

**SARVARI
RESEARCH
TRUST**

Resistance of Sárpo clones to the new strain of *P.infestans*, Blue 13.

Simon White

David Shaw

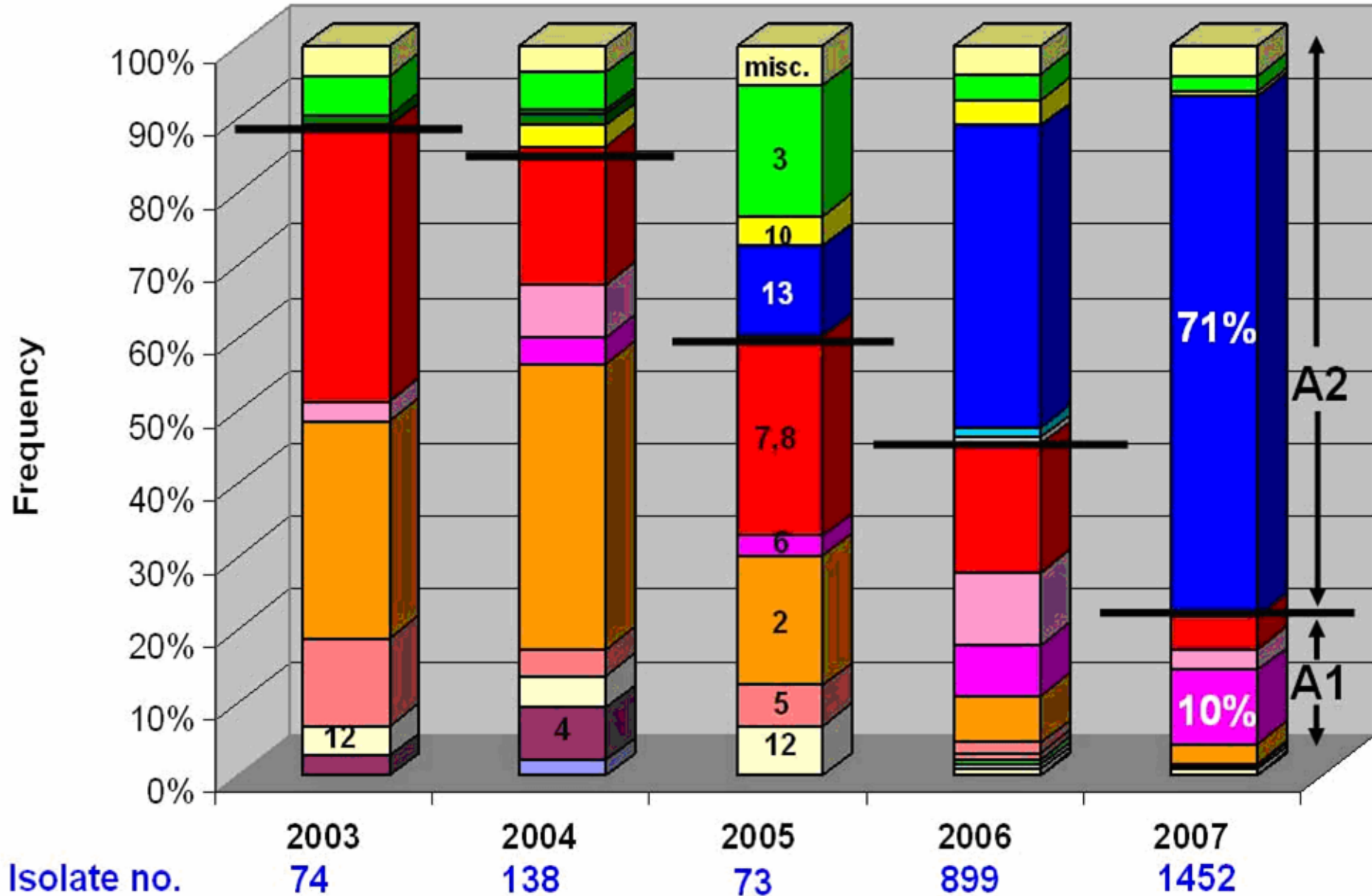
Henfaes Research Centre,
Abergwyngregyn, Wales

Over the last few years, Sárpo clones have shown very high resistance to blight populations in UK and Europe

Blight populations have now changed significantly

How has resistance of Sárpo clones fared relative to other resistant clones?

GB genotypes



Blue 13 blight strain is set to dominate

PHENYLAMIDE resistance will be the main blight control challenge this season and to tackle it effectively programmes need to be constructed in two distinct phases.

Last year the frequency of A2 mating types increased dramatically and the highly aggressive 'Blue 13' strain dominated the population from the start of the season throughout the country. And in recent fungicide sensitivity tests all 'Blue 13' samples showed resistance to phenylamides, including metalaxyl-M.

According to Bayer Crop-Science blight expert Eileen Bardsley there is every reason to believe that 'Blue 13' will predominate from day one of this season too.

"To tackle this 'new blight' programmes need to be considered in two distinct phases - the rapid growth phase up to canopy complete and the stable canopy phase thereafter - selecting products with the appropriate activity for crop growth stage," she said.

"During rapid canopy growth only systemic fungicides can give new growth the protection it needs. And the only true systemics, unaffected by phenylamide resistance, are the propamocarb-based co-formulations Consento, Merlin and Tattoo. Products with strong tuber blight activity need to be kept back until the canopy is stabilised."

Dr Mark Palmer, Agrovista technical manager supports this two-phase approach and says it proved its worth under last year's very high blight pressure. "Where growers used two or three Consento treatments up to canopy complete, then switched to alternating between Infinito (fluopicolide+propamacarb) and Ranman (cyazofamid) defences held up well, both in the field and subsequently in storage.

"Propamocarb is a proven systemic with the mobility to protect rapid growth and the fenamidone component builds



To tackle the new Blue 13 blight strain control programmes must be considered in two distinct phases - rapid growth up to canopy complete and the stable canopy phase, says Bayer.

in early tuber protection. With an alternative like this available you have to ask: 'Why run the risk of using a pheny-

lamide when 80 per cent of the blight you're trying control is likely to be resistant to it?' " said Dr Palmer.

The need for resistance

- CONVENTIONAL GROWING

Phenylamide resistance of Blue 13

Need to reduce inputs – public concern over chemical residues in food

Cost of fungicide and its application

- ORGANIC

Withdrawal of copper based fungicides

Resistant varieties central to blight control in organic systems

Cultivars/Genotypes Assessed

- MAINCROP

Sárpo Mira and Axona (Nationally Listed)

Sárpo Will (submitted 2007)

Robijn and Bintje (EUCABLIGHT standards)

LadyBalfour (NIAB blight resistance score of 7 - widely grown organically in UK).

