Introduction to ramularia

Dr Neil Havis - SRUC

Ramularia collo-cygni

A brief introduction

Dr Neil Havis

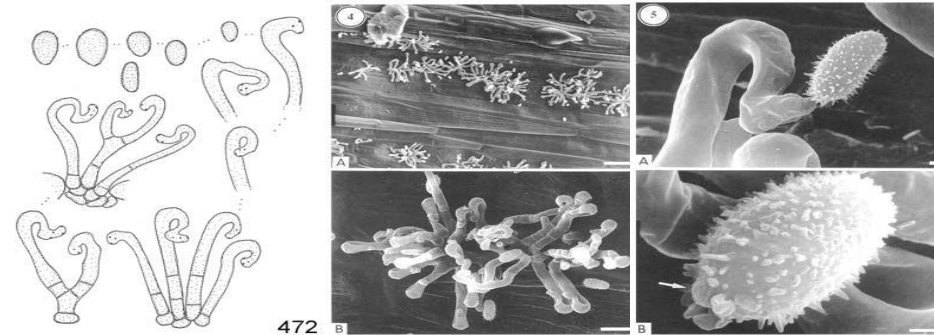*Leading the way in Agriculture and Rural Research, Education and Consulting*

Pathogen profile:

First described by Cavara in Northern Italy in 1893
Initially named as *Ophiocladium hordei*

Now classified as :

