

The potato blight population in Northern Ireland in 2012: ongoing changes and fungicide performance

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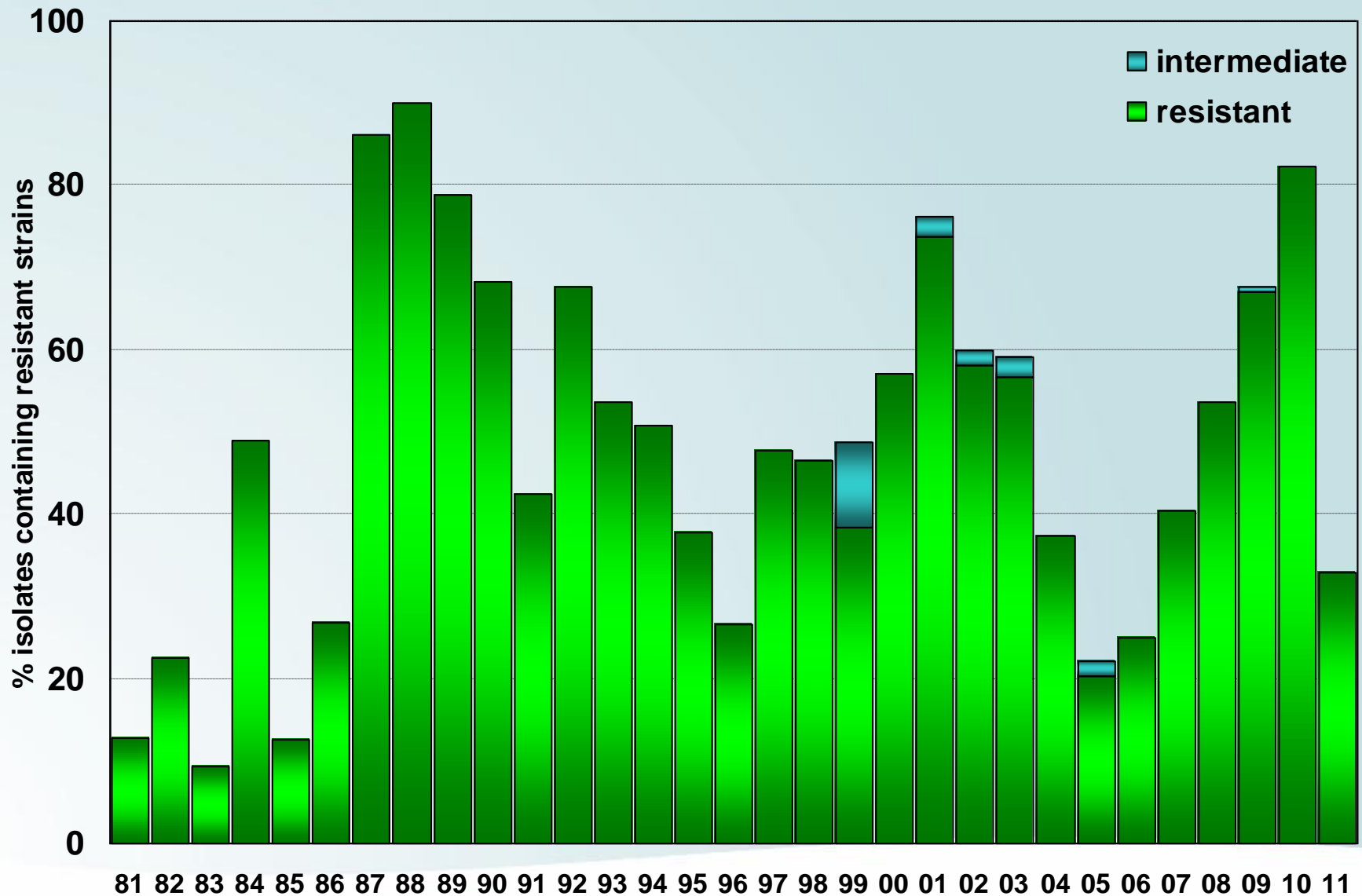
Agri-Food and Biosciences Institute

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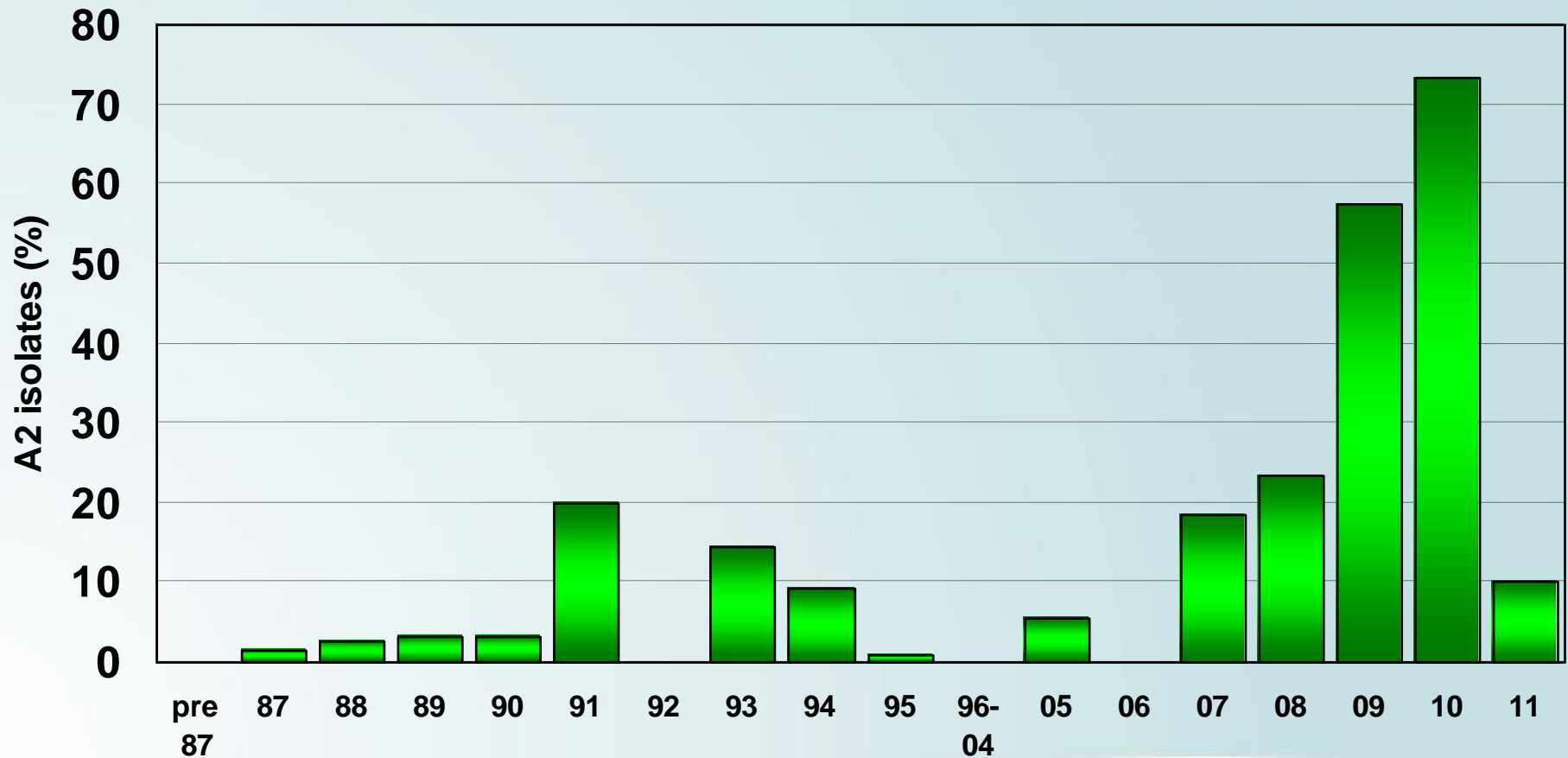
*The proportion of Northern Ireland *Phytophthora infestans* isolates containing phenylamide-resistant strains, 1981-2011*