Cultivars/Genotypes Assessed

- EARLY

Sárpo Una (submitted for NL 2006)

Sárpo Val (being considered for NL submission 2009)

Escort and Eerstelling (EUCABLIGHT standards)

Orla (“the most blight resistant early available” - NIAB score of 8)

Methods of Assessment

- 2005 & 2006

Field trials only

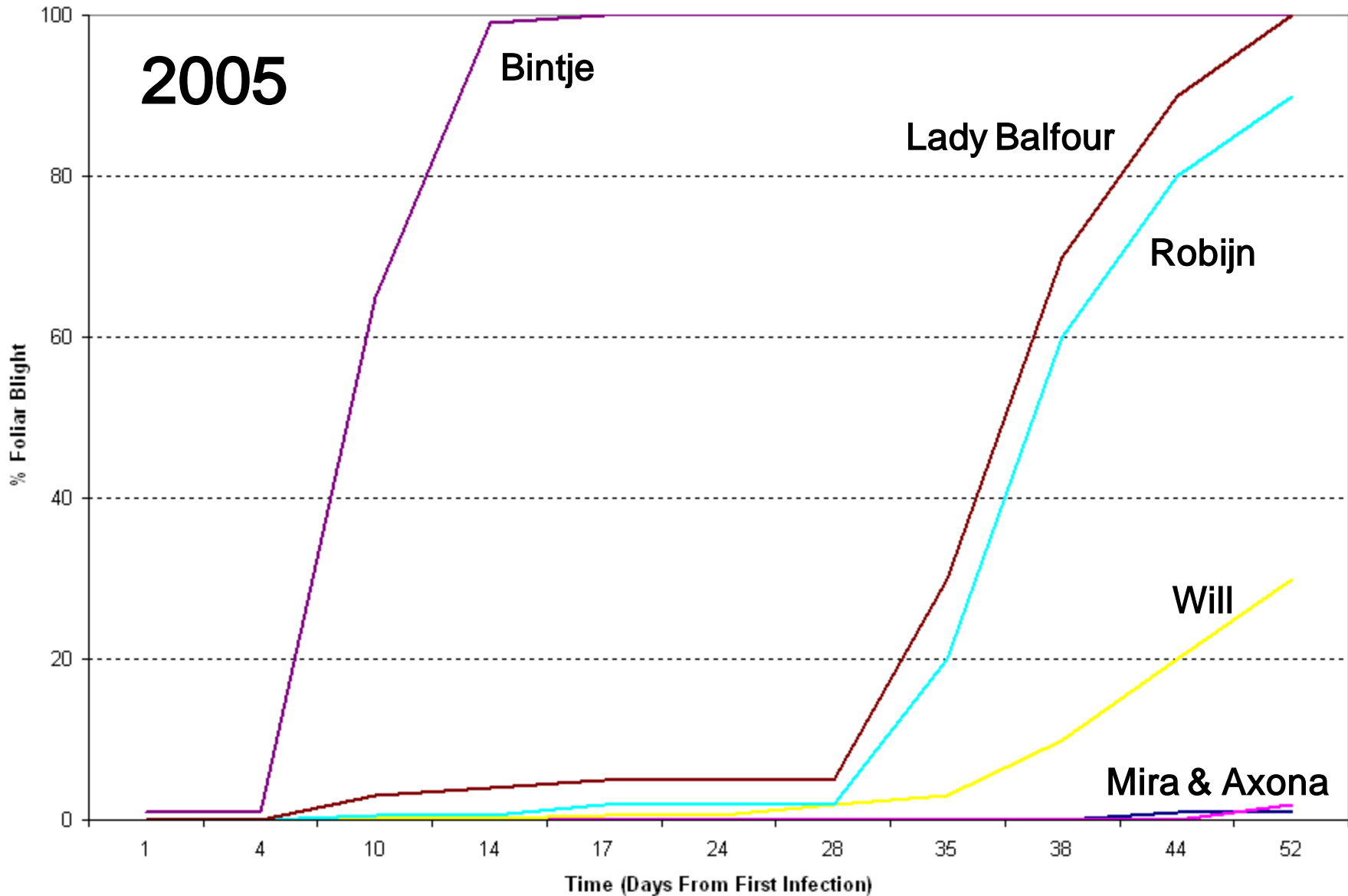
Natural infection with
spreader rows

- 2007 & 2008

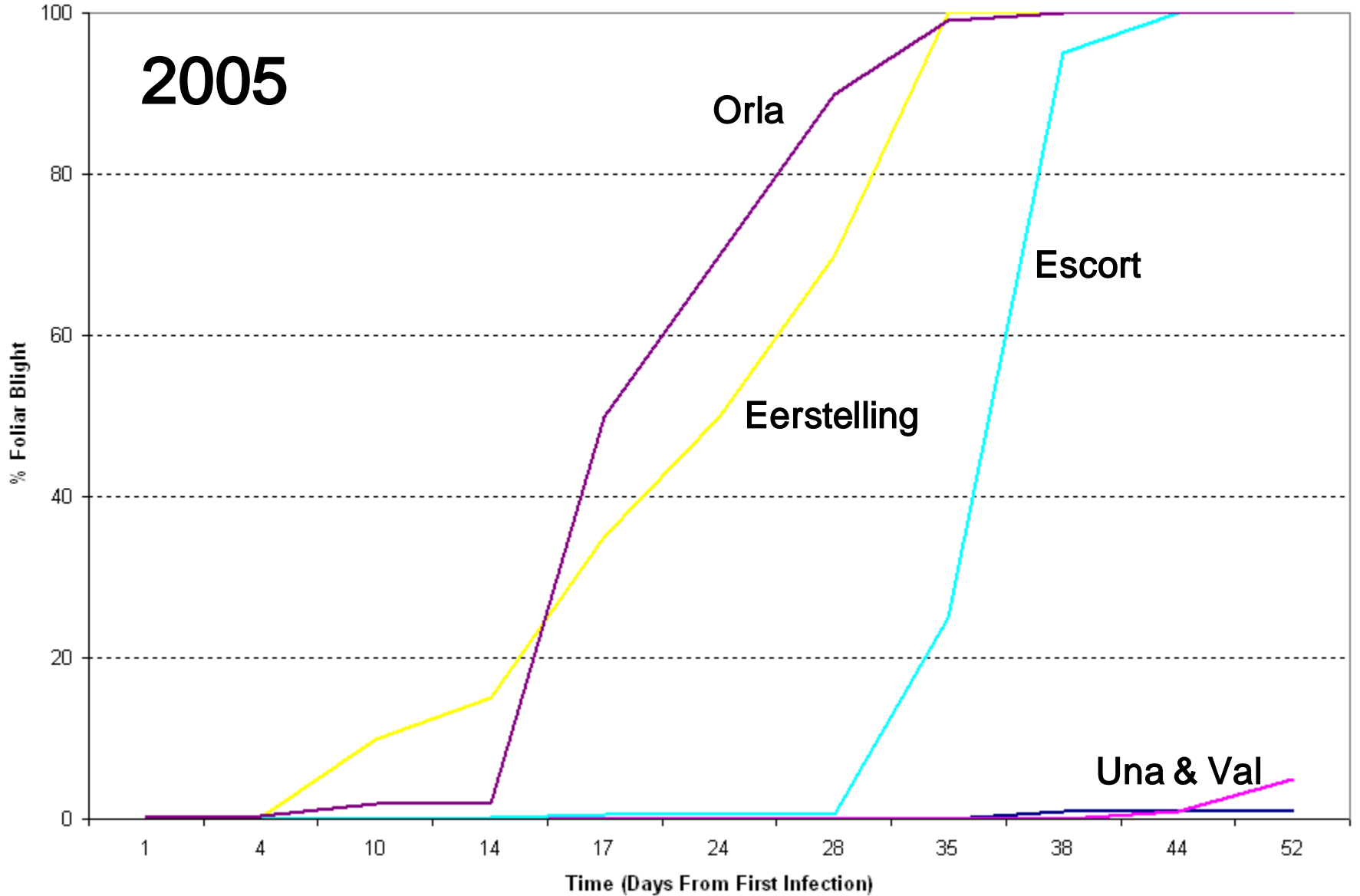
Field trials inoculated
with Blue 13. Use of
infectior plants.

