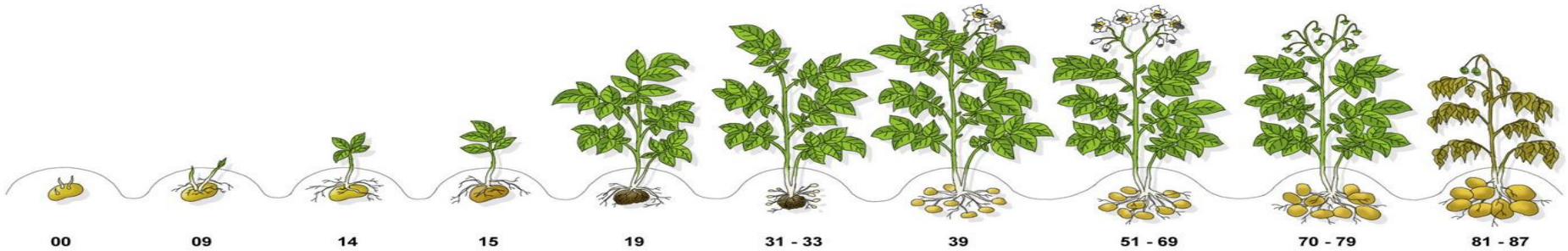
Potato portfolio

PPA 2026 Update

UPL Potato Portfolio



Zoxis, Affix (250g azoxystrobin)

Proxanil / Axidor (400g Propamocarb + 50g cymoxanil)
Manzate 75G (750g mancozeb)
Diprospero (90g Dimethomorph + 500g propamocarb)

Panarex/Rango (40g Quizalofop-P-Tefuryl)
Quidam (800g prosulfocarb)

Fazor (600g maleic hydrazide)

Fazor Flo (270.2g maleic hydrazide)

Argos
(900g orange oil)

Aryamin C (Amino Acid)

Calibra Carbo (GA142+ Amino Acid)

UPL

AFFIX (18324) ZOXIS (18438)

Active (s)	g a.i./l	Crops	Max. no. apps	Max. ind. dose	Max. total dose	Latest timing	Buffer zone
azoxystrobin	250g/L	Potato	1	3L/ha	3L	At planting	5m ABZ

- Key notes
- In furrow for Rhizoctonia solani (Black Scurf, Stem/Stolon Canker, Damping off, skin netting, tuber distortions),
- Reduces levels of Colletotrichum coccodes (Black Dot) and Silver Scurf
- Value of in-furrow fungicides greater than ever….
- Loss of seed treatments (pencycuron, penflufen)
- A QoI , group 11 but does not count to max number of sprays in blight programme

Fazor Flo

Fazor Flo – MAPP 21345 New Authorisation

- Maleic hydrazide 270.2g ai/l SL
- Label crops – potatoes, bulb onions, shallots, garlic
- Dose rate:
  - Potatoes –11.1 L/ha
  - Onions/Shallots/Garlic – up to 8.9 L/ha
  - EAMU's for carrots & parsnips applied for Sept 2025 (11.1 L/ha)
- Application timings, guidance same as for Fazor WG
- Packaging 600L , 300L IBC's , 20L bottles
- Benefits – liquid formulation, handling, no foaming compared to Fazor WG

Foam test on neat product

Initial without stirring

Competitor SL 270 | Fazor Flo | Fazor

Initial with stirring 5 sec after 0 min

Competitor SL 270 | Fazor Flo | Fazor

Initial with stirring 5 sec after 5 min

Competitor SL 270 | Fazor Flo | Fazor

Non diluted

Shaking the **Competitor product** generates a lot of persistent foam → **potential risk when handling**

Fazor Flo generates low level of foam which disappears immediately (<10s).

Foam test on diluted product

3 min after stirring

Competitor SL 270 Fazor Flo Fazor

15 min after stirring

Competitor SL 270 Fazor Flo Fazor

30 min after stirring

Competitor SL 270 Fazor Flo Fazor

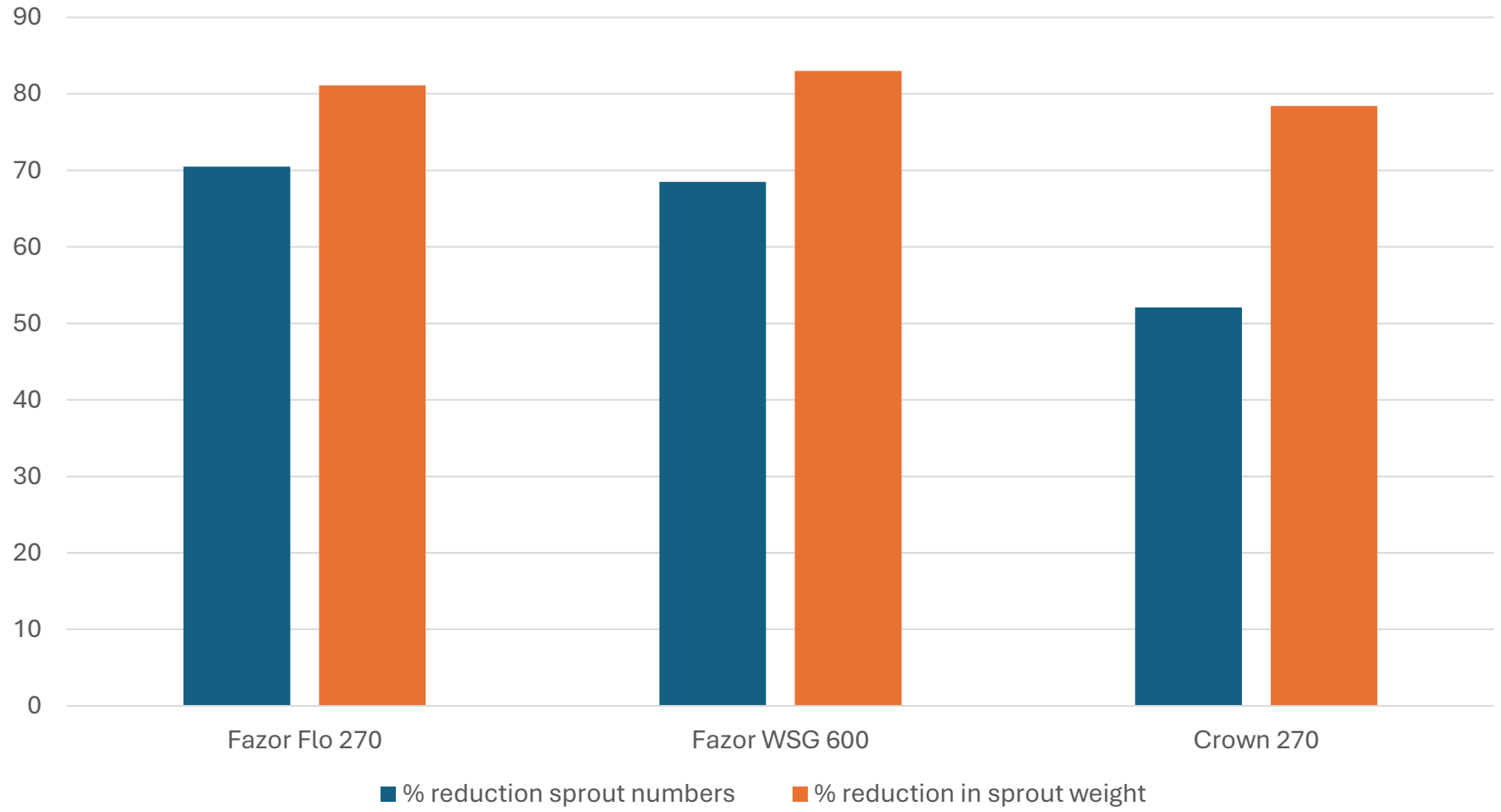
Competitor : high and persistent foam

Fazor Flo: good control of the foam

Fazor: high and persistent foam (equivalent to competitor SL 270) but defoams faster than Competitor SL 270.

