

Potato late blight research: Impacting on science, the economy and the environment



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SEFARI 

The SEFARI logo icon consists of a central point with several short, radiating lines of varying lengths, resembling a sunburst or a stylized star.

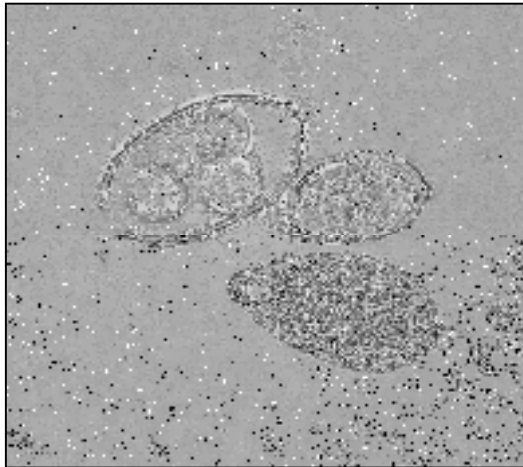
Potato Crops

- One of the most ‘important’ food crops both globally and in Scotland
- 2016:
 - 27 500 hectares plants
 - Across 2 600 farms
 - 12 700 hectares of seed
 - 14 800 hectares of ware
 - A value of £209 million



Potato Late Blight

- Late blight is caused by an oomycete pathogen called *Phytophthora infestans*
- 99% of fungicides used on potatoes in Scotland are for the treatment of potato late blight

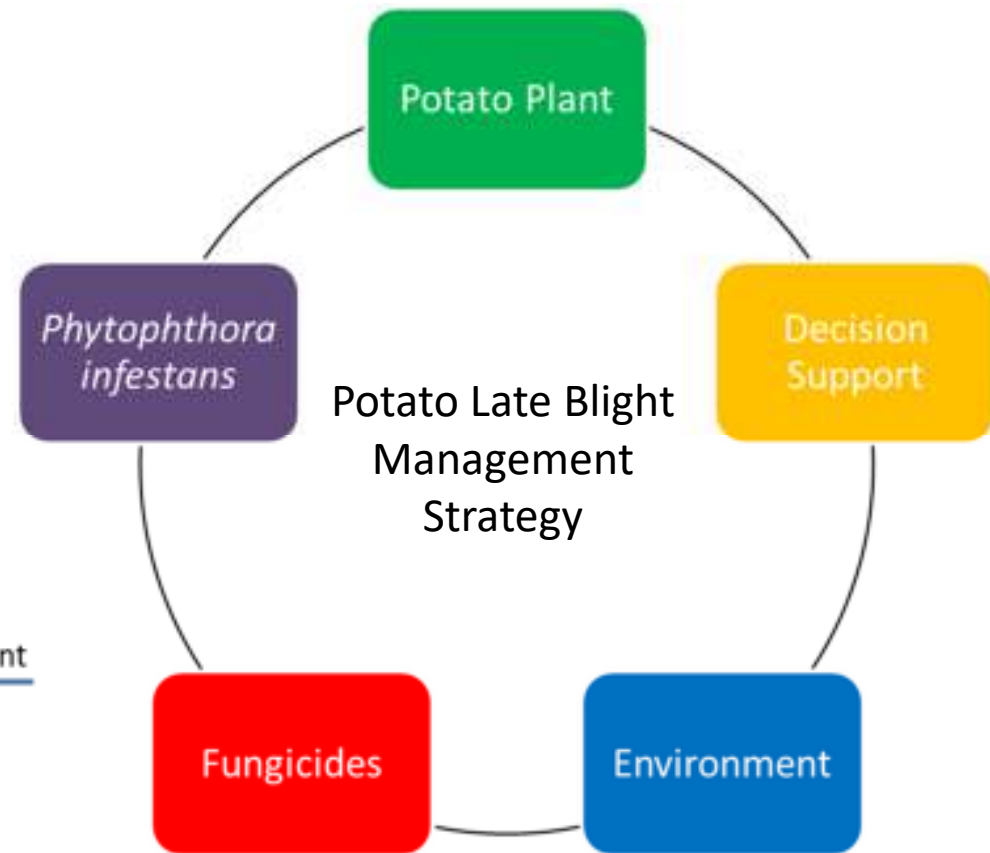


Integrated Pest Management



- WP 2.1 late blight research is undertaken under IPM to directly inform practice
- Impacts seen with:

- i** Population monitoring: genotypic and phenotypic analysis
- ii** Decision support tools for identifying risk
- iii** Fungicide guidelines and development
- iv** The future of blight management



Potato Late Blight



Allows for:

1. Quantification of the infection parameters
2. Investigation of resistance in potato varieties
3. Effectiveness of fungicide treatments
4. Networking with European and international bodies

The logo for "FIGHT AGAINST BLIGHT", featuring a small square icon with a leaf and the text "FIGHT AGAINST BLIGHT" in a bold, black, sans-serif font.