Whole plant testing -
inoculated plants in
greenhouse

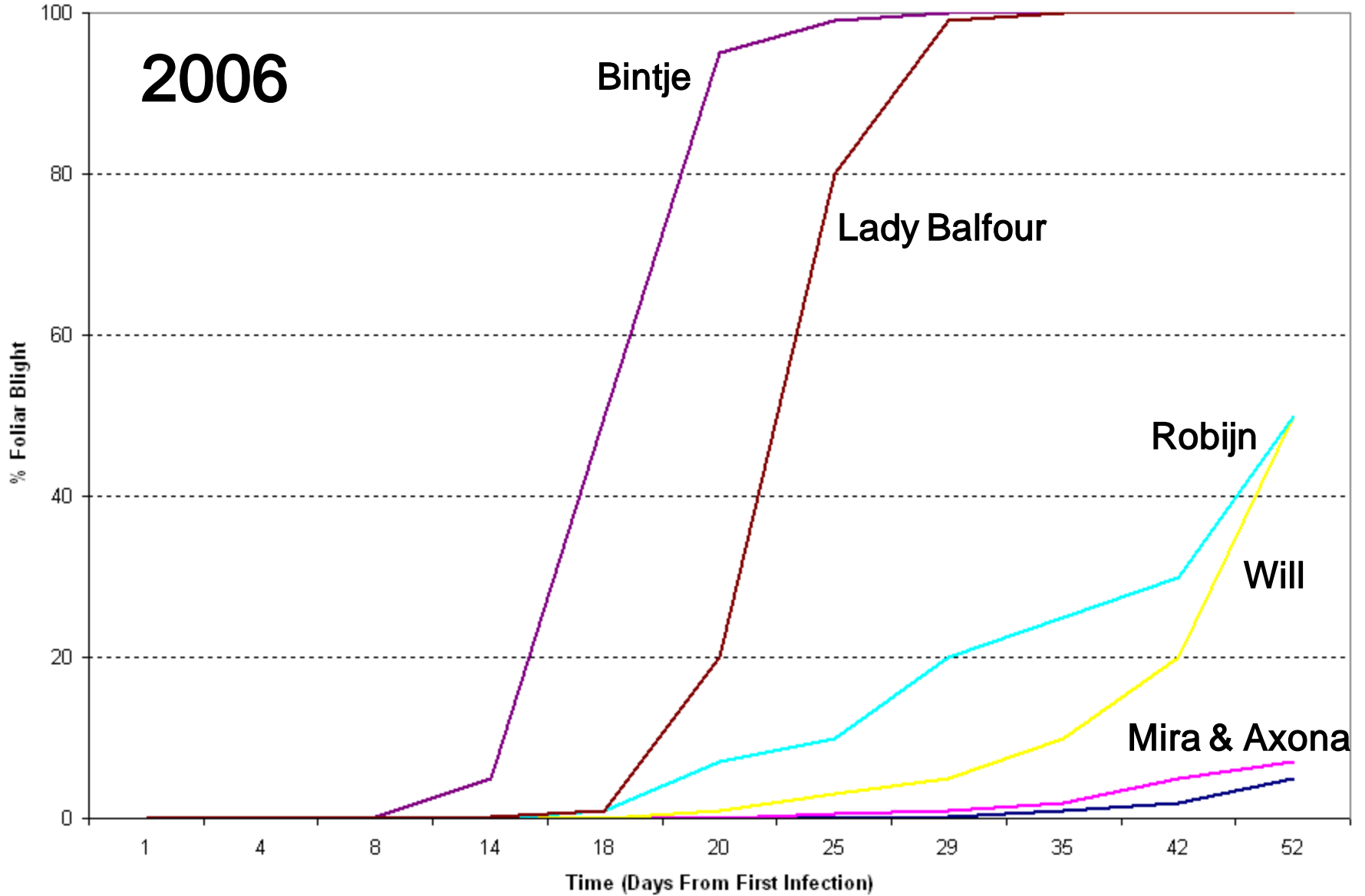
2005



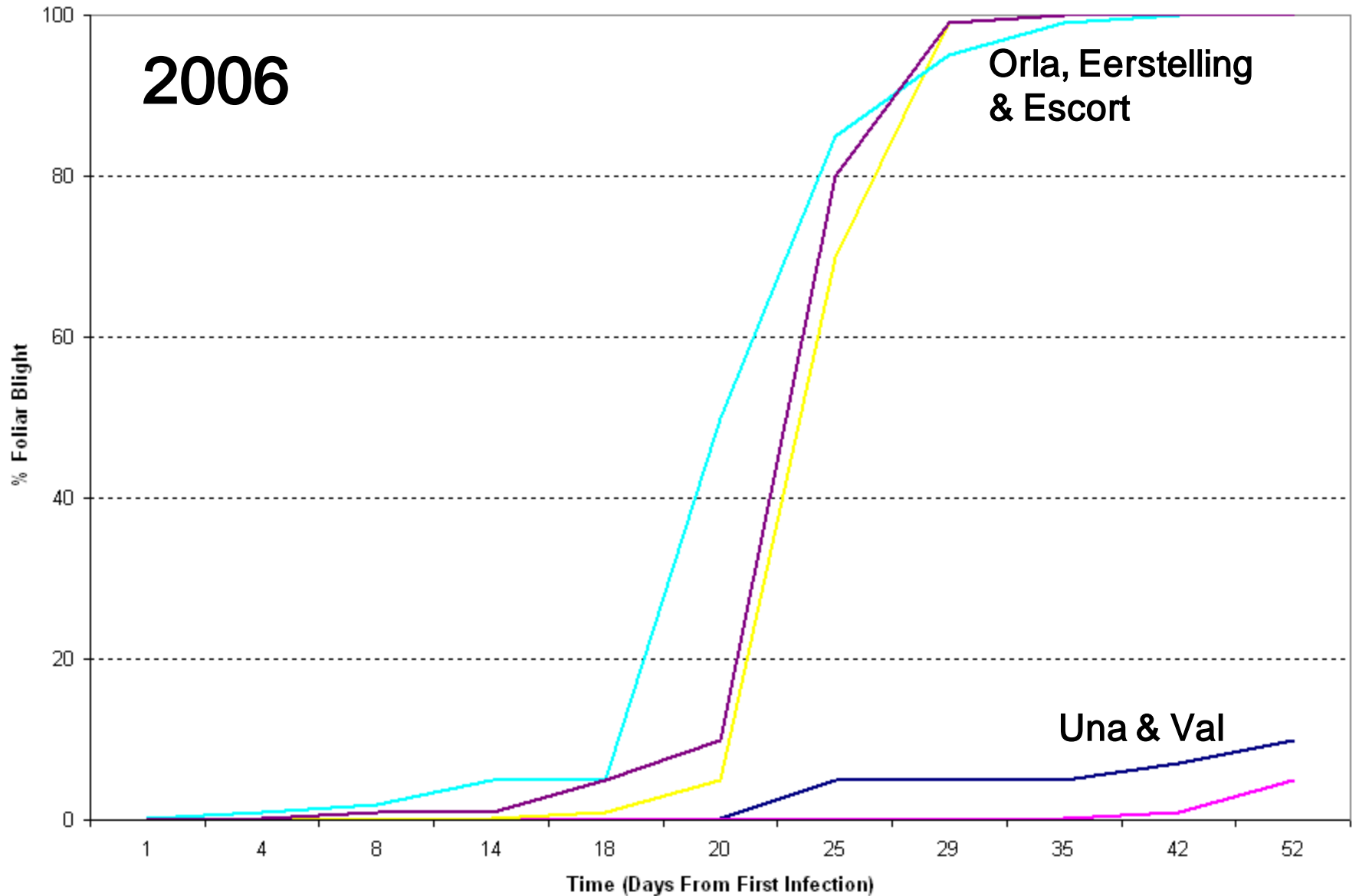
2005



2006



2006



Methods of Assessment

- 2005 & 2006

Field trials only