Efficacy of MH formulations (3000 gai/ha)

Assessed at end of storage 151-224 DAA



No significant differences

2019-2020 6 Maritime trials (UK, Fr, Ire, Bel, Ne, Dk, N Bintje, M Piper (2), Royal, Kuras, Valor)

Potato Blight Fungicides

Genotype Frequency Chart

Continent

Europe

Country

All countries selected

Host

All

N/A Other Potato Tomato

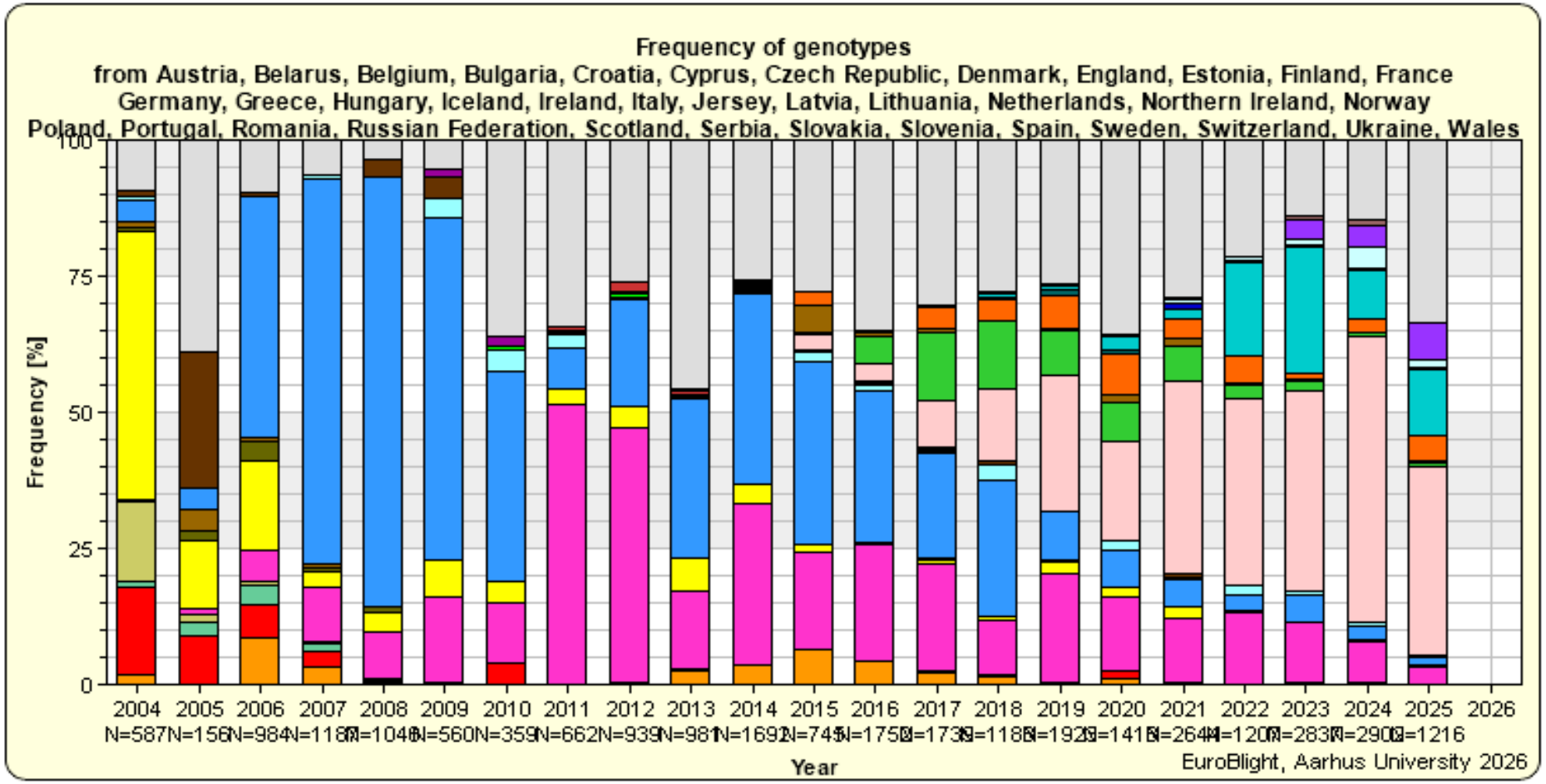
Show

Genotype legend

EU_1_A1
EU_2_A1
EU_3_A2
EU_5_A1
EU_6_A1
EU_8_A1
EU_10_A2
EU_12_A1
EU_13_A2
EU_22_A2
EU_23_A1
EU_33_A2
EU_34_A1
EU_35_A2
EU_36_A2
EU_37_A2
EU_38_A2
EU_39_A1
EU_40_A2
EU_41_A2
EU_42_A2
EU_43_A1
EU_44_A1
EU_45_A1
EU_46_A1
EU_47_A1
SIB_1_A1
Other