Phytophthora infestans 2011

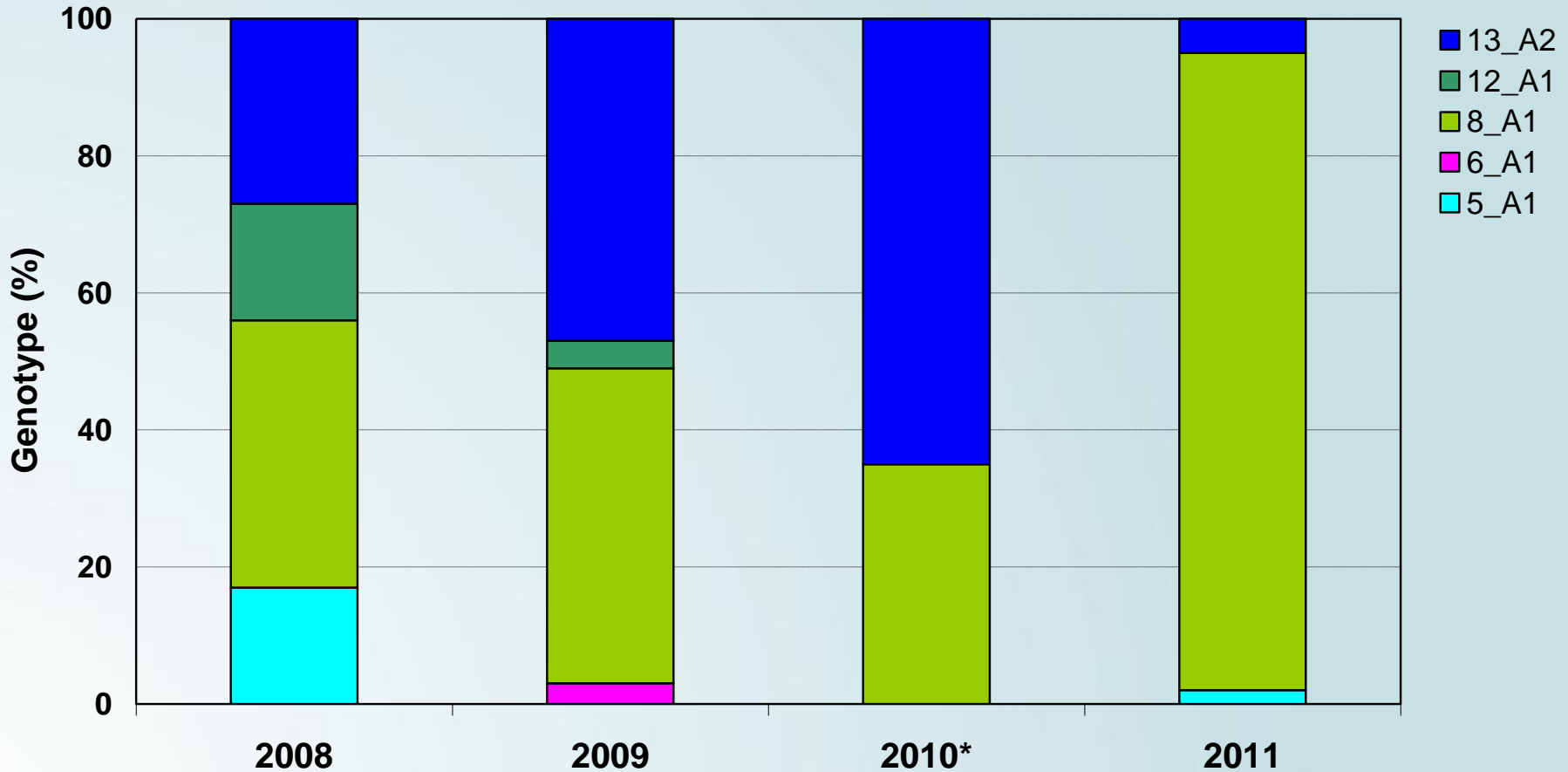
Northern Ireland

- *Mating type*



Phytophthora infestans genotyping

Genotypes of Northern Ireland *Phytophthora infestans* isolates, 2008-2011

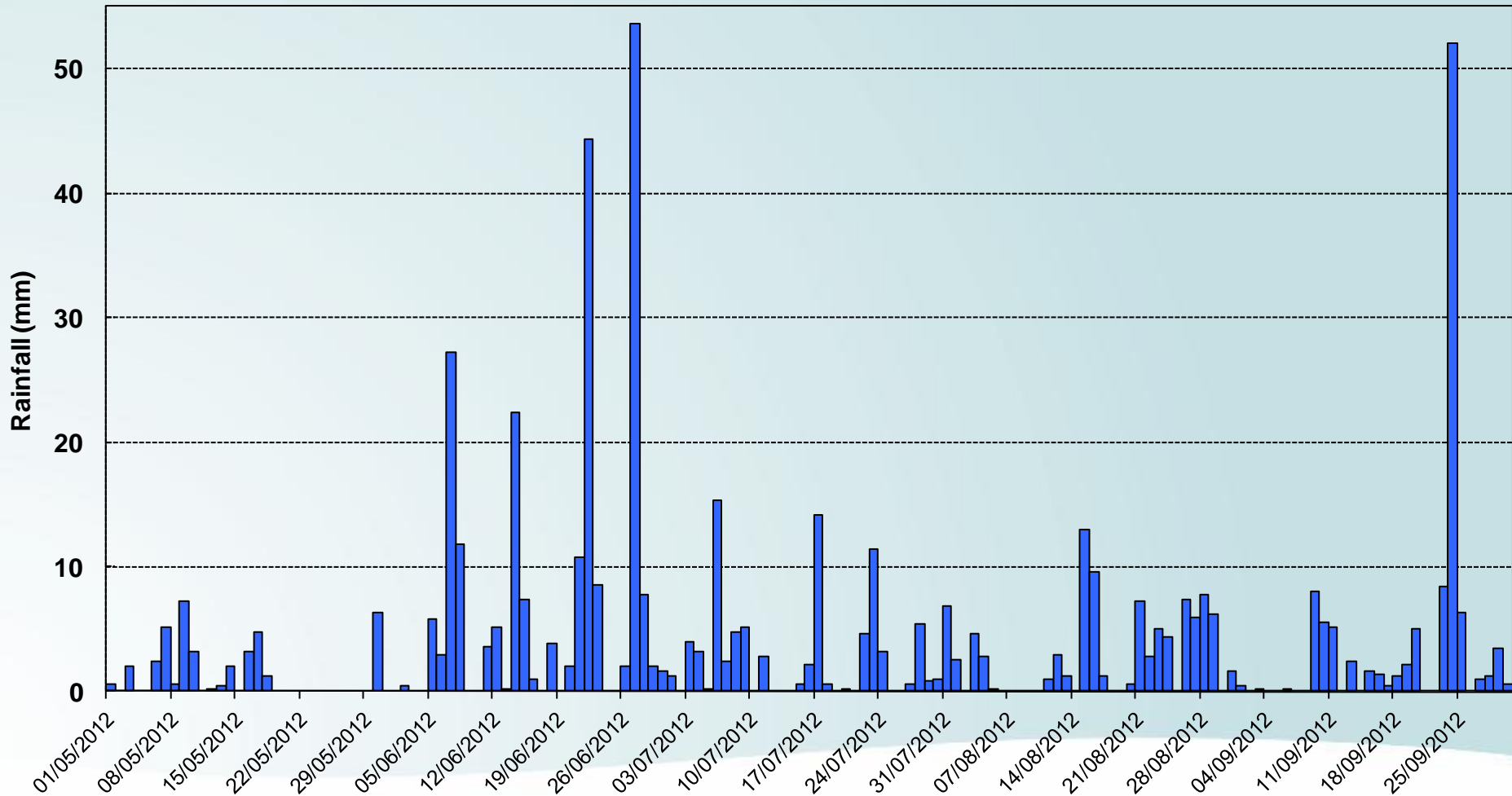