Natural infection with
spreader rows

- 2007 & 2008

Field trials inoculated
with Blue 13. Use of
infectior plants.

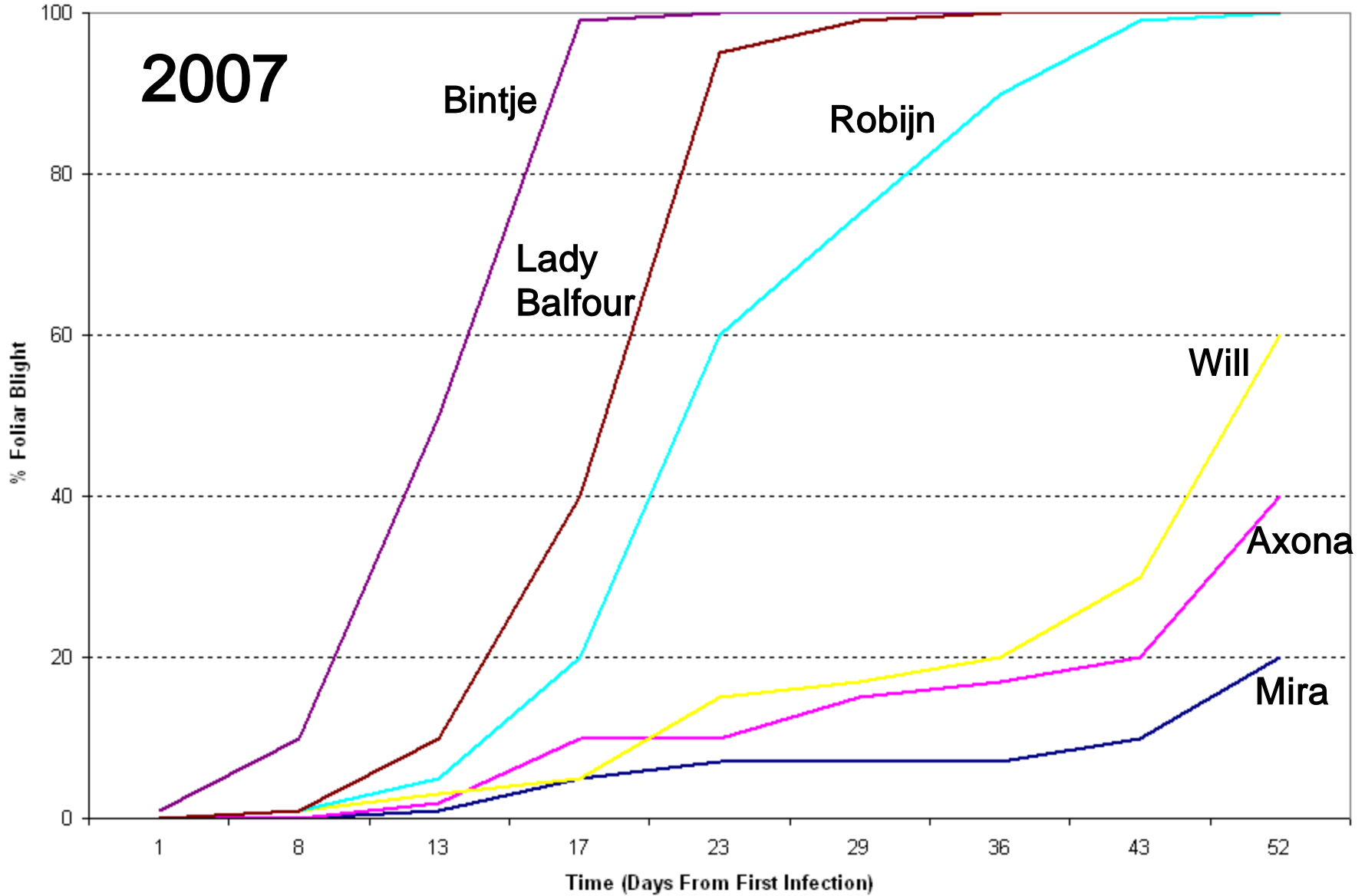
Whole plant testing –
inoculated plants in
greenhouse