Kingdom - Fungi
Phylum - Ascomycota
Class - Dothideales
Order - Mycosphaerellacae
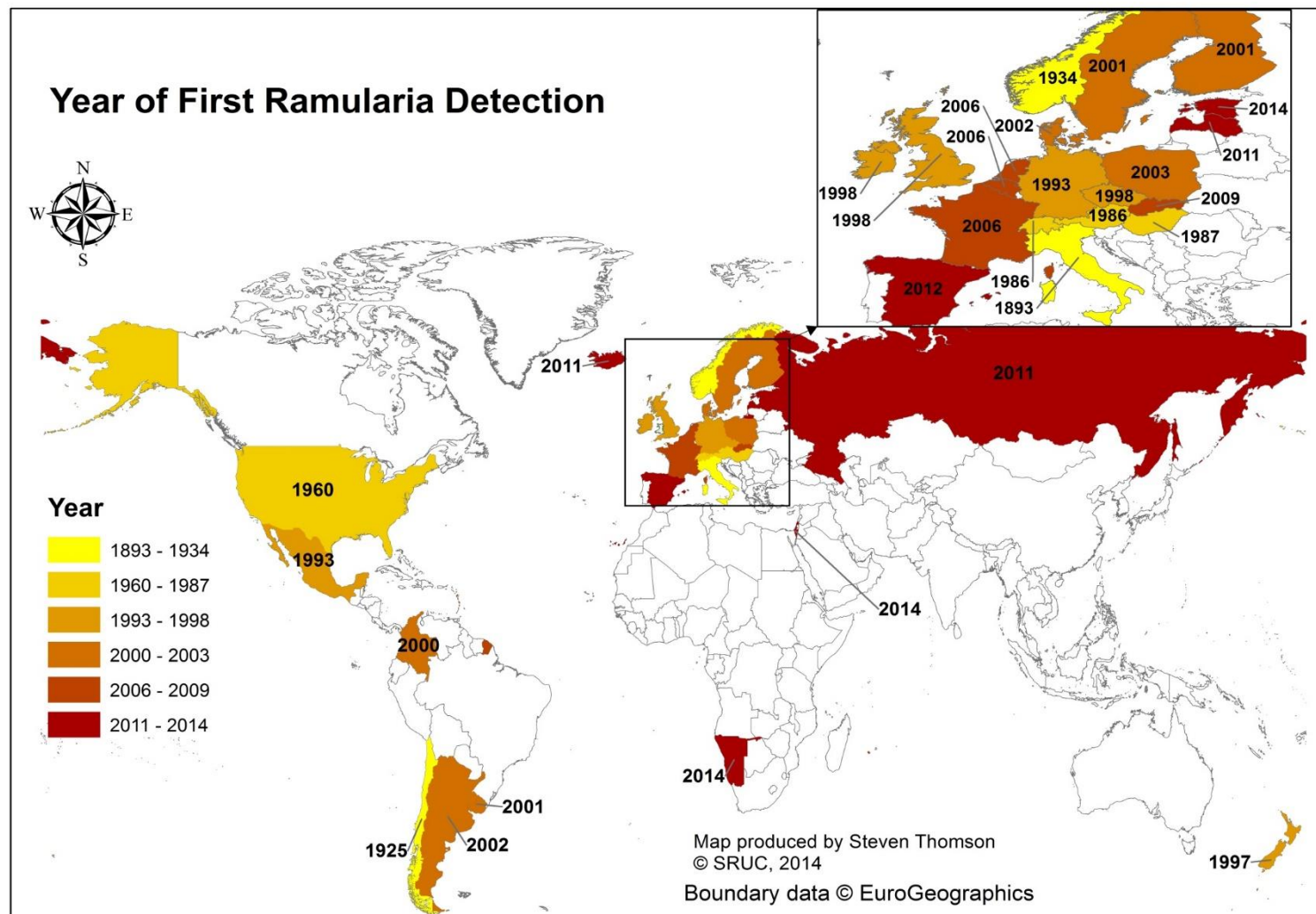Family - Ramularisphaerella
Genus - Ramularia
Species - collo-cygni
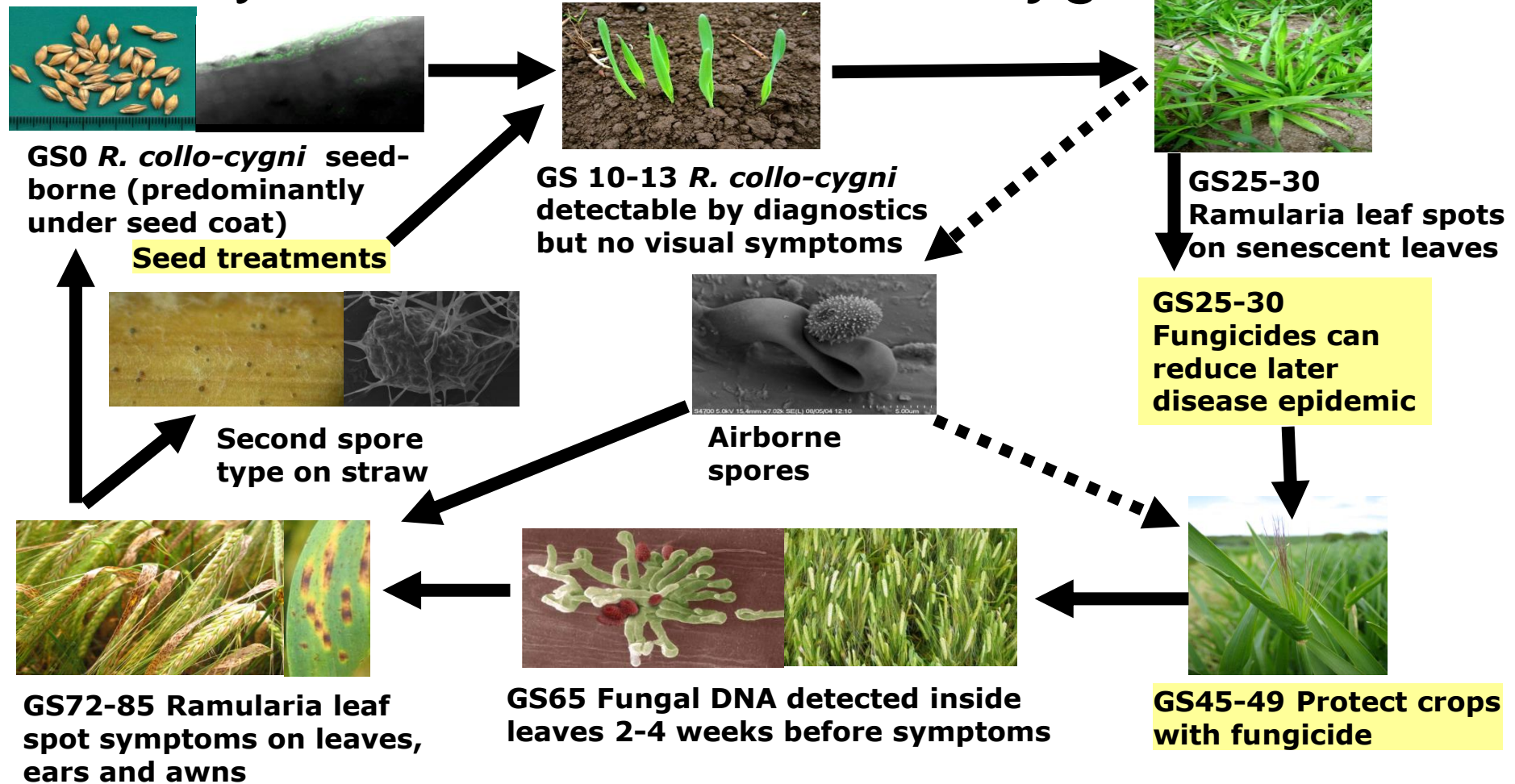
Ramularia leaf spot (RLS)