Genotype frequency distribution

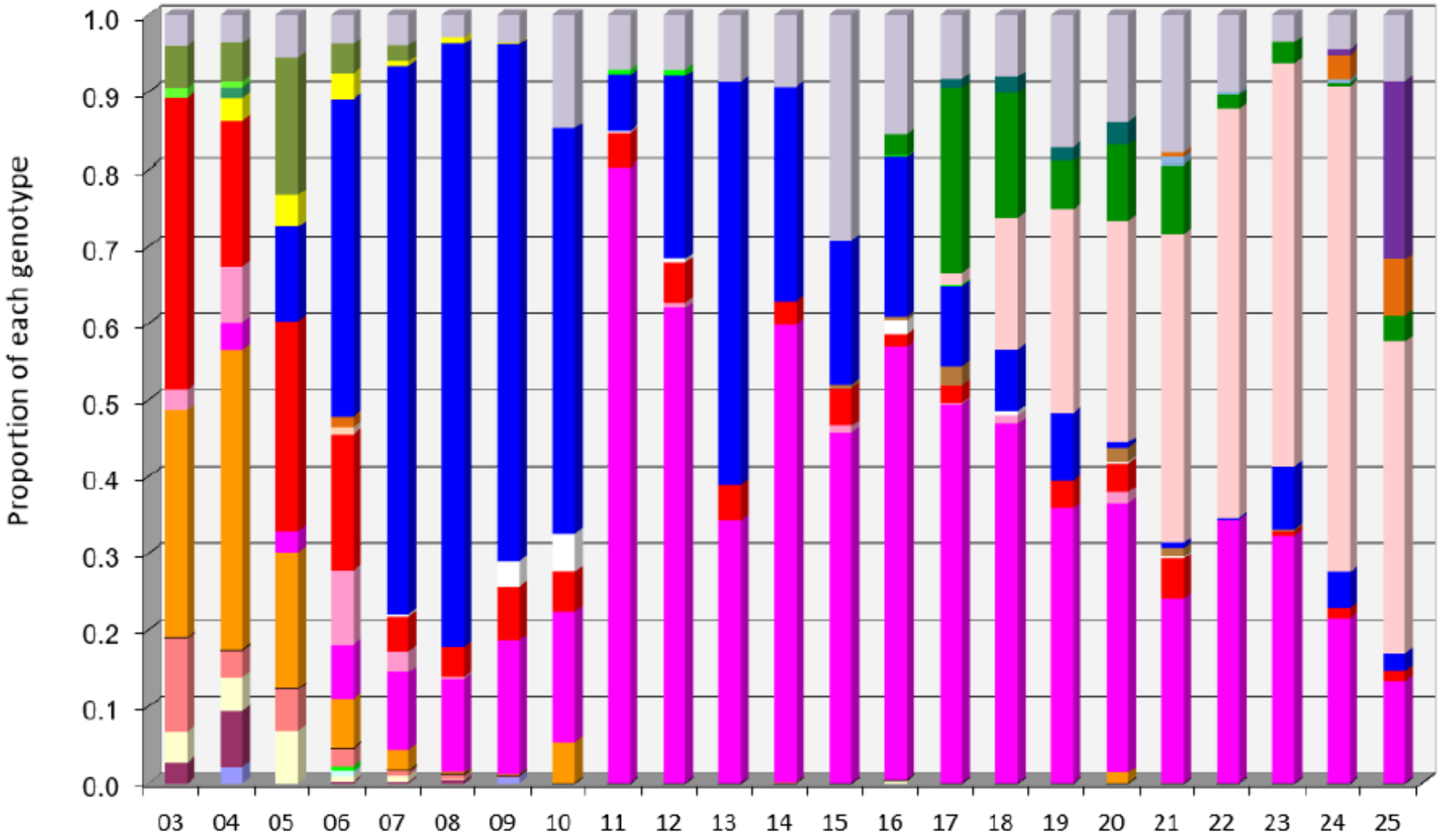
Help



EU_13 metalaxyl resistant **EU_6 declining** **EU_43 CAA & OSBPI resistant**

EU_37 fluazinam resistant **EU_36 aggressive, widespread** **EU_46 OSBPI resistant**

FAB genotype results – to date



- 300 samples
  - 200 – 220 in 2013, 2015 and 2018
- EU46 mostly in Wales & trial sites

EU36	41 %
EU43	0 %*
EU6	13 %
EU46	23 %*
EU13	2 %
EU41	7 %
EU37	3 %
'Other'	9 %

Detached leaf fungicide sensitivity summary

- UK isolates unless indicated
- Full resistance reported in four actives only
- Some variation within clones e.g. EU43, EU46, EU36
- Numbers in cells show number of isolates tested N.B. solid red does not infer that all isolates of that genotype are resistant

Genotype	Oxathiapiprolin	Mandipropamid	Metalaxyl	Fluazinam	Propamocarb	Ametoctradin	Zoxamide	Amisulbrom	Cyazofamid	Fluopicolide	Mancozeb
36_A2	41*	43	15	12	46	5	5	29	36	36	19
37_A2	20	32	5	15	30			15	30	30	15
6_A1	33	28	10	6	33	5	5	22	28	23	17
13_A2		6	3	1	6				6	1	
41_A2 (DK)	5	6	6	5	6	5	5	5	1		
41_A2 (UK)	10	10	6		10			5	5	5	
43_A1 (DK)	5	28	15	10	5	5	5	5			
43_A1 (NL)	5	5	5		5			5	5	5	
46_A1 (NL)	5	5*	5								
46_A1 (UK)	5	5	5		5			5		5	
Other (NL)	4	4									