Field Trials - Methods

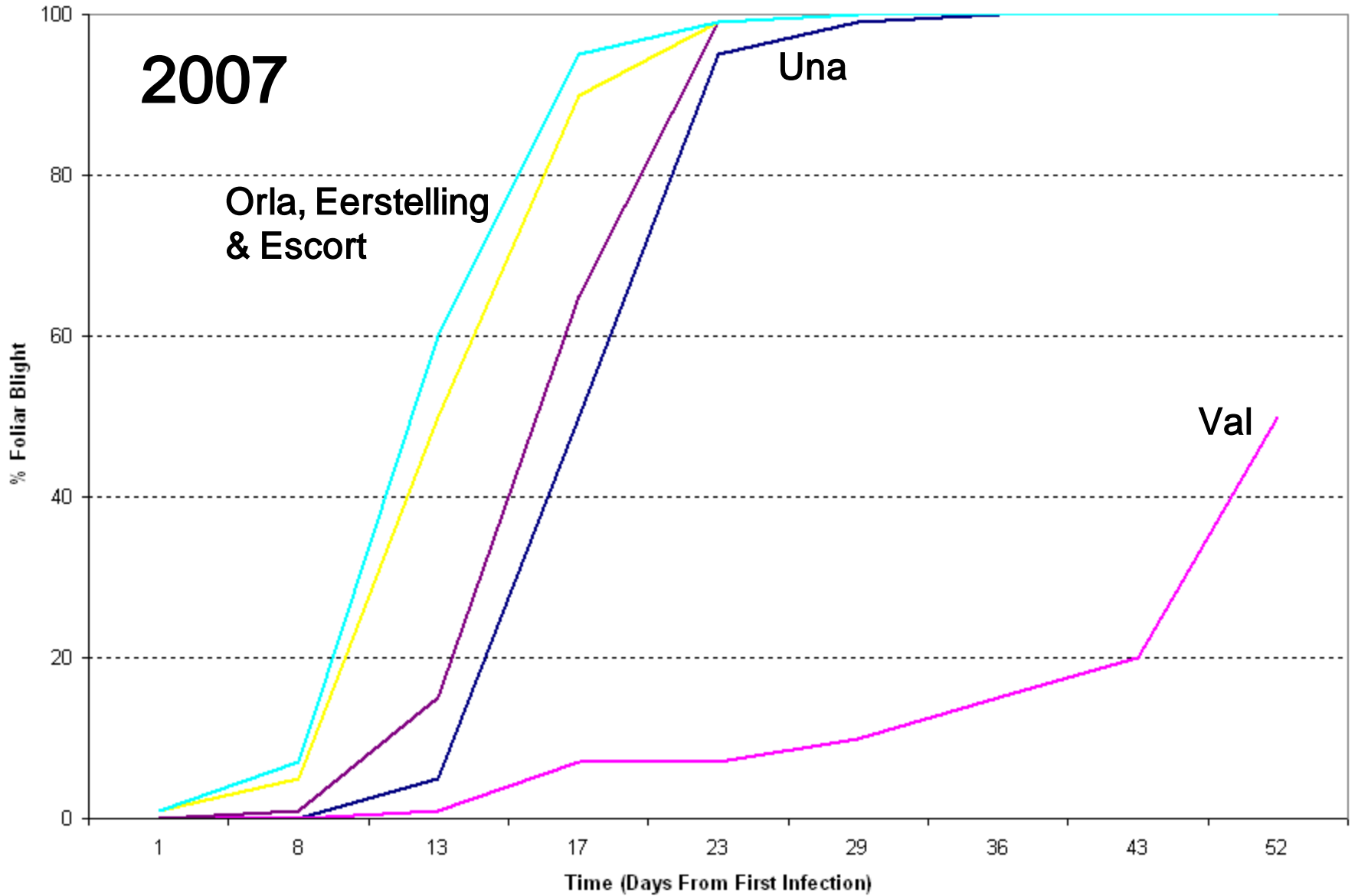
- Infector plants of cv Bintje (highly susceptible)
- Sprayed with suspension of Blue 13 zoospores/sporangia
- Leaf samples taken mid and late epidemic for genotyping to determine whether Blue 13 still present in trial