- RLS can be distinguished from other foliar symptoms by 5 rules

- <u>R</u>ectangular lesions
- <u>R</u>ing of chlorosis around the lesion
- Necrosis is <u>R</u>ight through the leaf
- <u>R</u>eddish/brown colouration of lesion
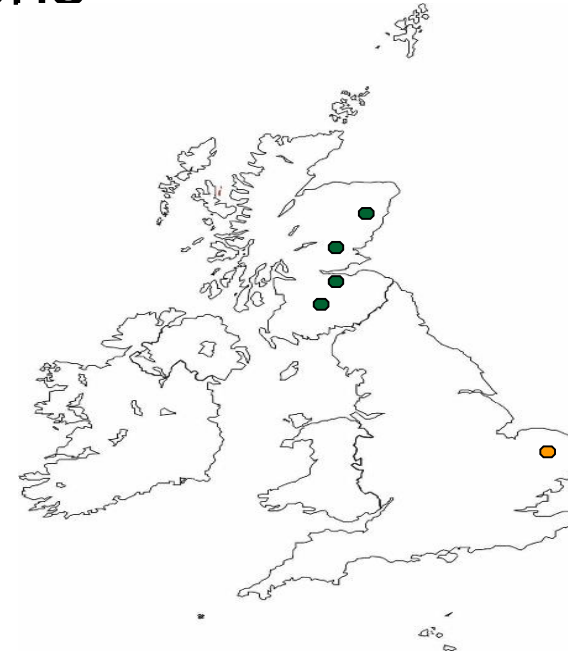- <u>R</u>estricted by leaf veins

- https://cereals.ahdb.org.uk/ramularia

- title text

Year of First Ramularia Detection

Map produced by Steven Thomson
© SRUC, 2014
Boundary data © EuroGeographics

Year
- 1893 - 1934
- 1960 - 1987
- 1993 - 1998
- 2000 - 2003
- 2006 - 2009
- 2011 - 2014

Life cycle of *Ramularia collo-cygni*

GS0 *R. collo-cygni* seed-borne (predominantly under seed coat)