* R reported on continent

* one NL R

Sensitive

Difference at low doses

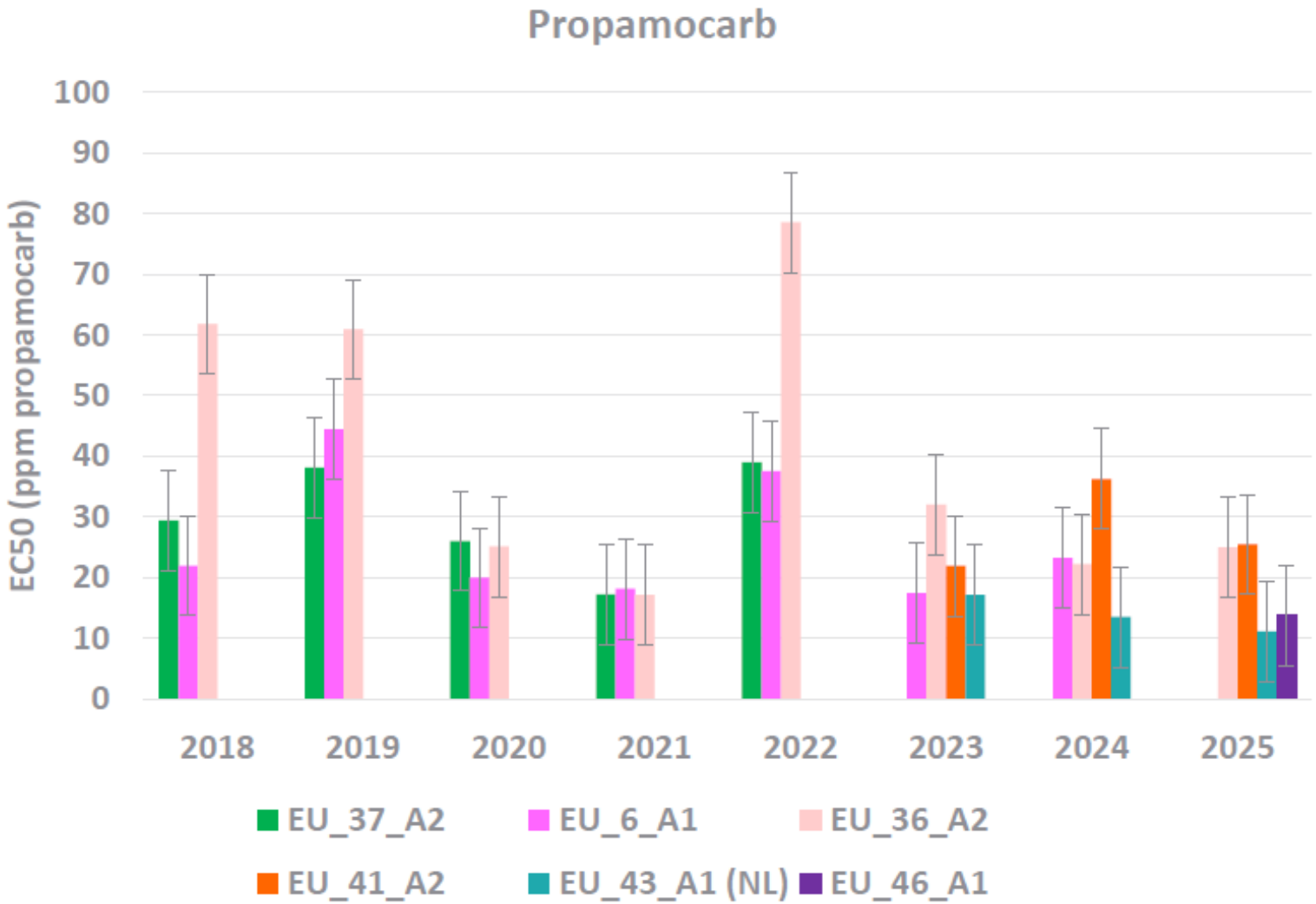
Intermediate

Resistant

DNA DNA (– active ingredients with DNA testing available)