2007



2007



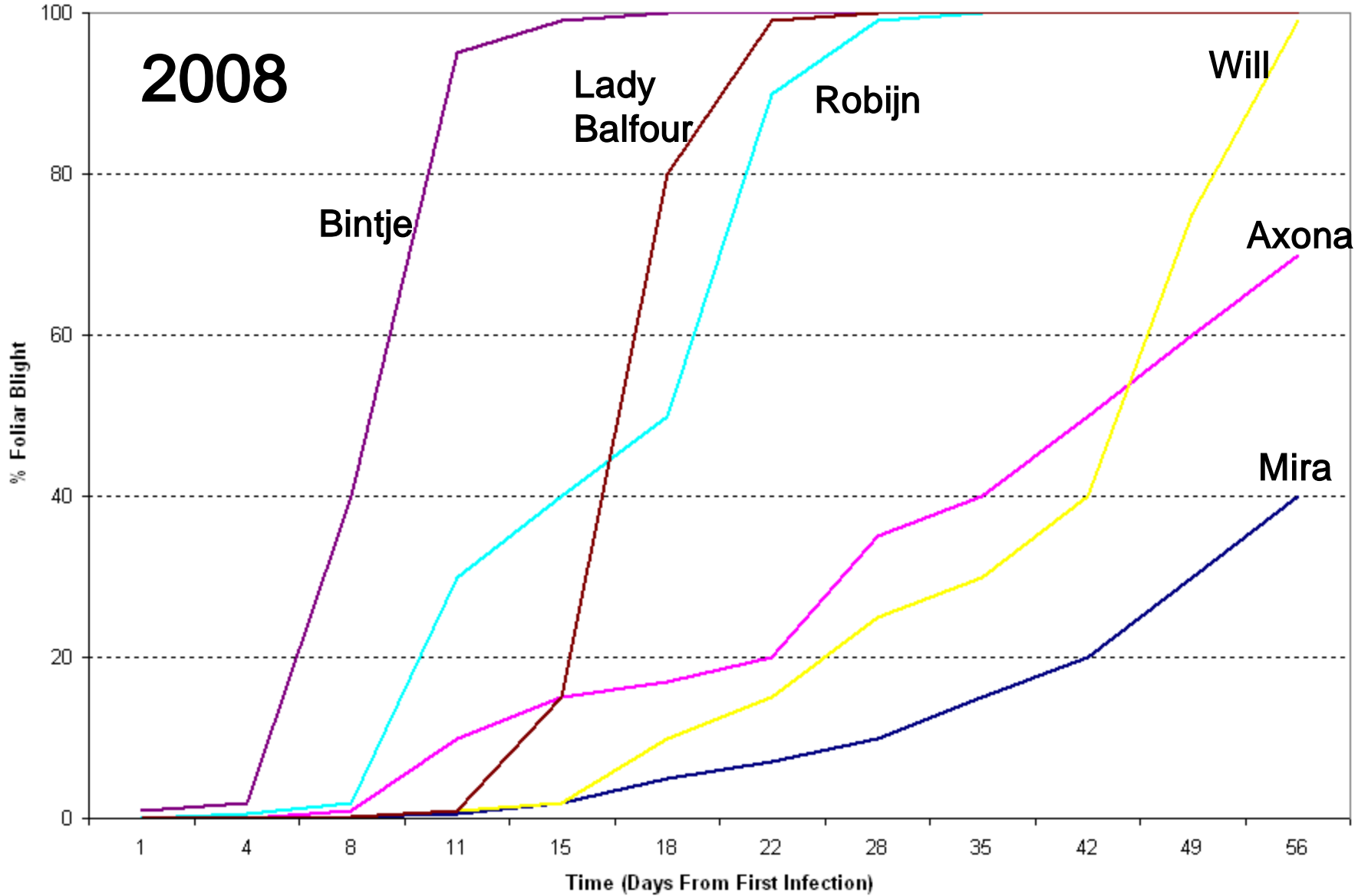
**Orla, Eerstelling
& Escort**

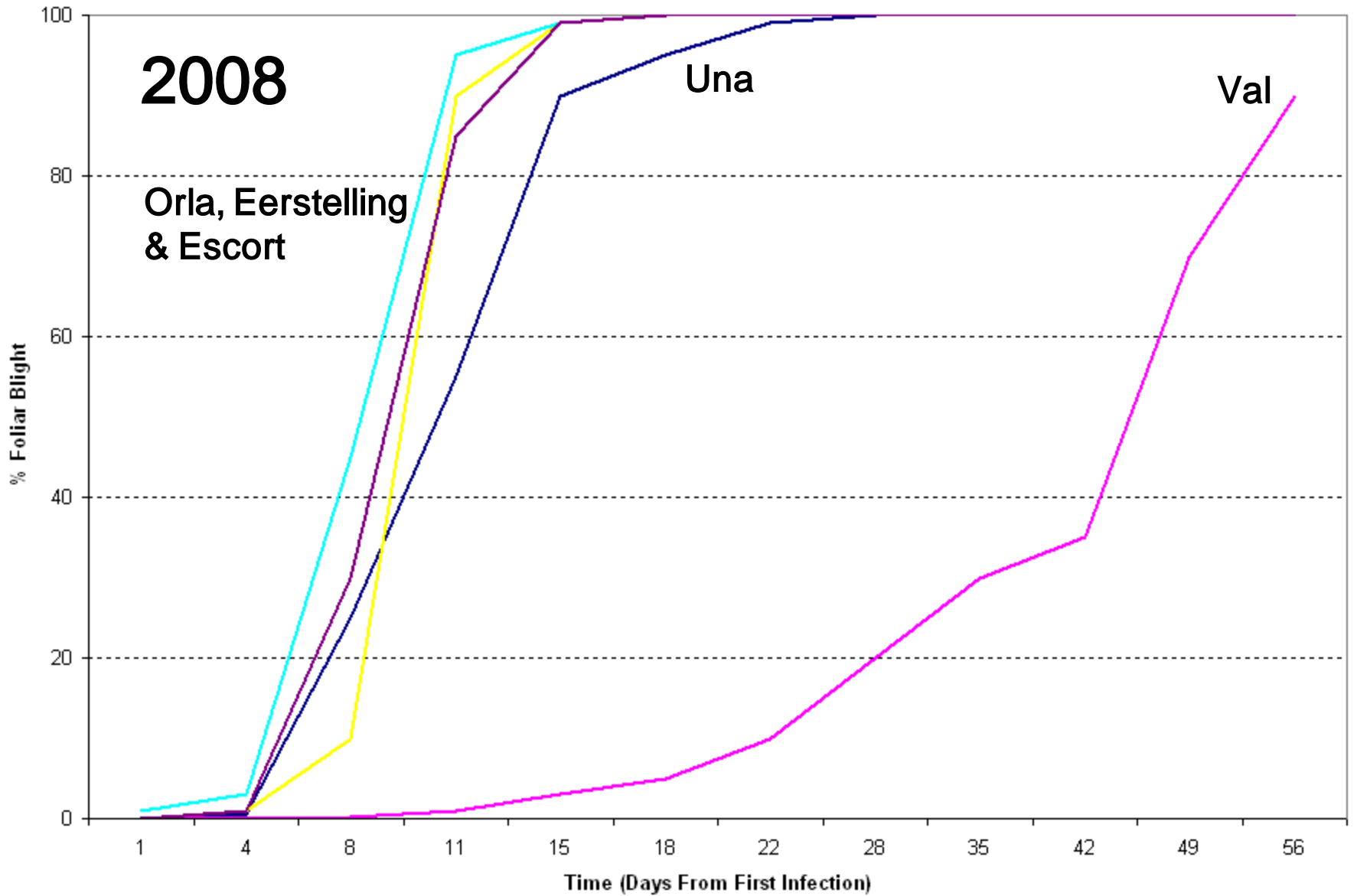
Una

Val

Time (Days From First Infection)