The logo for "Blightwatch", with "Blight" in orange and "watch" in green, followed by a green leaf icon.

The logo for "syngenta", with "syngenta" in a blue, lowercase, sans-serif font and a green leaf icon above the 'a'.

The logo for "AHDB POTATOES", with "AHDB" in large green letters and "POTATOES" in smaller green letters below it, with a green wave graphic.

The logo for "EuroBlight", featuring a globe icon with a potato leaf and the text "EuroBlight" and "A potato late blight network for Europe" below it.



The logo for "Innovate UK", with "Innovate UK" in a purple, sans-serif font.

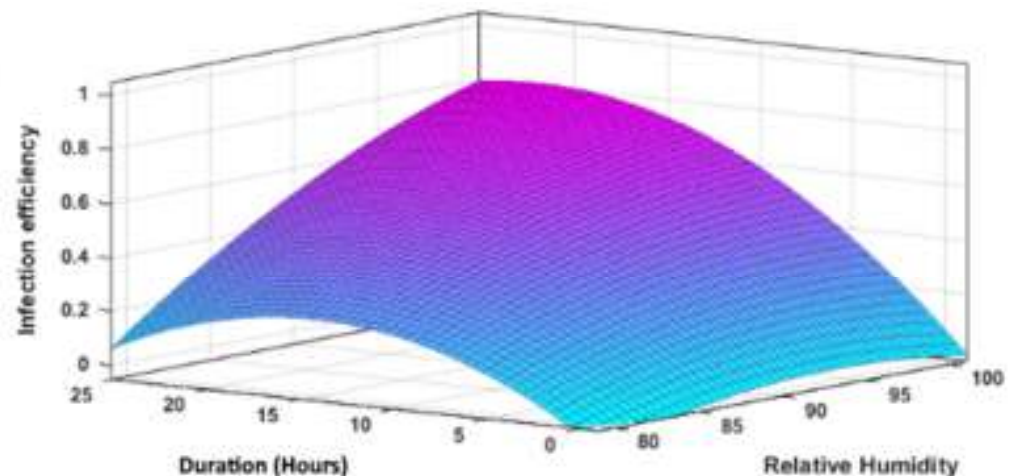
The logo for "soilessentials", with "soilessentials" in a green, lowercase, sans-serif font and "precision farming solutions" below it, with a green wave graphic.



Potato Late Blight



- Temperature, relative humidity and duration of exposure are key factors for identifying risk of infection from sporangia
- Smith Period – risk criteria defined in the 1950s
- Modelling work from 2011 – 2016 to investigate risk criteria
 - Contemporary genotypes
 - Large historic data set of outbreaks
 - Modern analysis techniques



Hutton Criteria

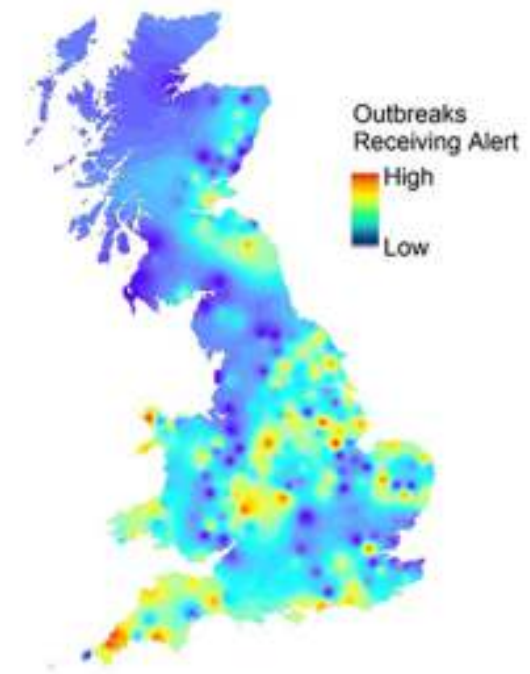
- Hutton Criteria were launched in 2017
- Performed significantly better as indicators of risk prior to the reported outbreaks
- Performed more uniformly across Great Britain



Smith Period:



Hutton Criteria:



Hutton Criteria



- Launched for the 2017 growing season
- Blightwatch is AHDB and levy payer funded
- ~17 000 subscribers in Great Britain in 2017
- >100 000 views in 2017



Hutton Criteria



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New risk criteria helps transform potato late blight alert systems

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Potato Agronomy – Criteria for blight evolution

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New criteria to replace Smith periods in potato blight forecasting

8 December 2016 by [Gavin McFerson](#)

Arable • Amenity • Plantsystems • Fruit

Technical News...