Seed treatments

GS 10-13 *R. collo-cygni* detectable by diagnostics but no visual symptoms

GS25-30 Ramularia leaf spots on senescent leaves

GS25-30 Fungicides can reduce later disease epidemic

Second spore type on straw

Airborne spores

GS72-85 Ramularia leaf spot symptoms on leaves, ears and awns

GS65 Fungal DNA detected inside leaves 2-4 weeks before symptoms
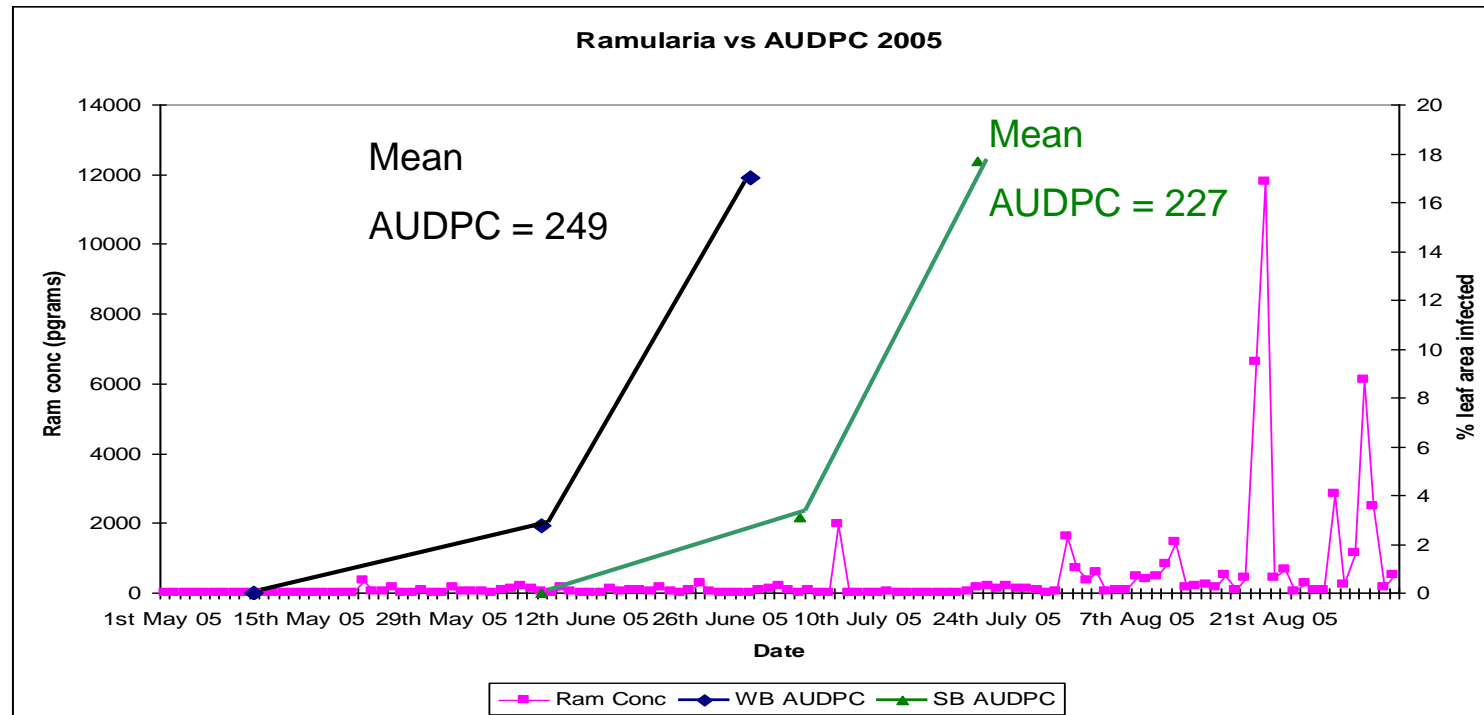
GS45-49 Protect crops with fungicide

Ramularia collo-cygni- spore monitoring

Spore samplers and weather stations

Monitoring RLS epidemic development

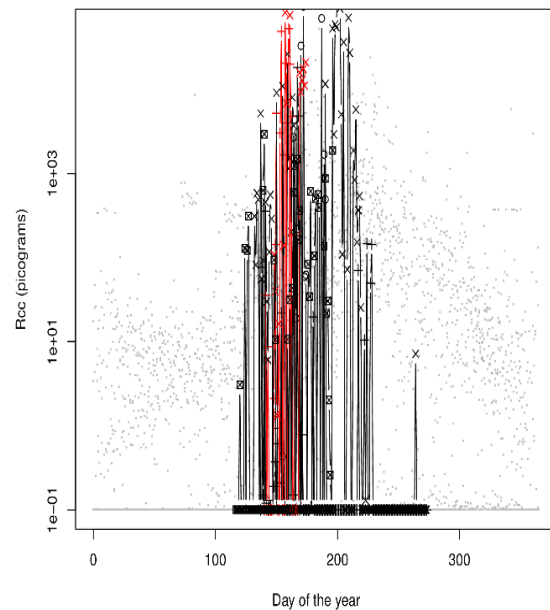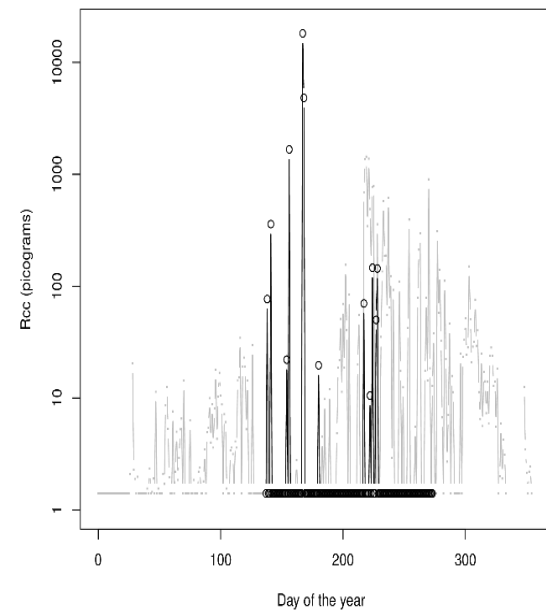Ramularia vs AUDPC 2005