2008





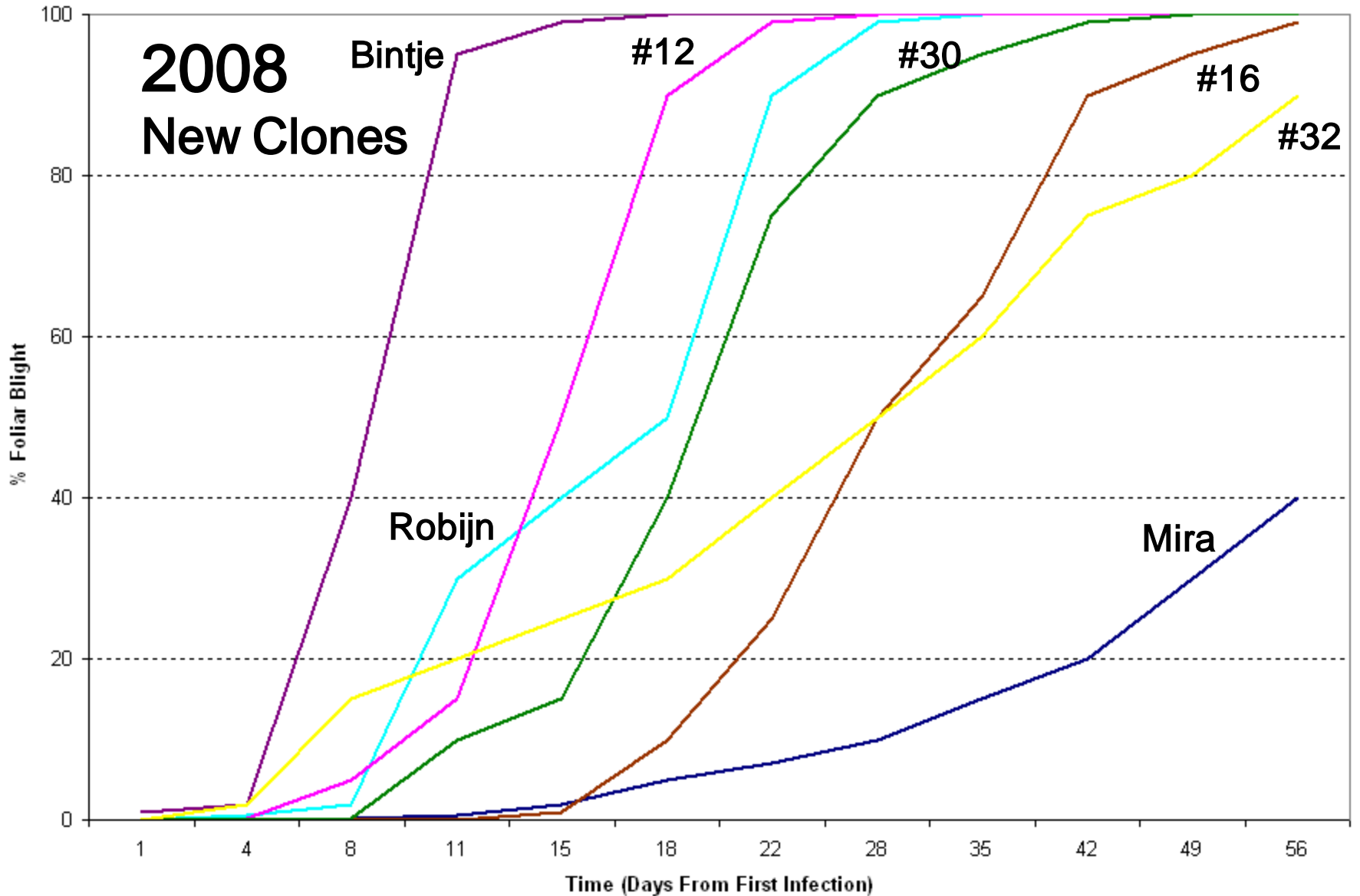
rAUDPC - maincrop

	Mira	Axona	Will	Robijn	L.Balfour	Bintje
2005	0	0	0.05	0.3	0.27	0.81
2006	0	0.02	0.12	0.26	0.39	0.56
2007	0.06	0.14	0.21	0.66	0.76	0.88
2008	0.25	0.53	0.5	0.75	0.81	0.88

rAUDPC - early

	Val	Una	Orla	Escort	Eerstelling
2005	0.01	0	0.54	0.3	0.75
2006	0	0	0.54	0.4	
2007	0.1	0.74	0.84		
2008	0.48	0.78	0.79	0.8	0.84

2008 New Clones



Whole Plant Inoculation

- Plants grown as single stems from stem cuttings
- Inoculated c6 weeks from planting
- Greenhouse misting used to maintain leaf wetness
- Plants scored using Malcolmson's 1-9 scale (Cruickshank et al, 1982)