* based on a small sample of 17 isolates

2012

- *A very wet season!*

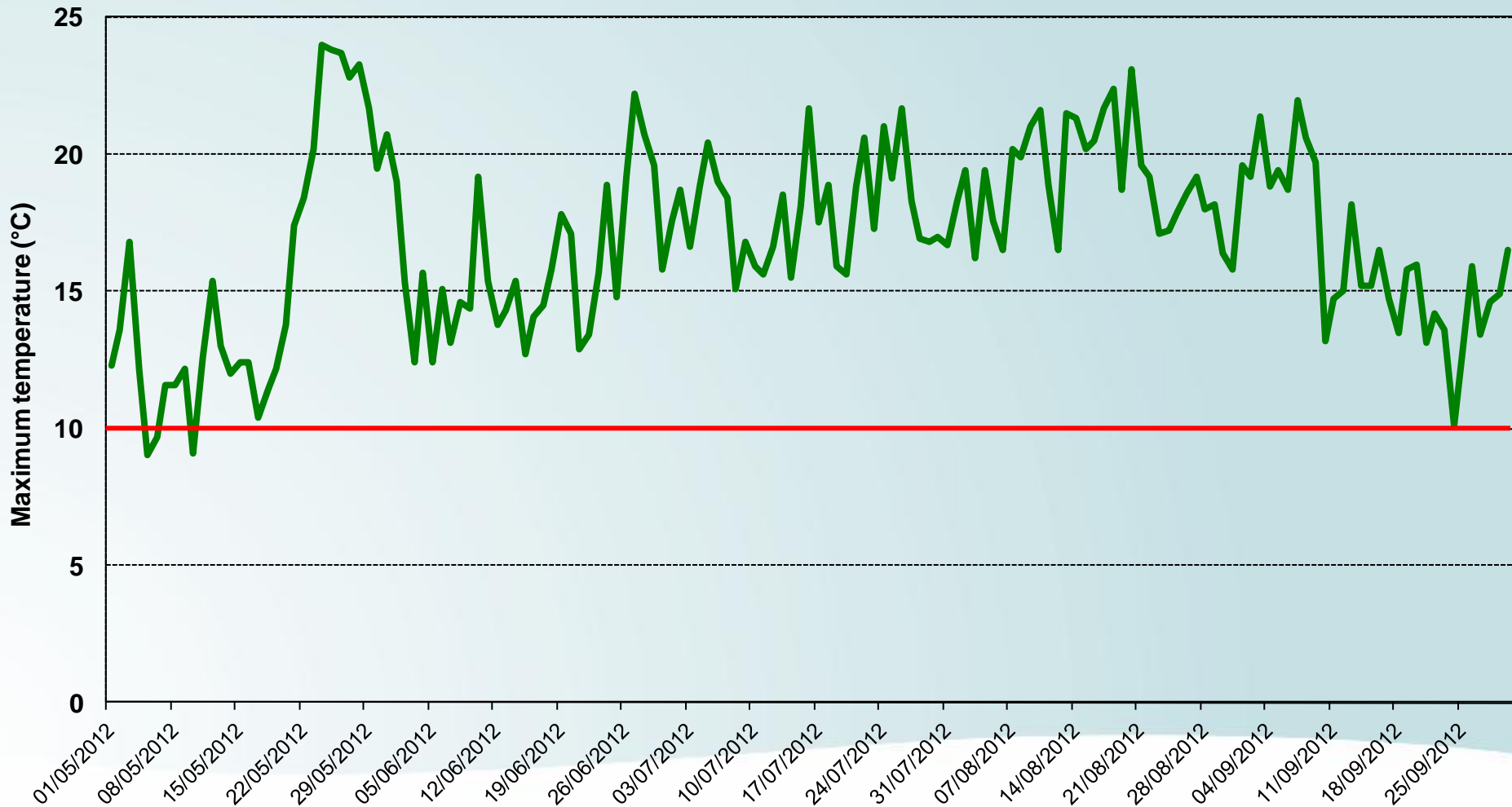
Rainfall (mm) Newforge, May-September 2012



2012

- *A very cool season!*

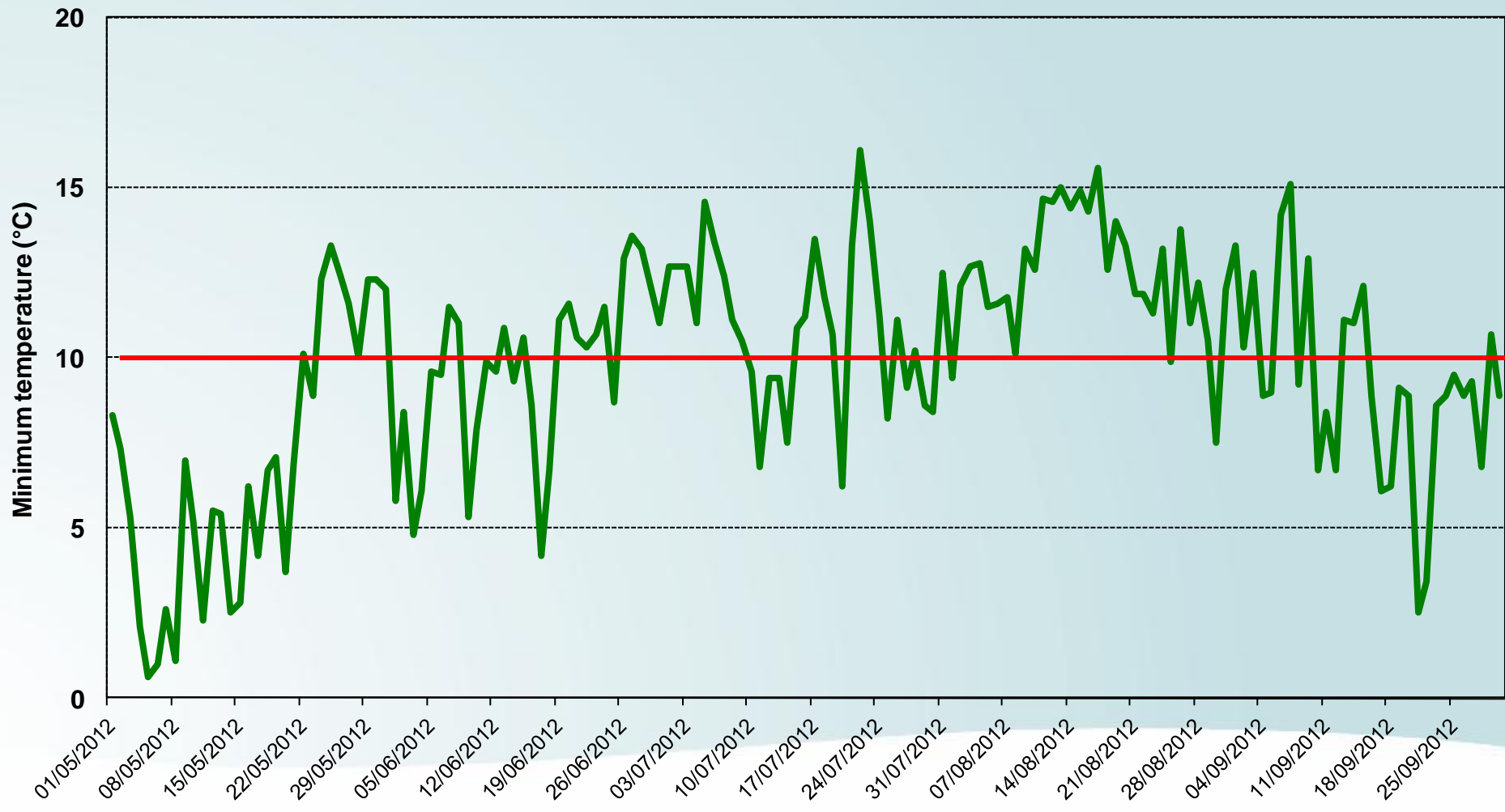
Maximum temperature (°C) Newforge, May-September 2012