Ramularia collo-cygni- a new major pathogen of barley
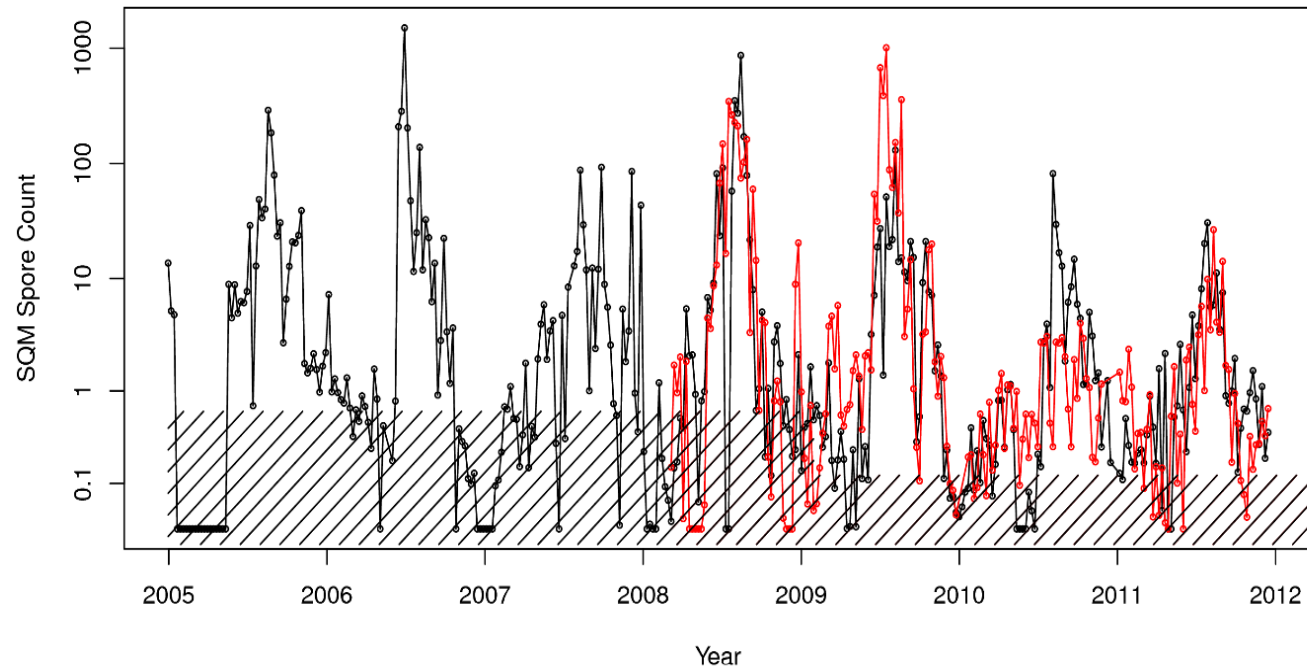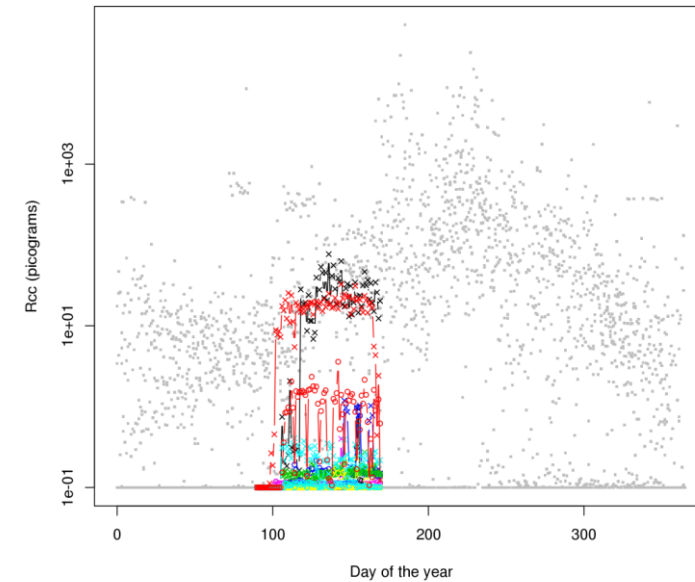
Ramularia epidemiology – spore patterns