Hutton Criteria - A positive development

08/05/2017

Part article taken from The Vegetable Farmer, & in its May issue, The Vegetable Farmer spoke to...

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Potato growers to benefit from new blight forecasts

Tuesday 13 December 2016 12:11

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New weapon in the fight against late potato blight

The James Hutton Institute has developed a new system of blight reporting. Picture: Robert Blackburn/InVivoWeek

By **ANDREW ARBUCKLE**

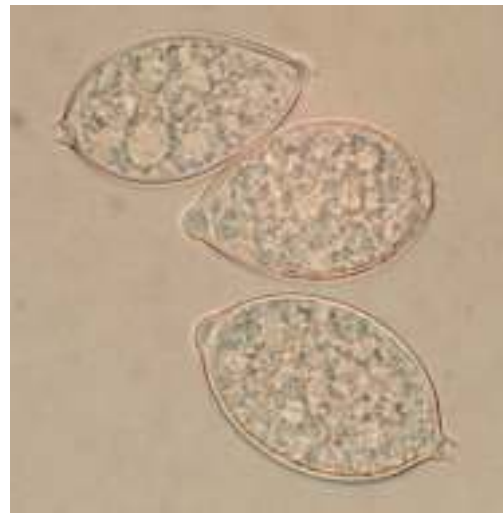
Published: 08:32
Updated: 08:37
Friday 24 March 2017

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Precision Agriculture



- Weather based forecasting assumes the presence of inoculum
- In-field spore detection can inform management decisions



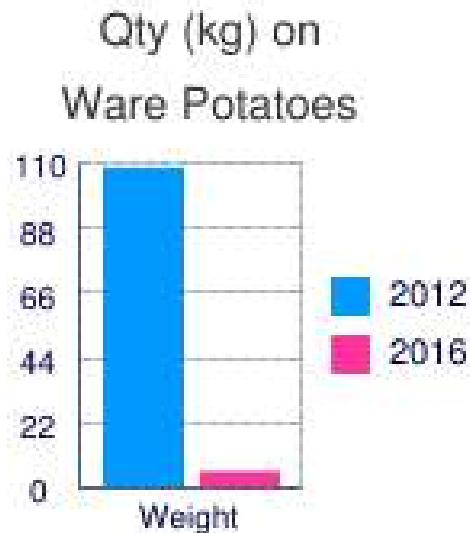
Innovate UK

Changes to Fungicide Use



- Phenotypic and genotypic analysis has allowed for identification of reduced sensitivity to key blight fungicides
- Allows for rapid changes to blight management programs
- Incorporated into FRAG guidelines for 2018

Ex. 1: Metalaxyl-M use in Scotland



Ex. 2: Fluazinam



Fungicide use Reception



Farmers Guide

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FC Welcome to FARMERS GUIDE Home May 25, 2018

What to do if you want to use less



cpm

Web Exclusive

Blight options to break EU-37 resistance

syngenta.
United Kingdom

PRODUCT UPDATE 17.07.2017 East West North South



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How fungicide data is helping to combat new potato blight strain

Adam Clarke
30 April 2018

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Acute Crop management



Blight actives feel the strain



Late blight pressure and a flurry of indication that new blight strain 27

By Lucy de la Pastora

For the first time, blight genotyping has been

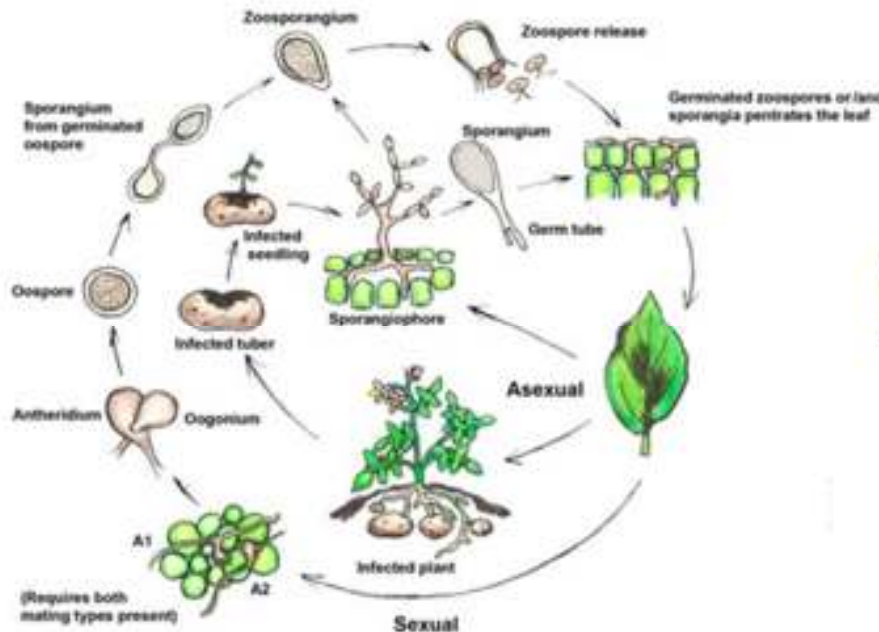
Fungicide Resistance Management in Potato Late Blight



