Influence of Recent Climate Change on Late Blight Risk in the UK

Howard Hinds
Crop Consultancy
Background

- Practical evidence of climate change in last 10 years – winter snowfall rare, spring flowers earlier, lawns need cutting all year
- UK summers predicted to become warmer and drier
- Recent summers however appear wetter and cooler, due to southerly jet streams.
- Extreme weather events more common, eg widespread floods June-July 2007
- Blight control more challenging, emergence of A2 Blue 13 strain
- Increased fungicide use, even with DSS use
- Perception of increased risk
New potato growing regions in Northern Europe
Climate change results in shift of growing regions up to 2050

- Potato growing marginalises
- Potato growing more difficult
- Conditions for growing are good
- New potato growing regions

Around med. Sea potato growing marginalises because of water shortages.
Eastern Europe will become too dry.
NW Europe remains possible but with MORE RISKS.
Potato growing in Northern Europe increase.
The Questions

What effect is recent climate change having on late blight risk in the UK?

Is it decreasing, increasing or staying the same?

What is the effect on fungicide use?
To answer

- Review climatic data – synoptic and local data
- Review late blight risk – DSS output
- Review fungicide use
Review of weather data
Temperature in last 1000 yrs – The Hockey Stick

Reconstructed Temperature

- Medieval Warm Period

Temperature Anomaly (°C)

Little Ice Age

1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000

2004 *
Recorded Temperature
In last 100 years
Average temperature and total rainfall in England and Wales: 1845-2006

Rainfall, millimetres (mm), difference from the 1845-1974 mean

Temperature celsius (°C), difference from the 1845-1974 mean

Warmer & Drier

SUMMER (Jun-Aug)

Centre for Ecology and Hydrology (Wallingford), Met Office

1845-1974
1975-2006
Seasonal precipitation, high summer and winter: 1874-2005

England and Wales

Percentage change from 1961 - 1990 average

Summer (July - August)
Winter (December - March)

Source: Hadley Centre

Data shown has been smoothed
UK regional rainfall 2002-08 April-Oct

Rainfall mm

UK Average

East Midlands
South West
East Anglia
North East
Review of blight risk

- Smith Period (1956) – when temperature is above 10ºC and relative humidity is above 90% for 11 hours on 2 consecutive days
- Smith Day (Blightwatch 2003) as above but for 1 day
- Plant-Plus (since 1998 in the UK) – based on disease lifecycle parameters of infection, growth, sporulation and dispersal
South West Late Blight Risk Plant-Plus model 2004-08
Conclusions & Answers

- Risk in East Midlands in last 80 years—about the same (need to review more regions, and April/September data)
- Recent risk in last 10 years—increasing, more evident in South West
- Fungicide use also increasing in last 10 years
The Future

- Late Blight risk in UK (North West Europe) continues to increase?
- More unpredictable weather?
- Less opportunities for saving fungicides?
- New roles for DSS’s – barometers of change and tools for management of change
Acknowledgements

- Huub Schepers (WUR)
- Morray Taylor (CSL)
- Dacom
- Bayer Crop Science

Thanks for your attention.