James Lynott

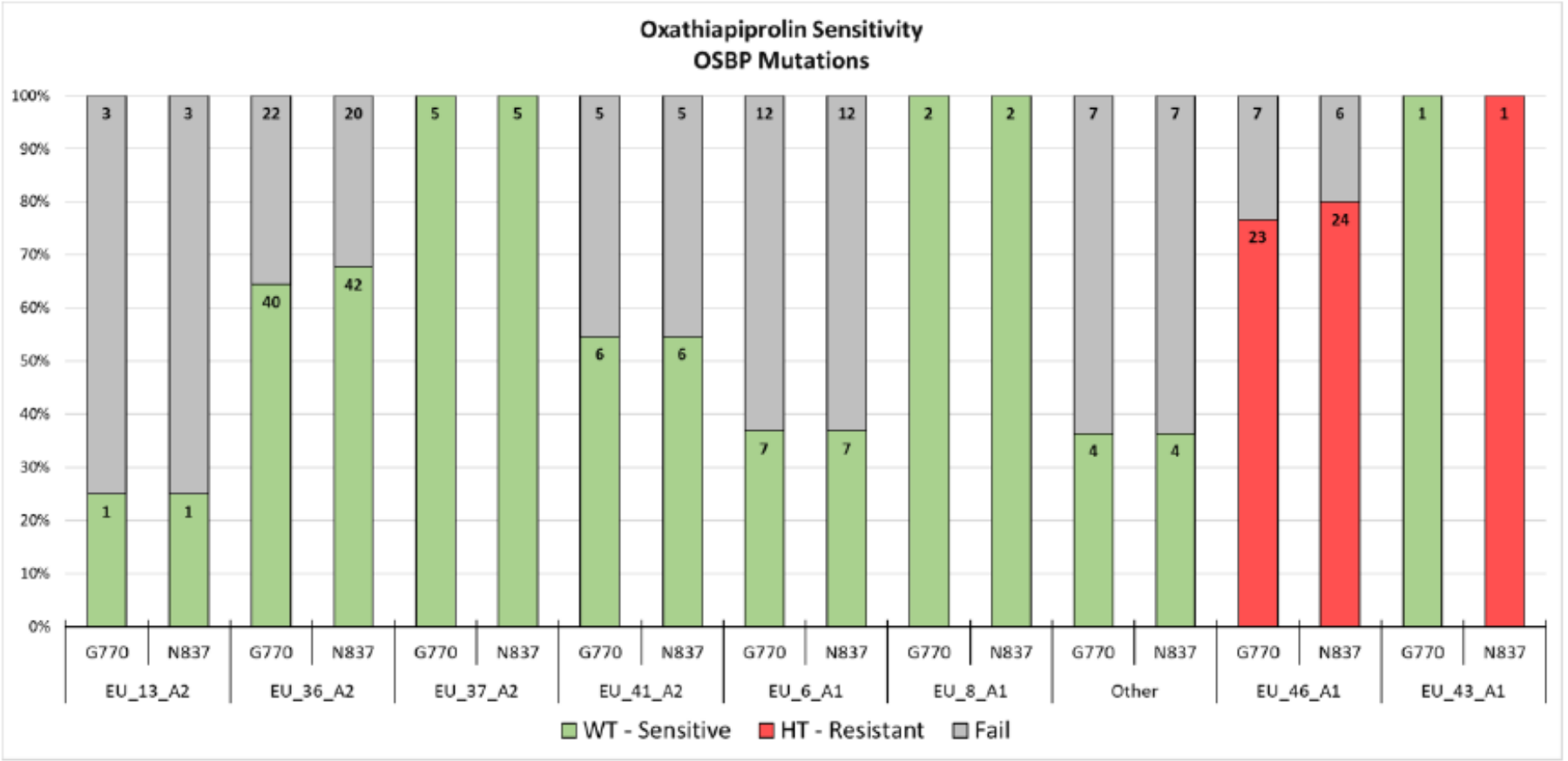
Propamocarb – field rate 5000 ppm



- All isolates sensitive
- Caution with all actives against over-reliance

FAB ddPCR results – OSPB >90 samples

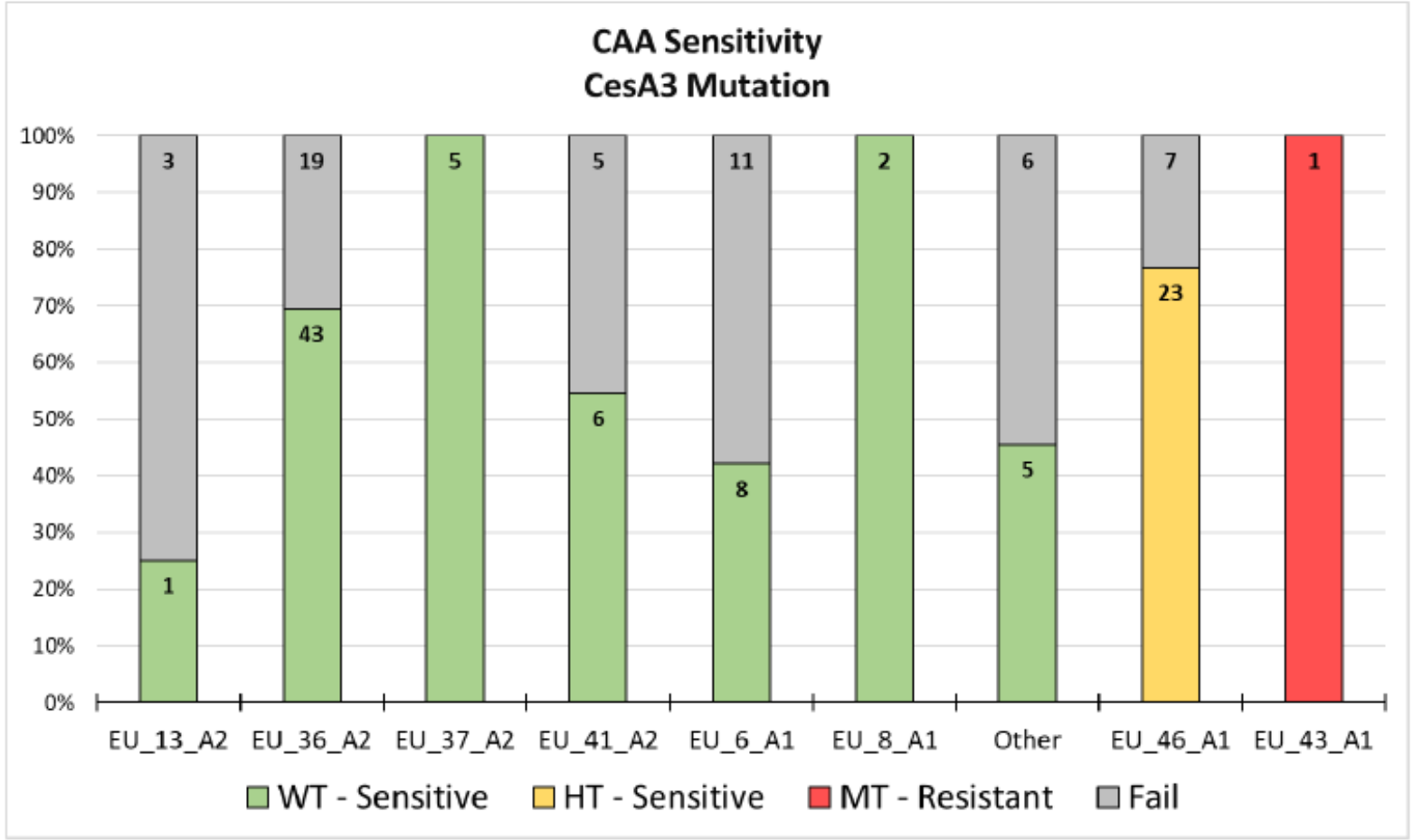
The James Hutton Institute



- All samples sensitive except for EU46
- Recent finding of single EU43

FAB ddPCR results – CAA >90 samples

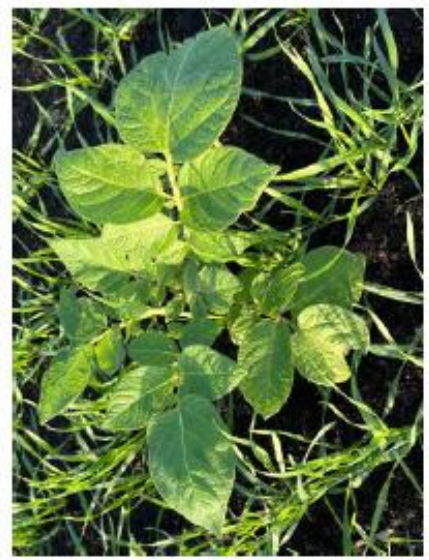
The James Hutton Institute



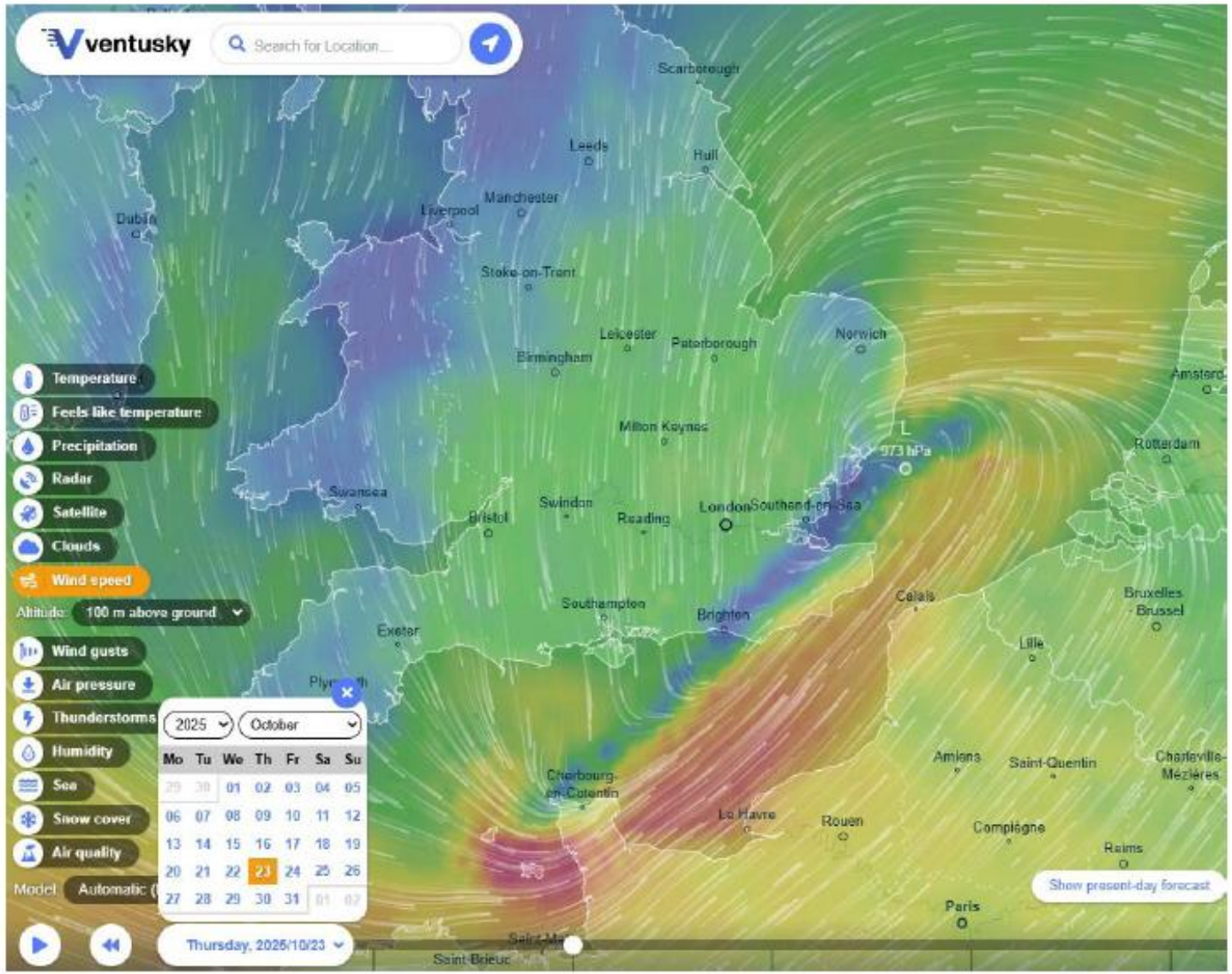
- All samples sensitive – even heterozygous EU46
- Recent finding of single EU43

New detection of EU43 – late in 2025

- **EU41**
  - Arrived 2021
  - Not sampled for 2 years
  - Scotland and N England in 2024
  - Scotland only to date in 2025
- **EU46**
  - Arrived in WA and SC late 2024
  - Not resampled in Scotland in 2025
- **EU43**
  - Sampled 4 November
  - IP19 on heavily infected volunteers
  - Awareness needed in spring 2026