2012

- *A very cool season!*

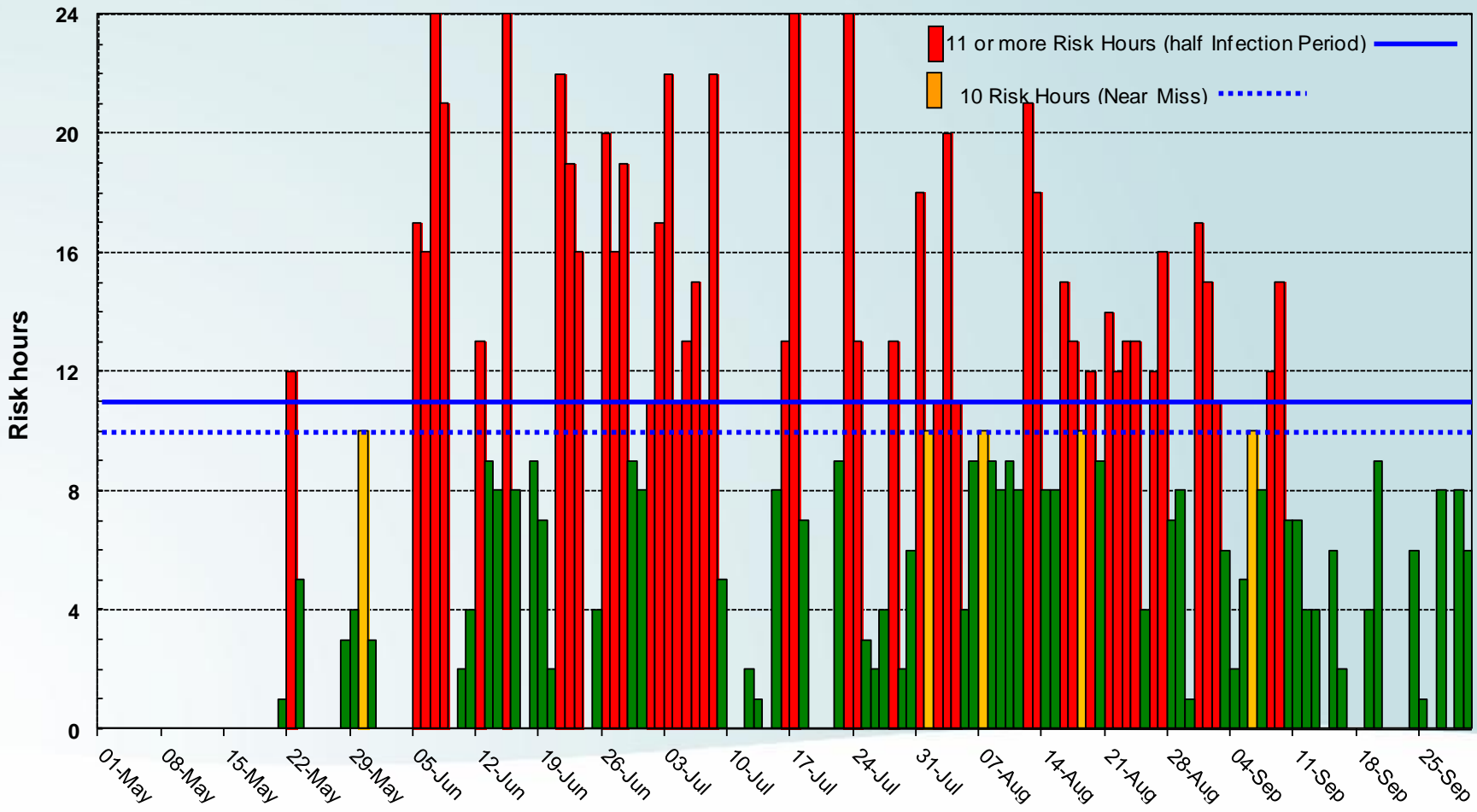
Minimum temperature (°C) Newforge, May-September 2012



Phytophthora infestans 2012

- First field outbreak of blight 22 June
- Impact of blight reduced by poor growing conditions?

Risk Hours Newforge 2012: May - September



Phytophthora infestans 2012

- population update

- *Queen's University student Emma Walker carried out the population study during her Ag. Tech. degree placement*



Phytophthora infestans 2012

- *Outbreaks throughout Northern Ireland*
- *34 sites sampled*
 - *L'derry 6*
 - *Tyrone 2*
 - *Antrim 11*
 - *Down & Armagh 15*
- *99 isolates obtained (up to 5 isolates/site)*

