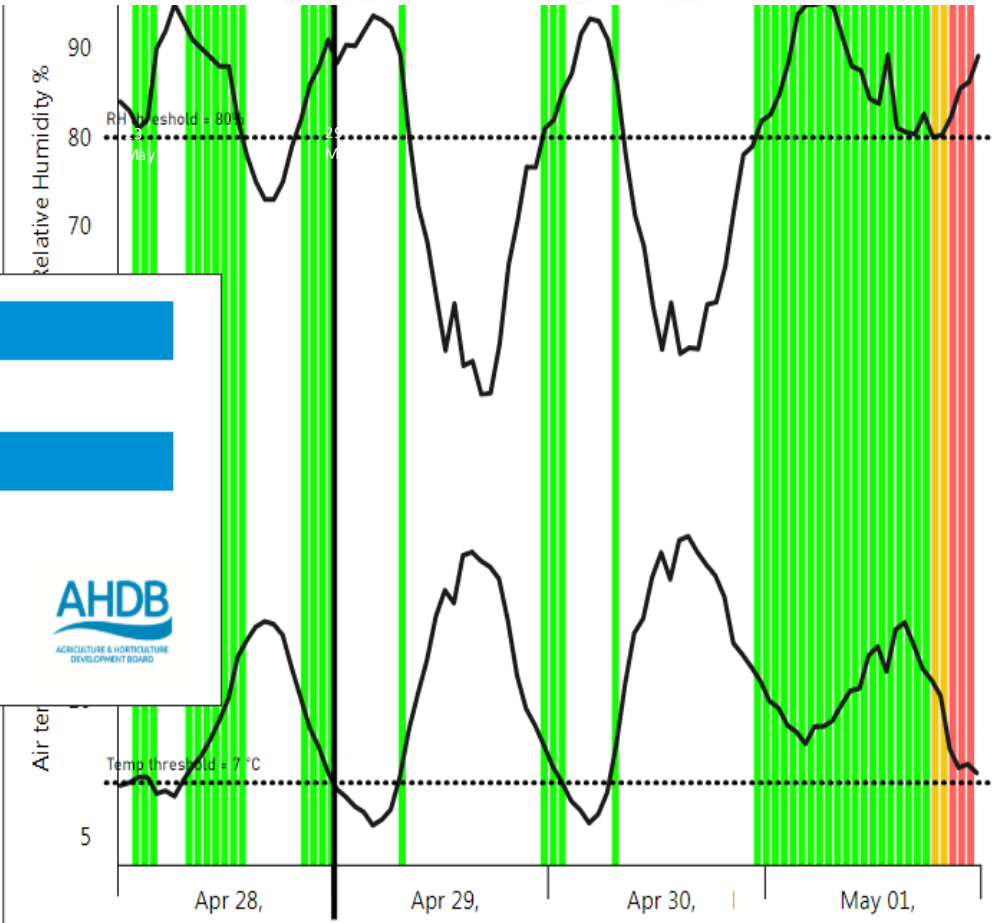


Name: Telford

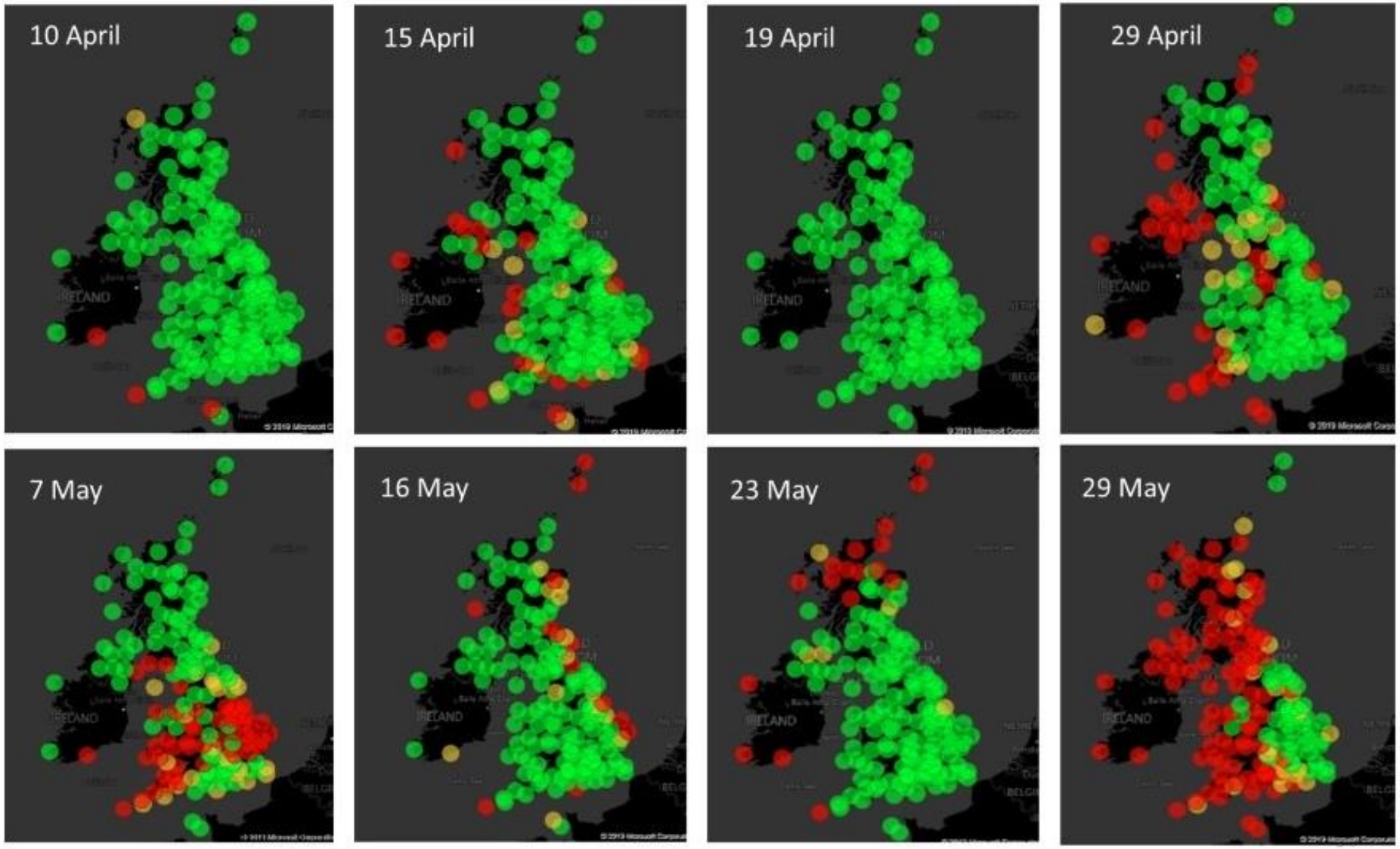
Region: West Midlands

Altitude (m): 112

AHDB



Weather-based risk alerts, AHDB-ADAS 2019



Weather-based risk alerts, AHDB-ADAS 2019

5 June 2019 spores

Sclerotinia infection risk alerts

Weather alerts | Spore numbers

AHDB

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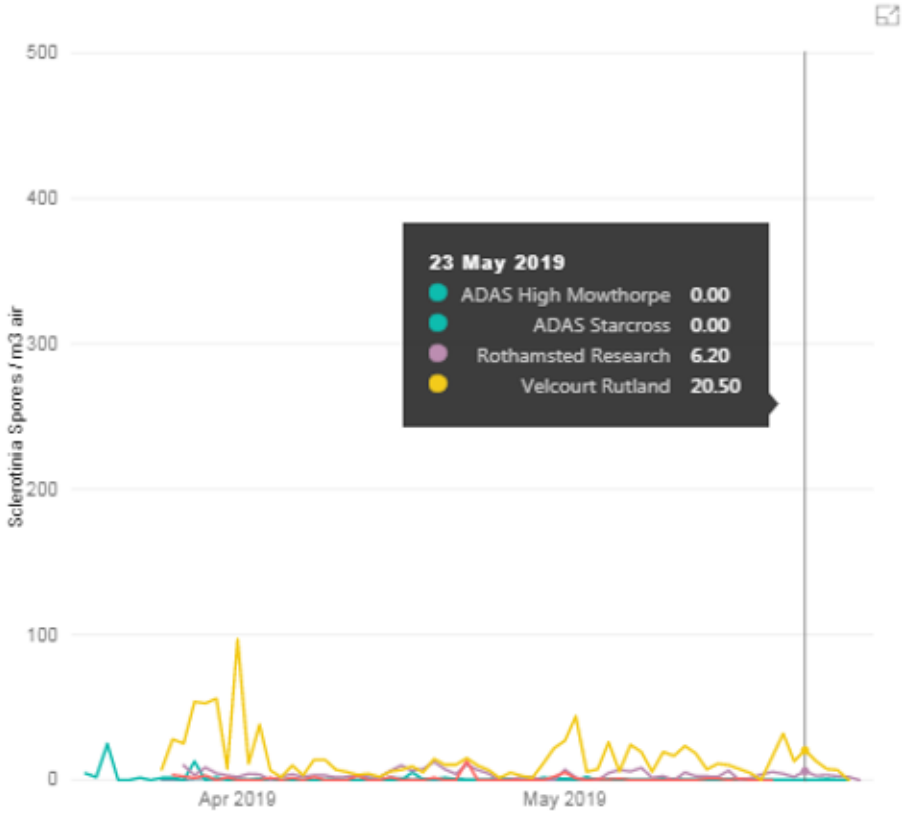

Potential spray saving with alerts, 2010-2018

Timing of fungicide treatment	% of Crops treated	Average sclerotinia incidence %
Untreated	-	8.4
Early-flower, all (23)	100	3.6
Inoculum alert (18)	78	3.4
Weather alert (18)	78	3.4
Inoculum AND weather alert (17)	74	3.6

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Key messages

- Risk alerts based on weather and inoculum reduced the number of unnecessary fungicide applications
- The alerts are risk averse:

  Zero inoculum = no infection

  Positive inoculum = infection, but variable levels

- Crops at very low risk were correctly predicted
- Risk alerts help with fungicide application timing: good control from fungicides applied on or before an alert

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Further work

- Continue predictions, risk monitoring and evaluation of benefits
- Develop automated in-field inoculum testing
- Modify scheme for other field crops & diseases
- Develop UK OSR varieties resistant to sclerotinia
- Promote integrated control strategies

Thank you

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ADAS:

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