Possible driver of EU43 spread to England



- Oct 23rd 03:00
- Wind and rain from Northern France and Netherlands
- Severe outbreak IP19 Nov 4th

PROXANIL (16664)

Active (s)	g a.i./l	Crops	Max. no. apps	Max. ind. dose	Max. total dose	Buffer zone
Cymoxanil + Propamocarb 10 Lit pack	50g/l 400g/l	Potato	4	2.5 l/ha	10 l/ha	-

Key notes

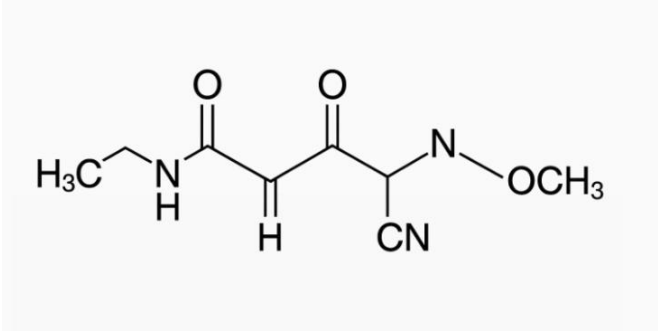
- Used successfully in UK since 2014
- Always apply with a contact fungicide such as cyazofamid, mandipropamid or amisulbrom
- Last timing of applications – 14 days before harvest

What do you need in a potato fungicide?

- Resistance management properties
- Most reliable anti-sporulant activity
- A tank mix partner you can trust
- Good rainfastness in unpredictable weather conditions

Proxanil for Resistance Management

Cymoxanil

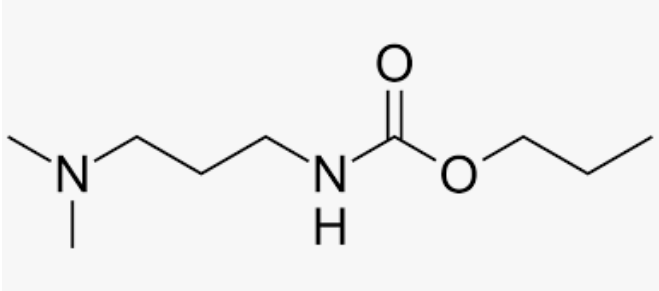


FRAC Group: 27 (Cyanoacetamide-oxime)

Resistance Risk: Low to medium

Resistance Status: No known resistance

Propamocarb



FRAC Group: 28 (Carbamates)

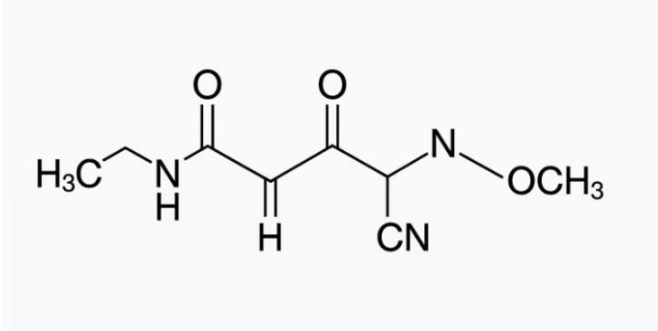
Resistance Risk: Low to medium

Resistance Status: No known resistance

Controls all strains tested

Proxanil:- activity and movement

Cymoxanil



Curative activity – 2 day ‘kick-back’