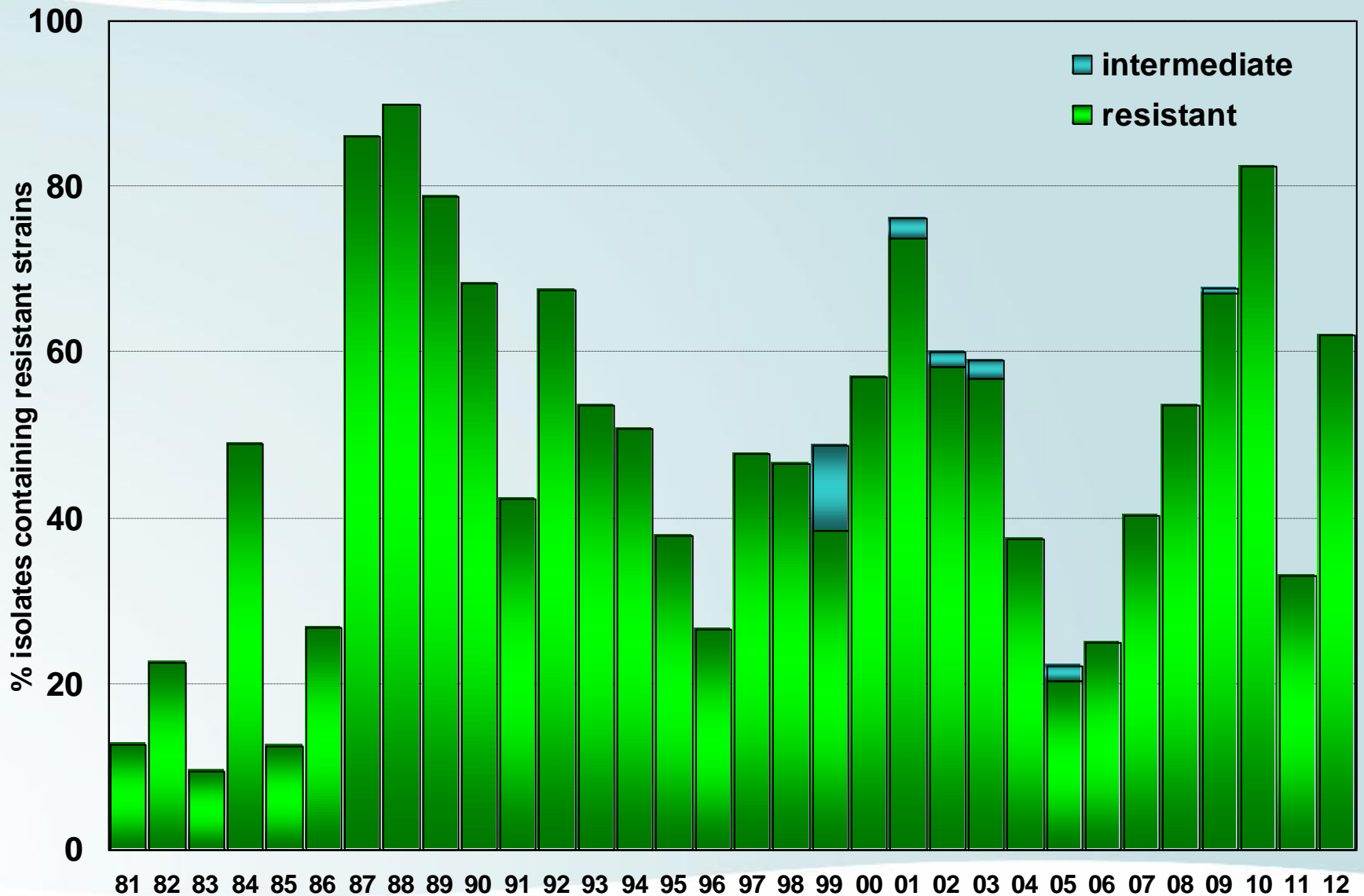


Phytophthora infestans 2012

- **Phenylamide resistance**
- 99 isolates from 34 sites tested
 - L'derry & Tyrone 22 (27% R)
 - Antrim 39 (69% R)
 - Down & Armagh 38 (74% R)
- **overall 62% resistant**
- compared with only 33% (of 86 isolates) in 2011



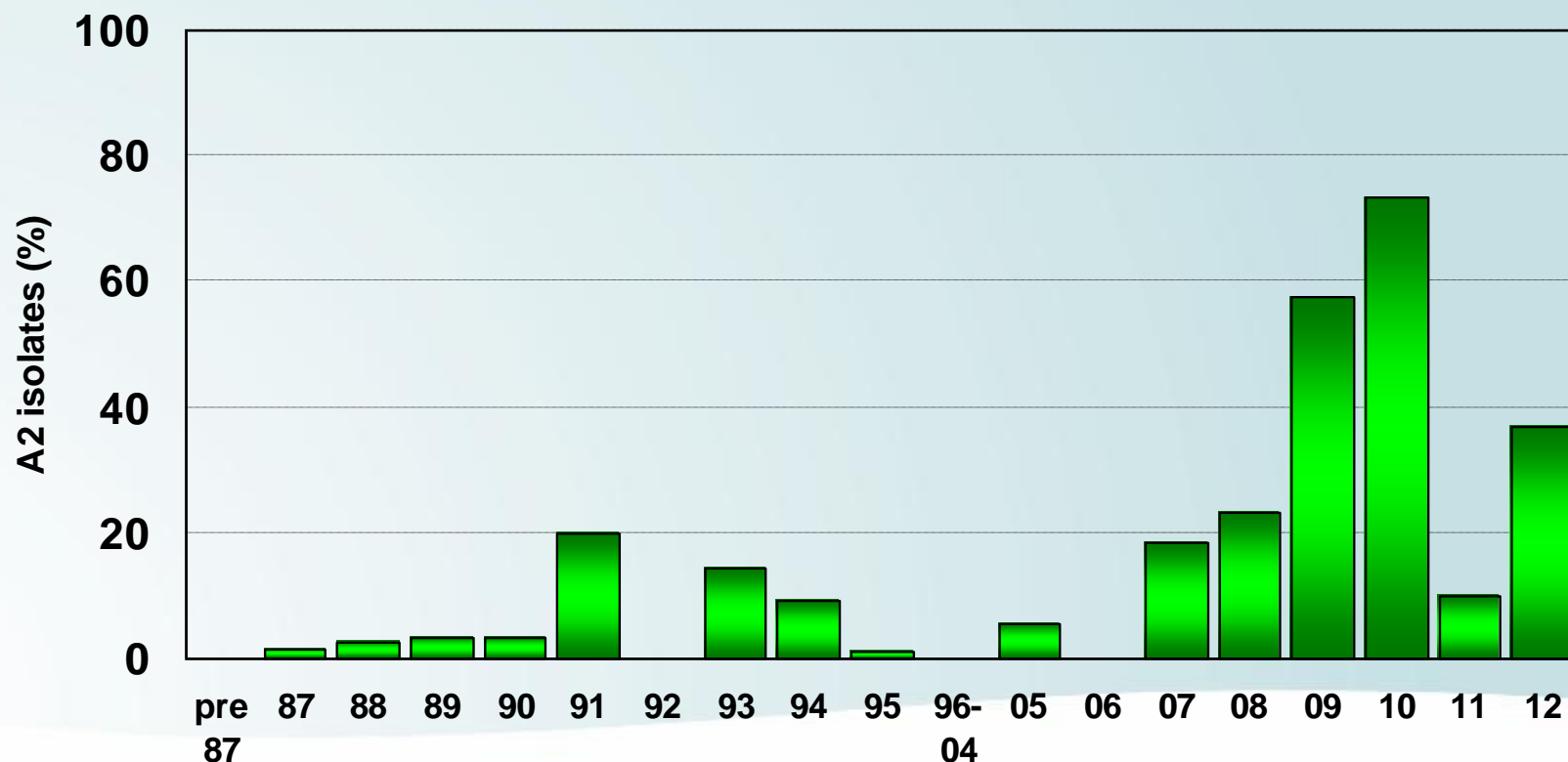
*The proportion of Northern Ireland *Phytophthora infestans* isolates containing phenylamide-resistant strains, 1981-2012*



Phytophthora infestans 2012



- **Mating type**
- 84 isolates from 31 crops – 37% A2 (cf. 10% in 2011)
- All A2 isolates were phenylamide-resistant