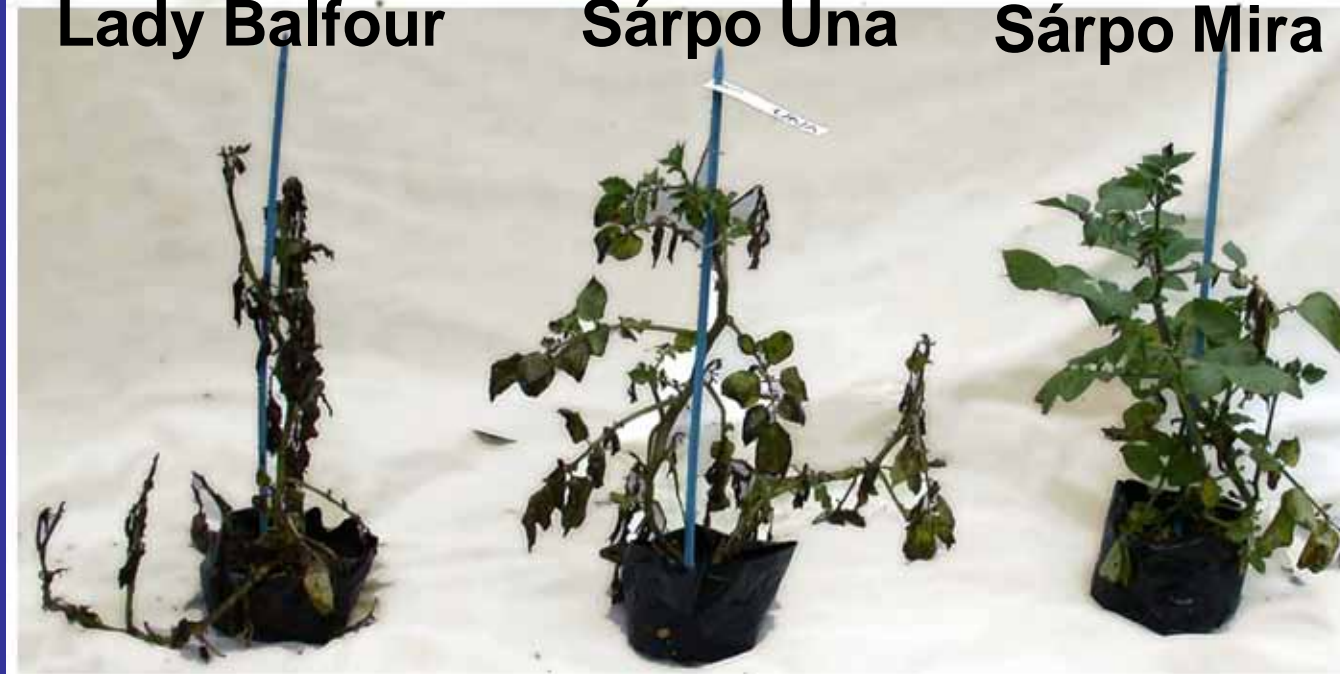


Pink 6

Lady Balfour

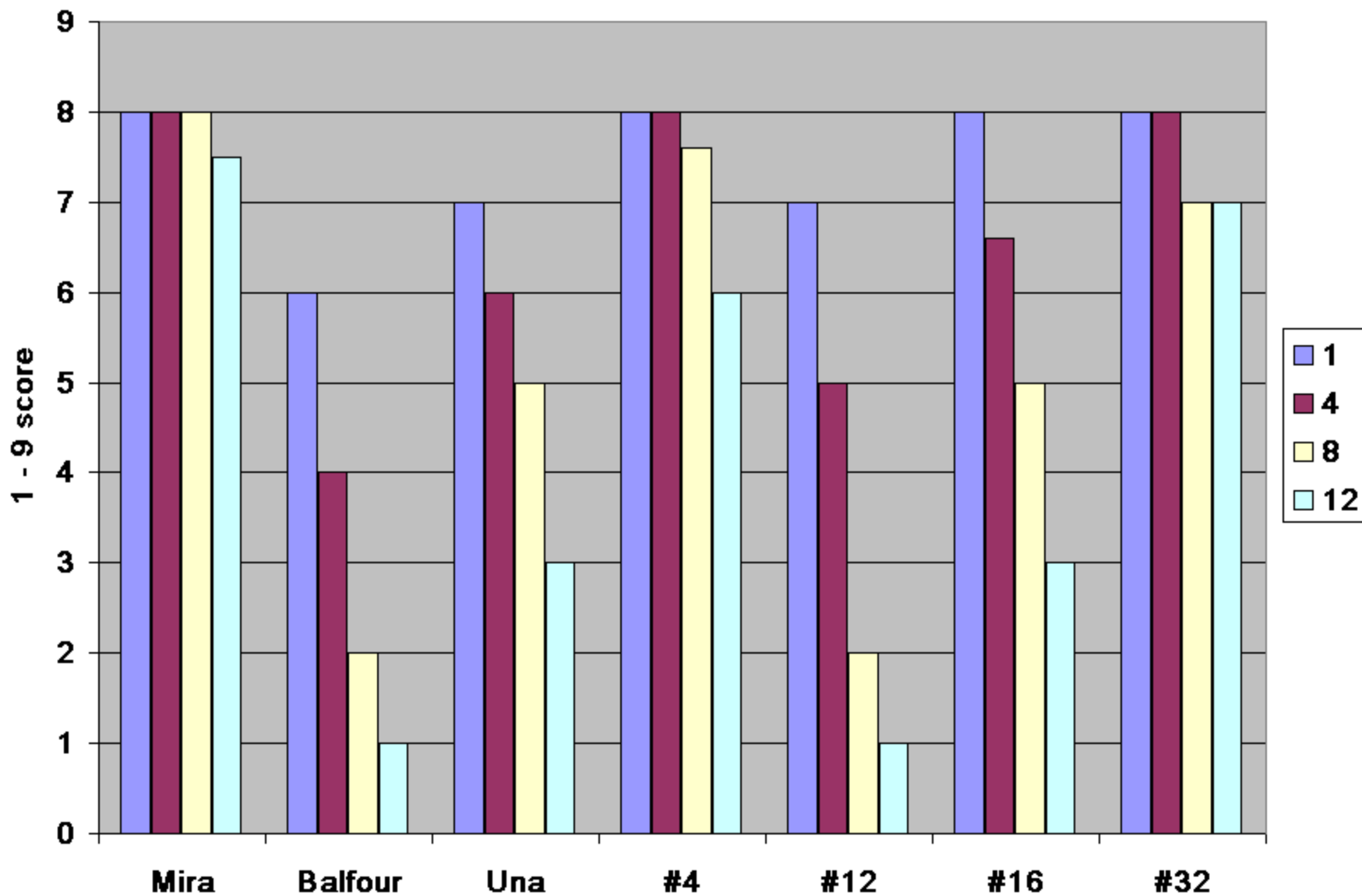
Sárpo Una

Sárpo Mira

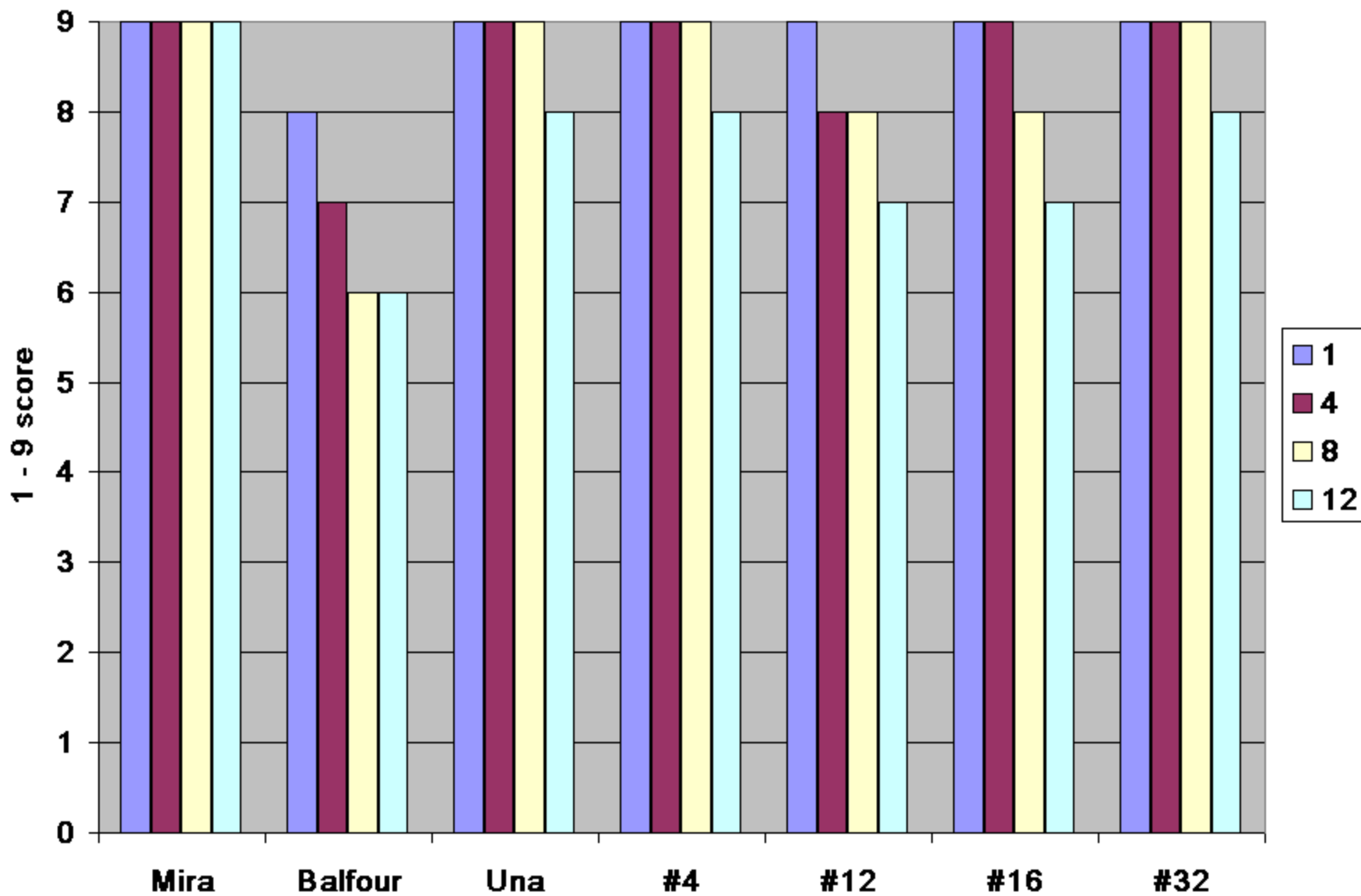


Blue 13

Blue 13 A2



Pink 6 A1



Summary and Conclusions

- Field trials in Wales with Blue 13 show more blight in all clones
- Wet weather coincided with Blue 13 infection
- Ranking of resistance of all clones remained virtually the same 2005 - 2008
- Best Sárpo clones still show useful resistance
- Other trials in UK - similar results

Summary and Conclusions (2)

- Whole plant inoculation confirms Blue 13 more aggressive than Pink 6 A1 strain
- Message to grower: varieties with intermediate resistance fail in presence of Blue 13 and wet weather
- Further work needed to assess aggressiveness of Blue 13 to new Sárpo clones

Cv Robinta

Sárpo clones in background



Acknowledgements

- Staff of Henfaes Research Centre
- Mr. Roger Tebbutt for hosting trials in Wales
- EUCABLIGHT partners
- SCRI