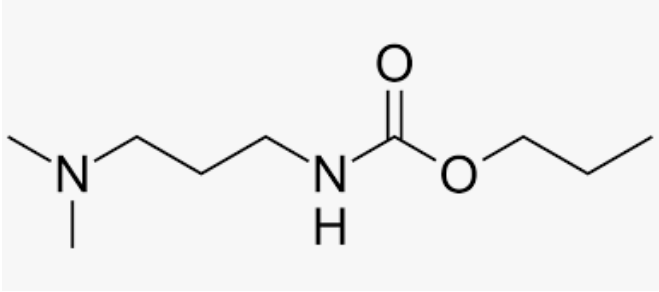
Detroys mycelia during incubation

Rapid uptake – immediate effect

Translaminar movement

Short persistence

Propamocarb



Anti-sporulant activity

Disrupts fungal cell membranes and mycelial growth

Protectant and upward systemic movement

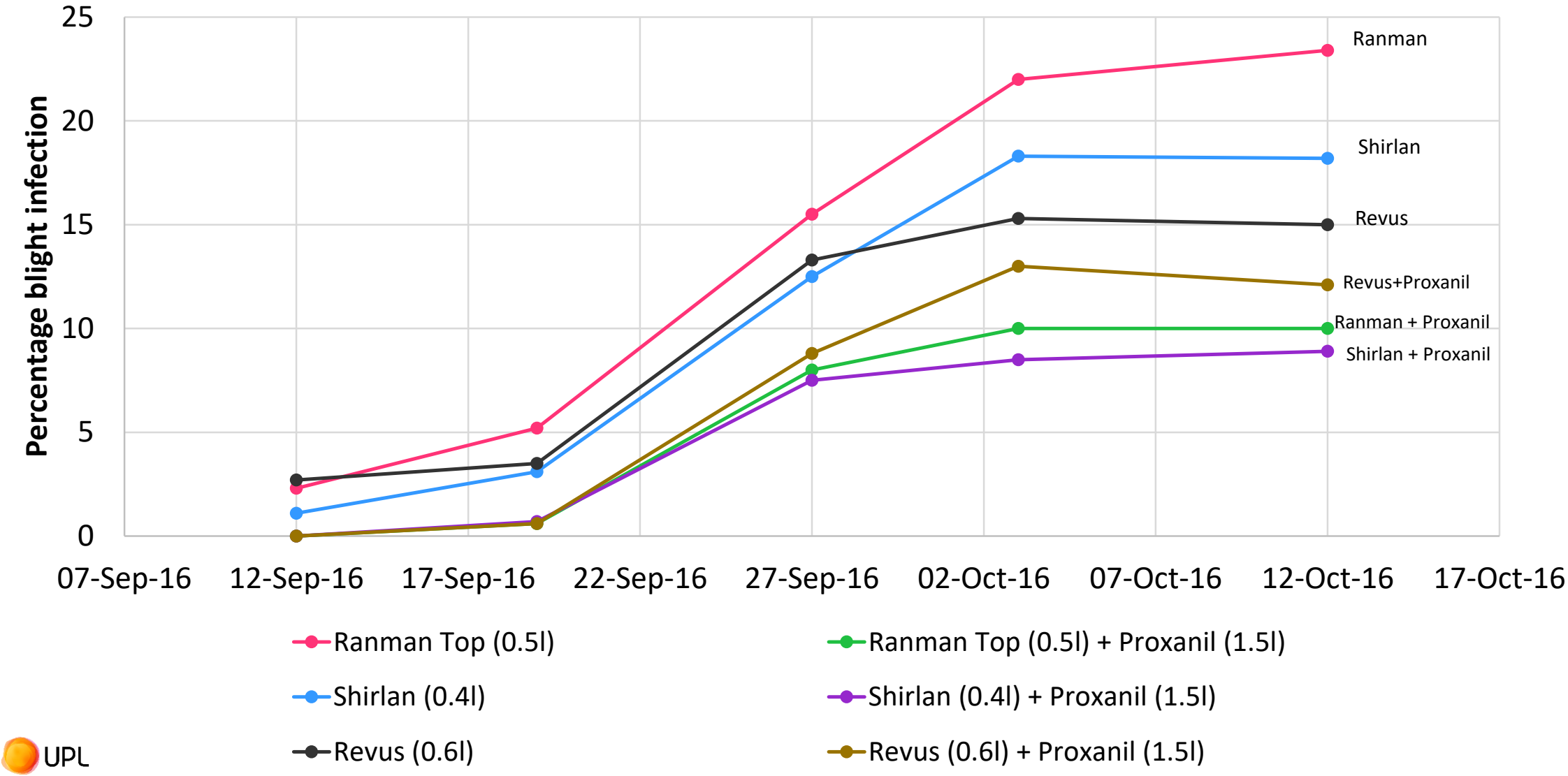
Longer persistence

Propamocarb hydrochloride – residue risk from increased usage?

- MRL 0.3 mg/kg
- GB pesticides residue sampling – 138 samples
  - 121 no residue (<0.01)
  - 4 @ 0.01
  - 13 @ 0.01-0.02 **worst case x15 safety margin to MRL**
- Half-life in potatoes 2.3 – 6.3 days depending on formulation
- Dissipation study:- mean 70% lost after 7 days, 96% lost after 14 days *
- PHI in potatoes 7 -14 days
- Bayer has guidance of max 6060 gai/ha (based on Previcur Flex max 6 x 1010 gai)
- Propamocarb does not accumulate in potato tubers
- Check with your market

* Abd-Alrahma & Almaz 2012

2016 blight trial preventative program

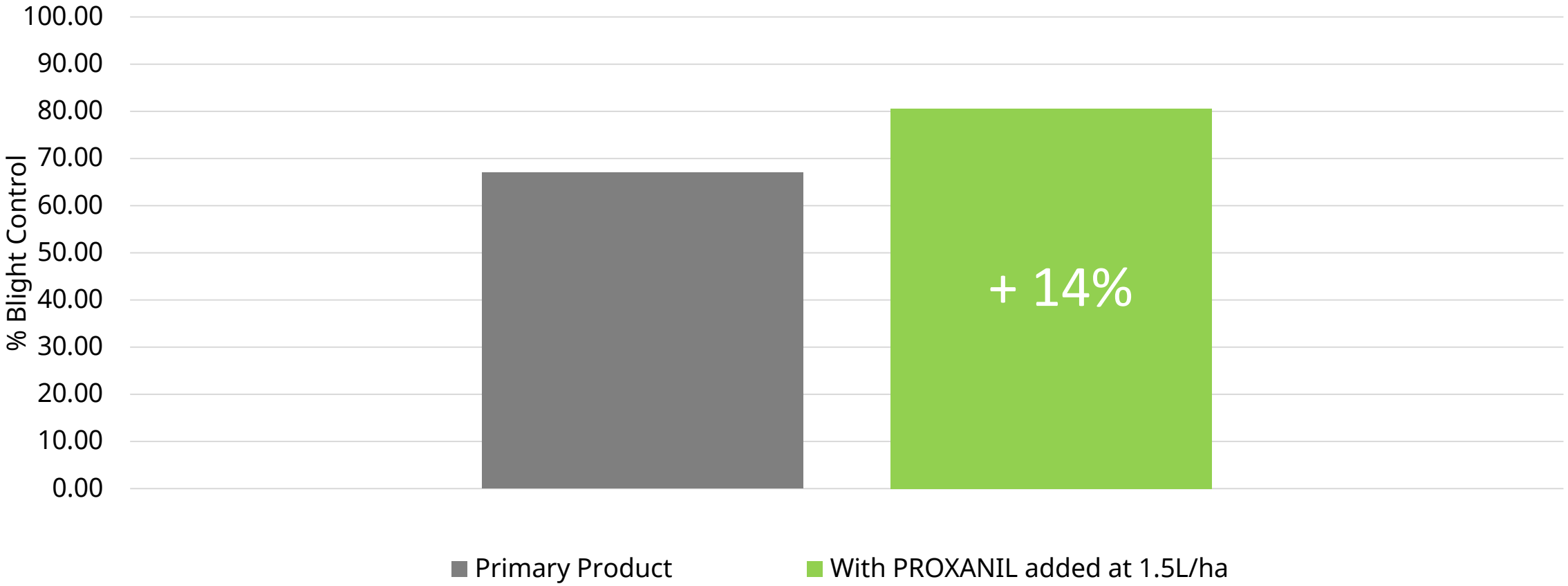


UPL

Richard Austin Agriculture- 2016

PROXANIL Value in Mixture

Mean % Foliar Blight Control (A2 Blue 13 + A1 Pink 6) seen when adding PROXANIL to a range of primary products including Revus, Ranman Top, Shirlan and Gachinko
(average of trials between 2014 and 2019)



2021 ‘Block’ trial

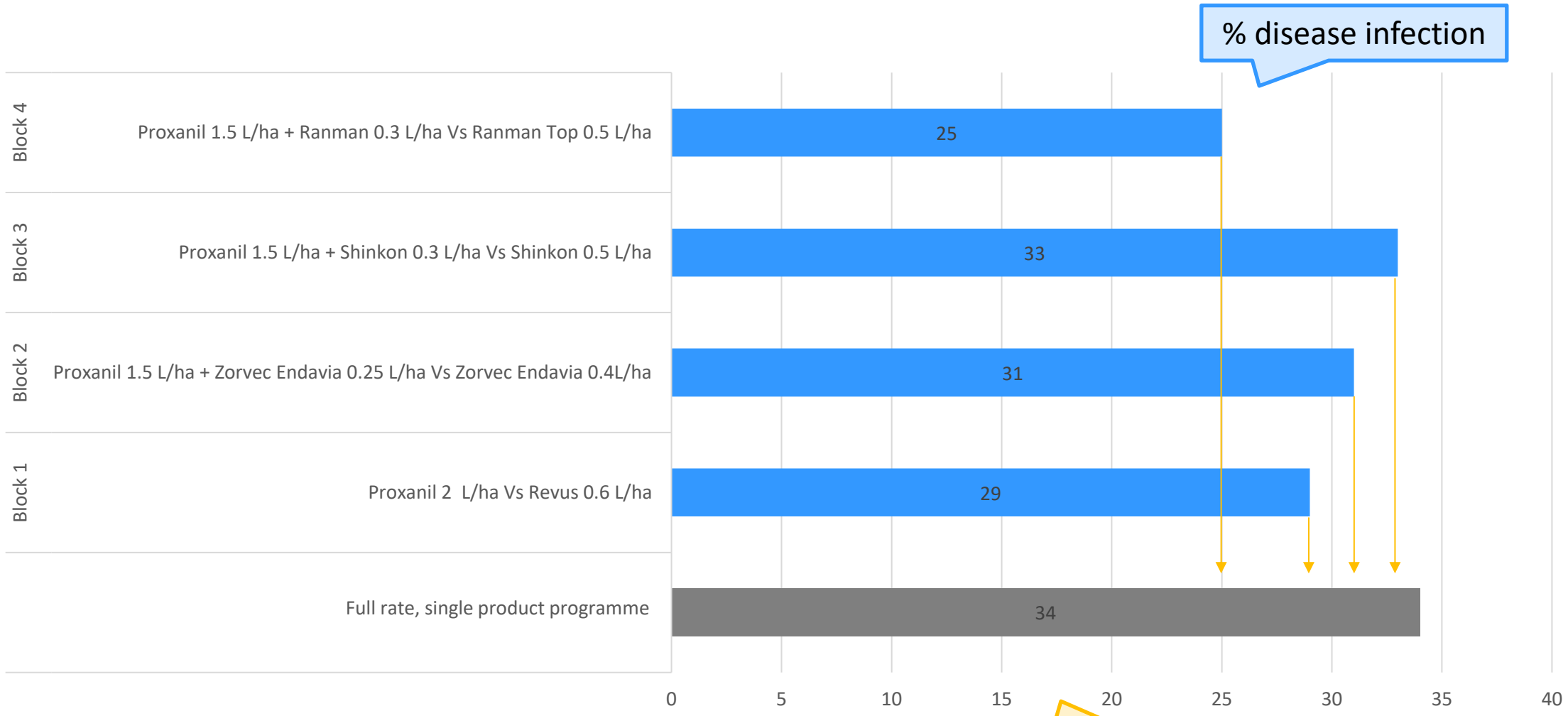
To demonstrate that adding mix partners while reducing dose is a cost effective, robust and responsible blight strategy