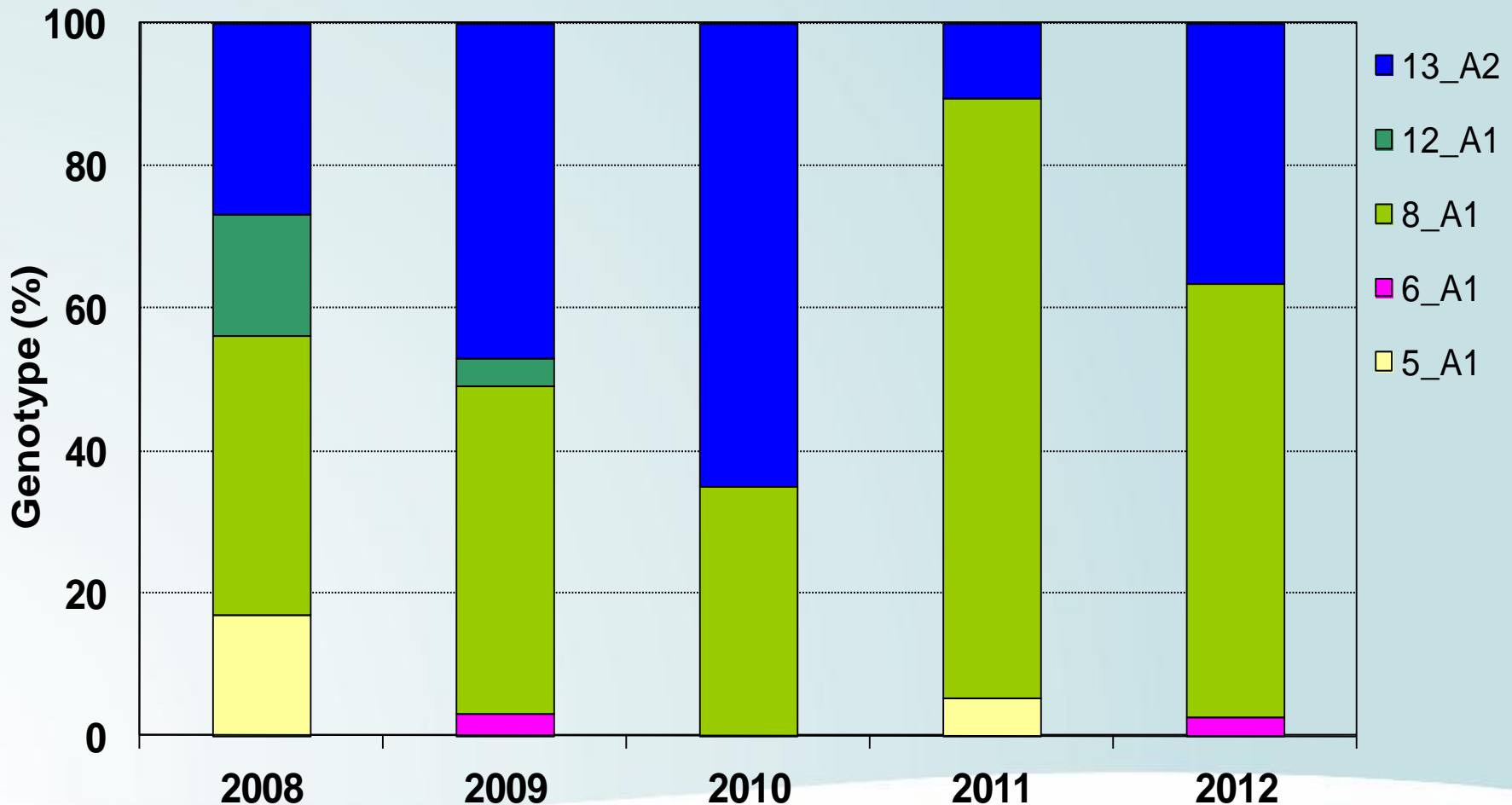
Phytophthora infestans 2012

- **Genotyping**
- *82 isolates characterised using Pep allozymes*
- *A2s (30) all Pep 96/96 (Blue 13)*
- *A1s (50) Pep 100/100 (old genotype),
A1s (2) Pep 96/96 (Pink 6)*
- *Selected isolates (9) SSR genotyped (JHI), confirmed
A2s were Blue 13, A1s were 8_A1 except for 2 6_A1*