New Fungicide Development



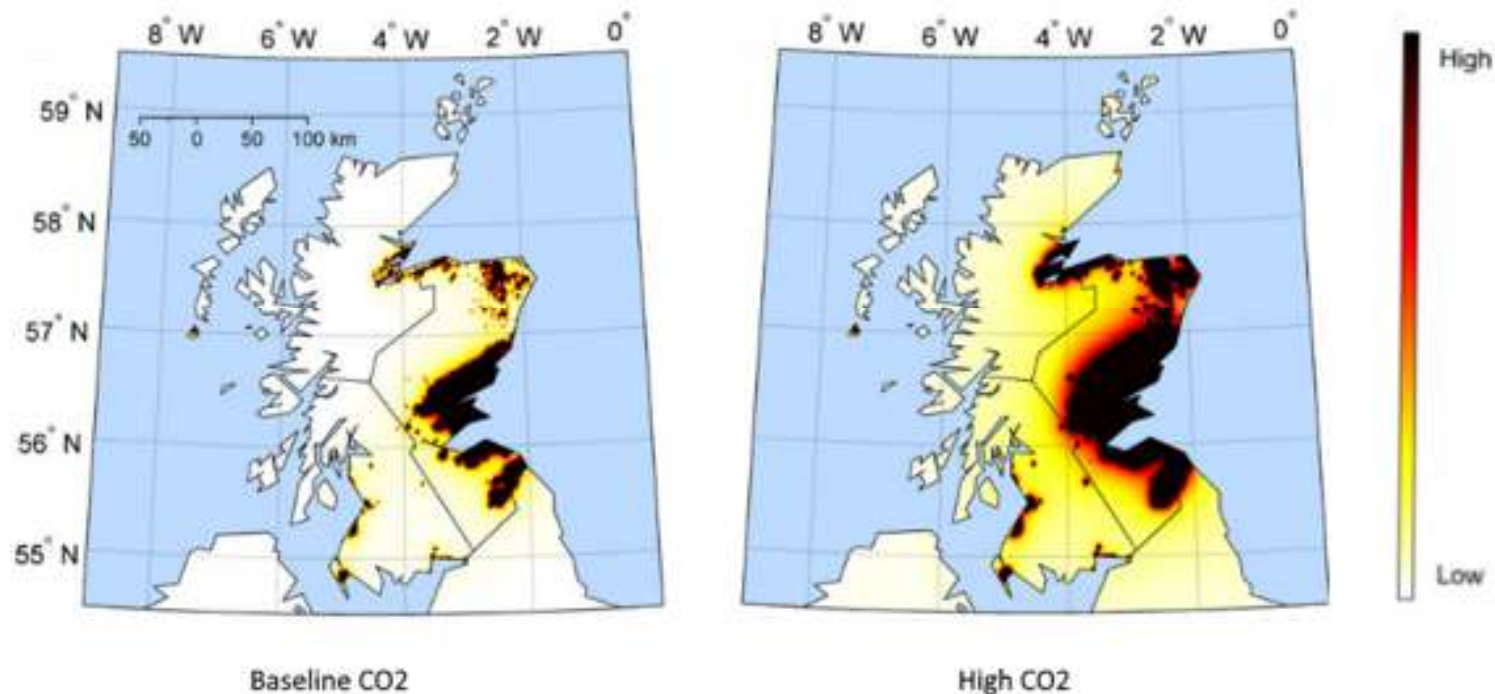
- Targeted based screening for new agrochemicals
- Based on genomics and pathogen biology
- Working with large agrochemical companies, one of which is Syngenta



Climate Change

- A base to future climate change modelling and understanding how risk will change in the future
- Work has already occurred to determine the spatial distribution of the pathogen and viability of the pathogen

Spatial distribution of *Phytophthora infestans* sporangia in 2080 using two different CO₂ scenarios:



Communication



- Dissemination of findings and communication with growers and other researchers is key
- Agronomists conferences, potatoes in practice, Euroblight



Collaborative projects working with growers and industry to provide tools and advice for growers for today and tomorrow.