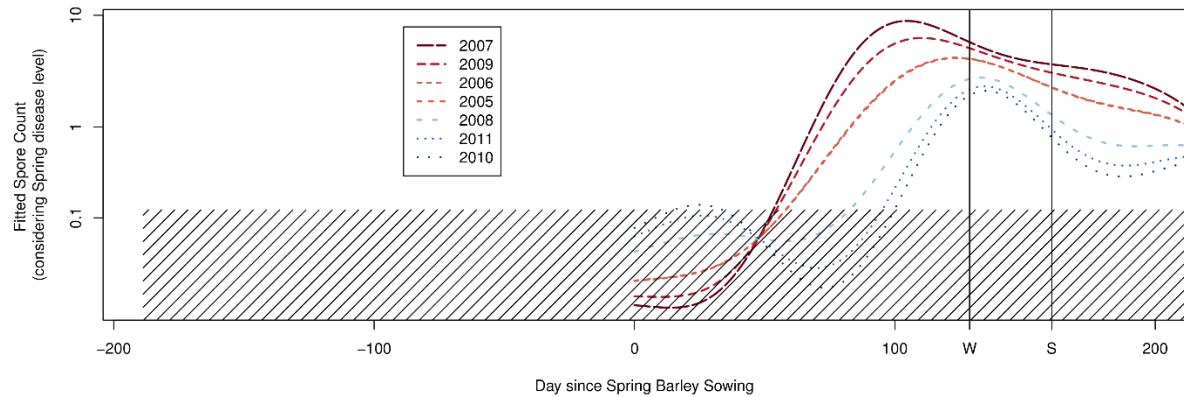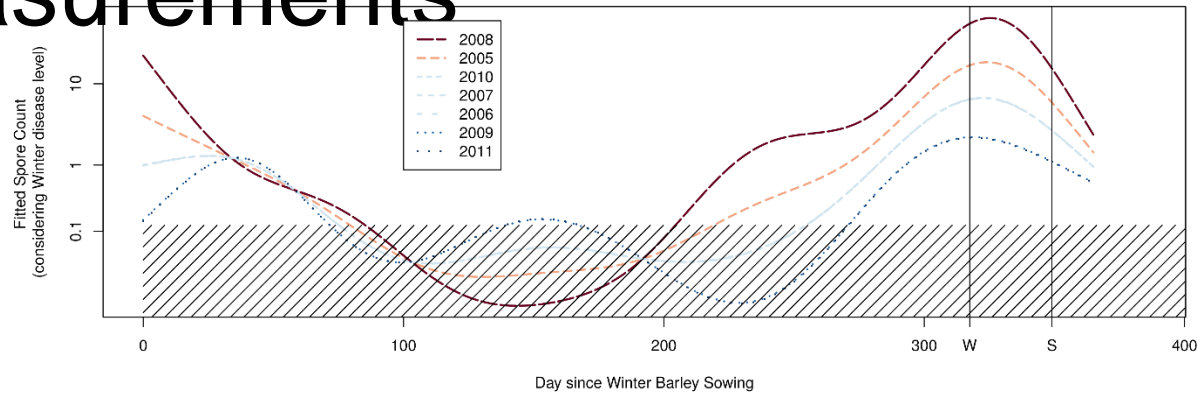Bavaria, all years   All sites 2010   Polish sites

Ramularia epidemiology-fitted curves for spore DNA measurements

Ramularia epidemiology

	BUSH	BUSH	BUSH	LANARK	LANARK	LANARK
	P-value (7 day median)	Coefficient (7 days abs max)	Maximum lag with significant effect	P-value (7 day median)	Coefficient (7 days abs max)	Maximum lag with significant effect
Wind Speed	0.000	-0.447	7	0.336	-0.224	1
Average Temperature	0.295	0.037	0	0.159	0.079	0
Solar Radiation	0.038	-0.403	5	0.167	-0.391	0
Surface Wetness	0.009	0.009	5	0.009	0.012	7
Rainfall	0.050	0.076	6	0.000	0.180	10

Leading the way in Agriculture and Rural Research, Education and Consulting