Phytophthora infestans 2012

- **Genotyping**

Northern Ireland *Phytophthora infestans* genotypes, 2008-2012



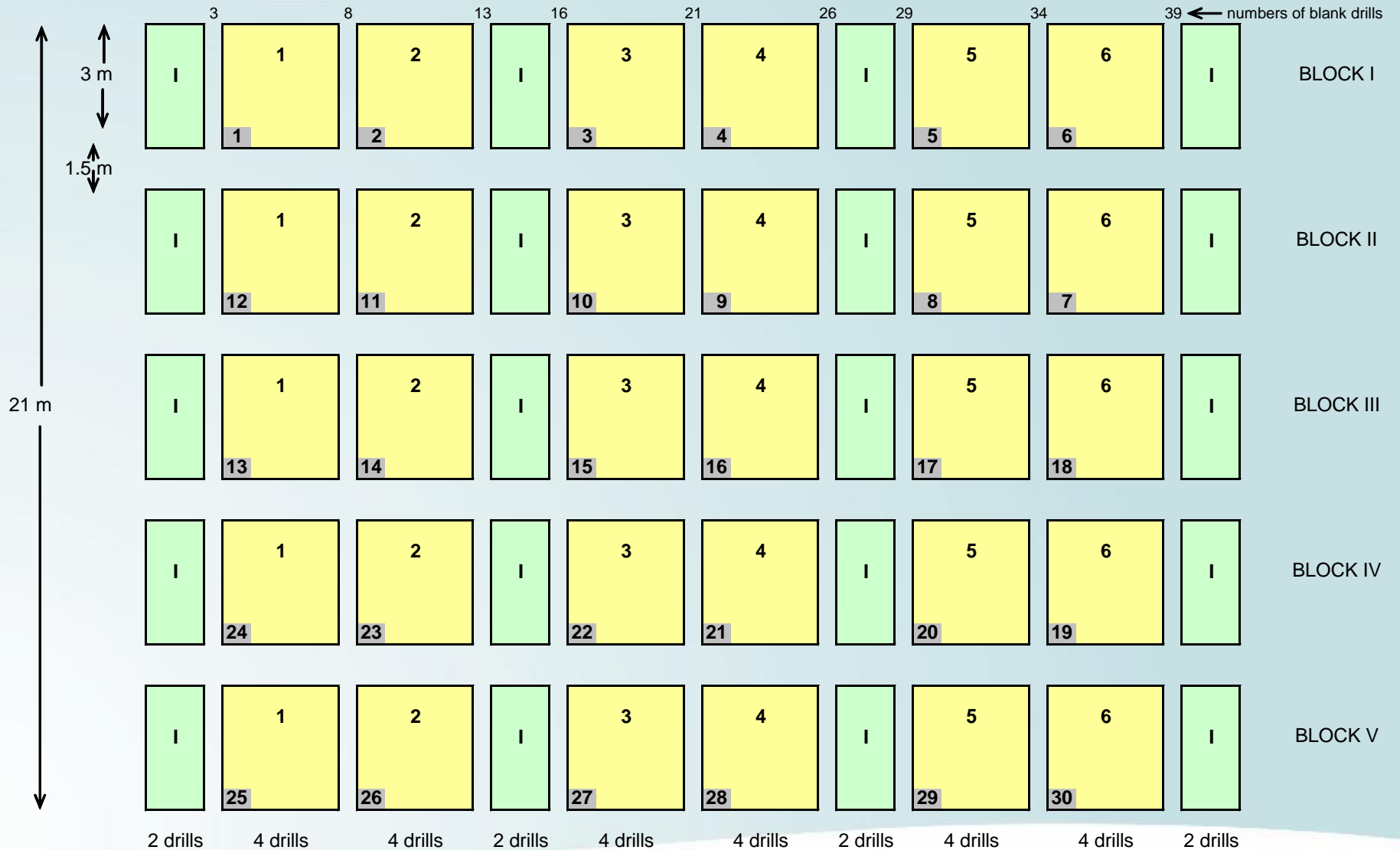
***Phytophthora infestans* 2012**

- *2012 population again dominated by 2 genotypes*
 - *8_A1 (commonest type in 1990s)*
 - *13_A2 (Blue 13, only A2 genotype)*
- *Occurrence of Blue 13 increased compared to 2011, but has not recovered to the 2010 level*
- *Green 33 not detected*
- *8_A1 remains the commonest genotype, Pink 6 detected for the first time since 2009, but only at one site*
- ***Population quite distinct from that in GB***

Field trials 2010-12

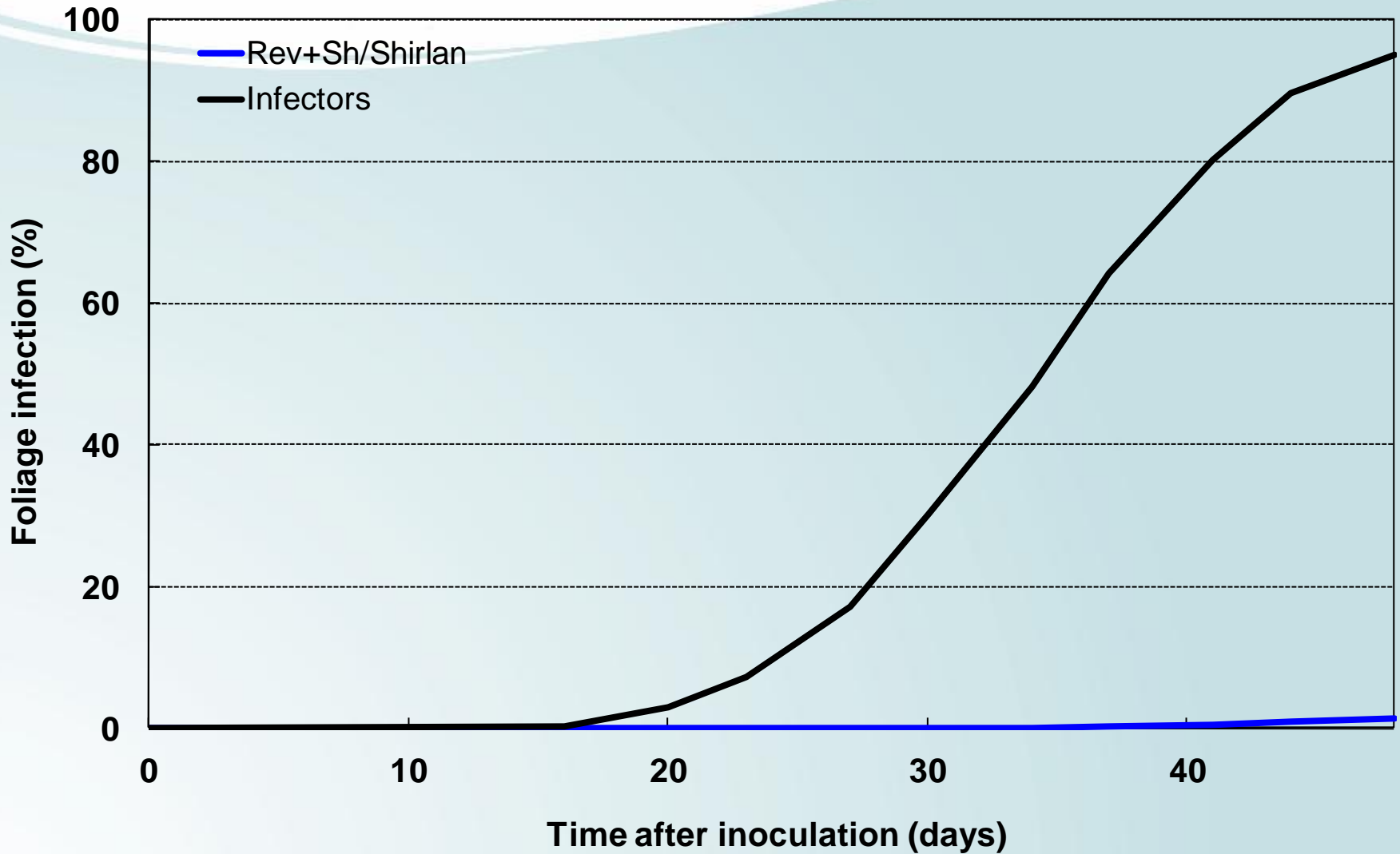
- *Evaluated programmes on cv. Up-to-Date*
- *Standard programme used each year*
2 x mandipropamid (150 g/ha) + fluazinam (100 g/ha)
8 x fluazinam (200 g/ha)
mandipropamid as 'Revus', fluazinam as 'Shirlan'
- *Trials planted May*
- *Fungicide programmes applied from June to August/September, 10 applications at 7-day intervals*
- *Infector drills inoculated July with previous year's N. Ireland isolates including 8_A1 and Blue 13*
- *Foliage blight assessed twice weekly*
- *Trials desiccated September*

Field trial layout



2010 Potato blight control trial: Newforge, QUB

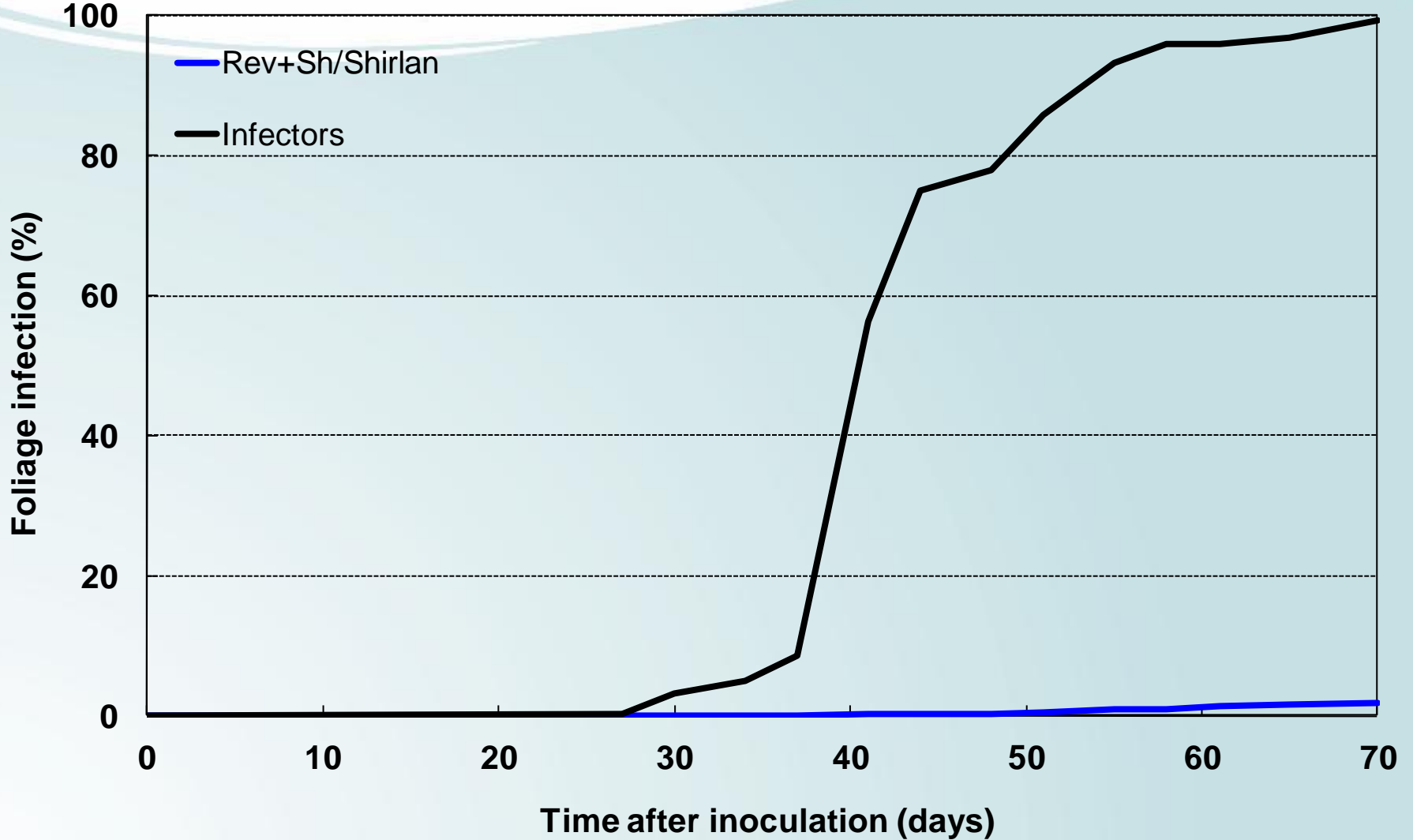
Foliage blight assessments



Final blight assessment 24 August – standard 1.2%

2011 Potato blight control trial: Newforge, AFBI

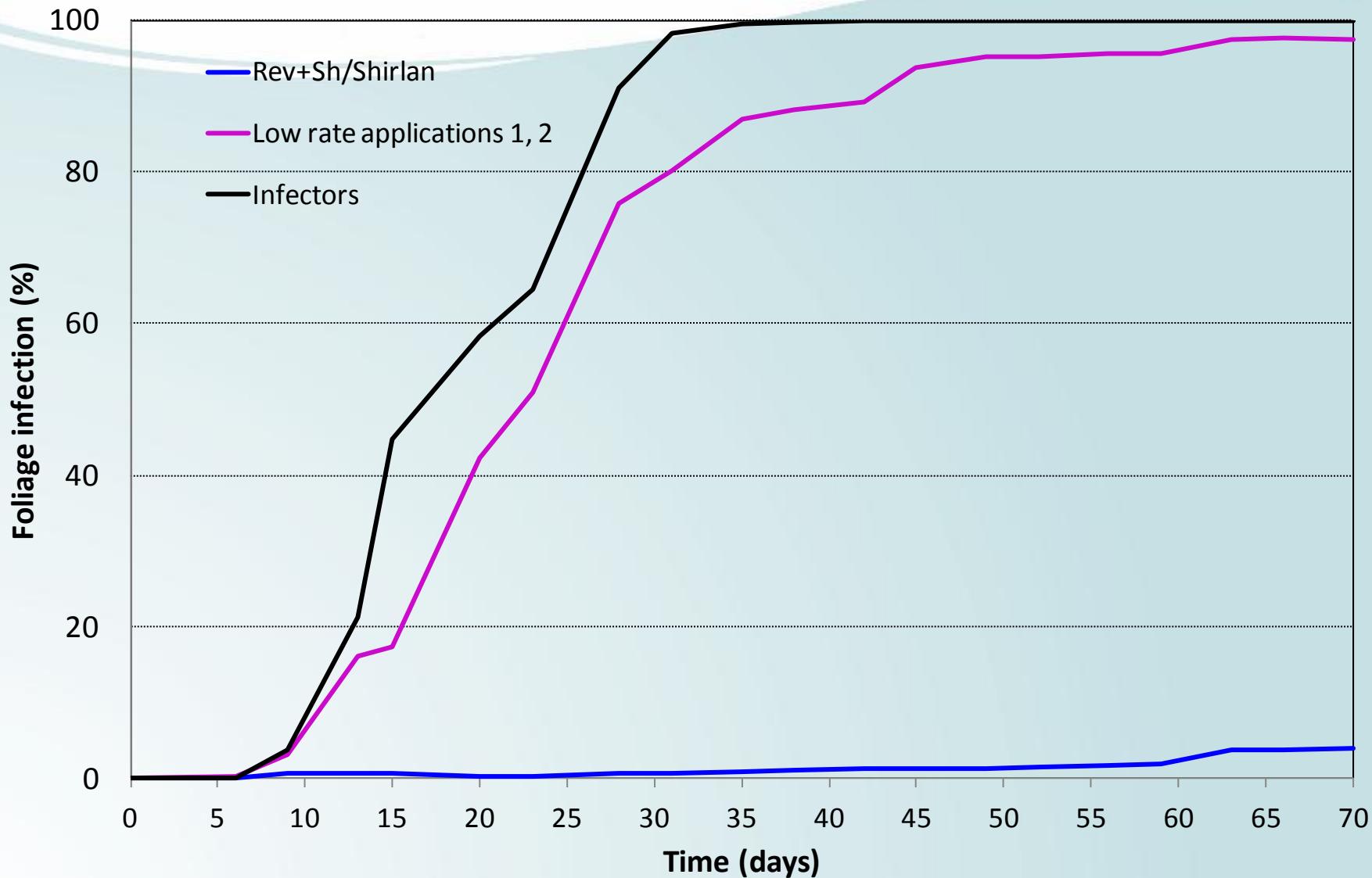
Foliage blight assessments



Final blight assessment 14 September – standard 1.8%

2012 Potato blight control trial: Newforge, AFBI

Foliar blight assessments



Final blight assessment 4 September – standard 4.0%



2012 Potato blight control trial: Newforge, 9 August

Fungicide performance 2010-12

- *In trials, the standard programme of 2 applications of mandipropamid + fluazinam followed by 8 fluazinam applications achieved good foliar blight control*
- *Tuber blight was also well controlled*
- *This performance is reflected in commercial crops in Northern Ireland*
- *Fluazinam is the most popular fungicide on seed crops, used by 63-75% of growers in the years 2010-12*
- *Programmes may need to be modified if the *P. infestans* genotypes change*

Many thanks to:

- *Inspectors of Agri-food Inspection Branch, DARD for the blight samples*
- *The British Society for Plant Pathology who funded Emma through an Undergraduate Vacation Bursary*
- *The James Hutton Institute (JHI) for genotyping*