	Block 1	Block 2	Block 3	Block 4
1	Untreated	Untreated	Untreated	Untreated
2	Revus 0.6 L/ha	Zorvec Endavia 0.4 L/ha	Shinkon 0.5 L/ha	Ranman Top 0.5 L/ha
3	Proxanil 1.5 L/ha	Zorvec Endavia 0.4 L/ha	Shinkon 0.5 L/ha	Ranman Top 0.5 L/ha
4	Proxanil 2 L/ha	Zorvec Endavia 0.4 L/ha	Shinkon 0.5 L/ha	Ranman Top 0.5 L/ha
5	Diprospero 1.5 L/ha	Zorvec Endavia 0.4 L/ha	Shinkon 0.5 L/ha	Ranman Top 0.5 L/ha
6	Revus 0.6 L/ha	Zorvec Endavia 0.25 L/ha + Edipro 1 L/ha	Shinkon 0.5 L/ha	Ranman Top 0.5 L/ha
7	Revus 0.6 L/ha	Zorvec Endavia 0.25 L/ha + Proxanil 1 L/ha	Shinkon 0.5 L/ha	Ranman Top 0.5 L/ha
8	Revus 0.6 L/ha	Zorvec Endavia 0.25 L/ha + Proxanil 1.5 L/ha	Shinkon 0.5 L/ha	Ranman Top 0.5 L/ha
9	Revus 0.6 L/ha	Zorvec Endavia 0.4 L/ha	Edipro 1 L/ha + Shinkon 0.3 L/ha	Ranman Top 0.5 L/ha
10	Revus 0.6 L/ha	Zorvec Endavia 0.4 L/ha	Proxanil 1 L/ha + Shinkon 0.3 L/ha	Ranman Top 0.5 L/ha
11	Revus 0.6 L/ha	Zorvec Endavia 0.4 L/ha	Proxanil 1.5 L/ha + Shinkon 0.3 L/ha	Ranman Top 0.5 L/ha
12	Revus 0.6 L/ha	Zorvec Endavia 0.4 L/ha	Shinkon 0.5 L/ha	Edipro 1 L/ha + Ranman 0.3 L/ha
13	Revus 0.6 L/ha	Zorvec Endavia 0.4 L/ha	Shinkon 0.5 L/ha	Proxanil 1 L/ha + Ranman 0.3 L/ha
14	Revus 0.6 L/ha	Zorvec Endavia 0.4 L/ha	Shinkon 0.5 L/ha	Proxanil 1.5 L/ha + Ranman 0.3 L/ha

UPL - Open Ag

Each block is 3 applications. RAA 32201 Lincolnshire Blight Trial conducted by Richard Austin Agriculture in 2021

Where can Proxanil be used as a tank mix partner?

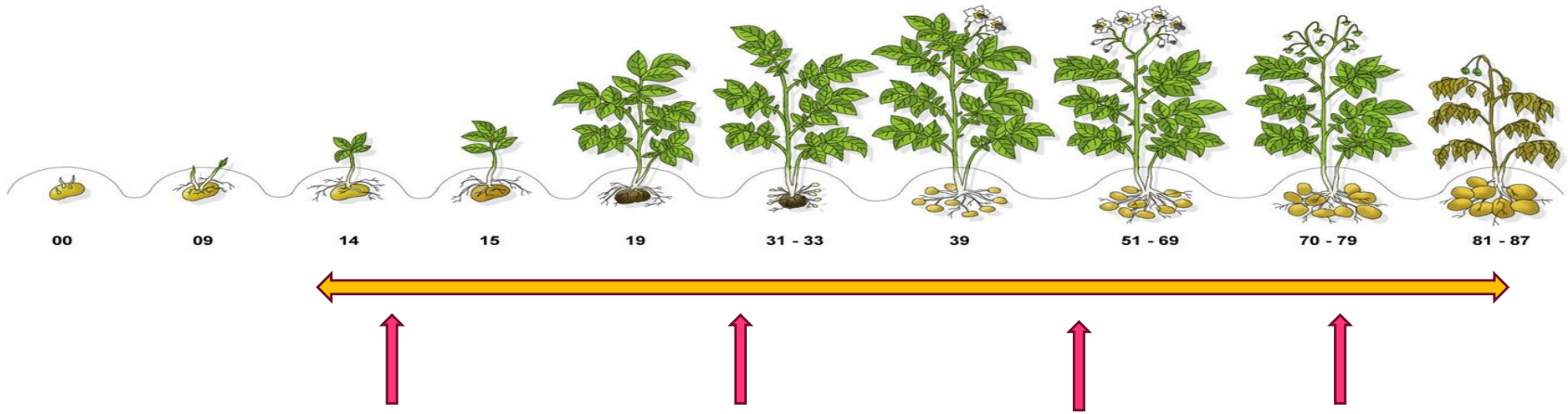


UPL - Open Ag

RAA 32201 Lincolnshire Blight Trial conducted by Richard Austin Agriculture in 2021

Proxanil 2026 – its value and timing has changed!

- Excellent resistance management – each component the only member of its group and no history of resistance
- Stop-effect valuable on seed borne blight
- Only reliable anti-sporulant available (following OXTP resistance)
- Also curative with good mobility
- Rapidly rainfast – 1 hour
- Adds on average 14% control when added to partner
- Proxanil + Ranman Top still top score for tuber blight in Euroblight table



Sinala Ultra

Label Extension

Potatoes

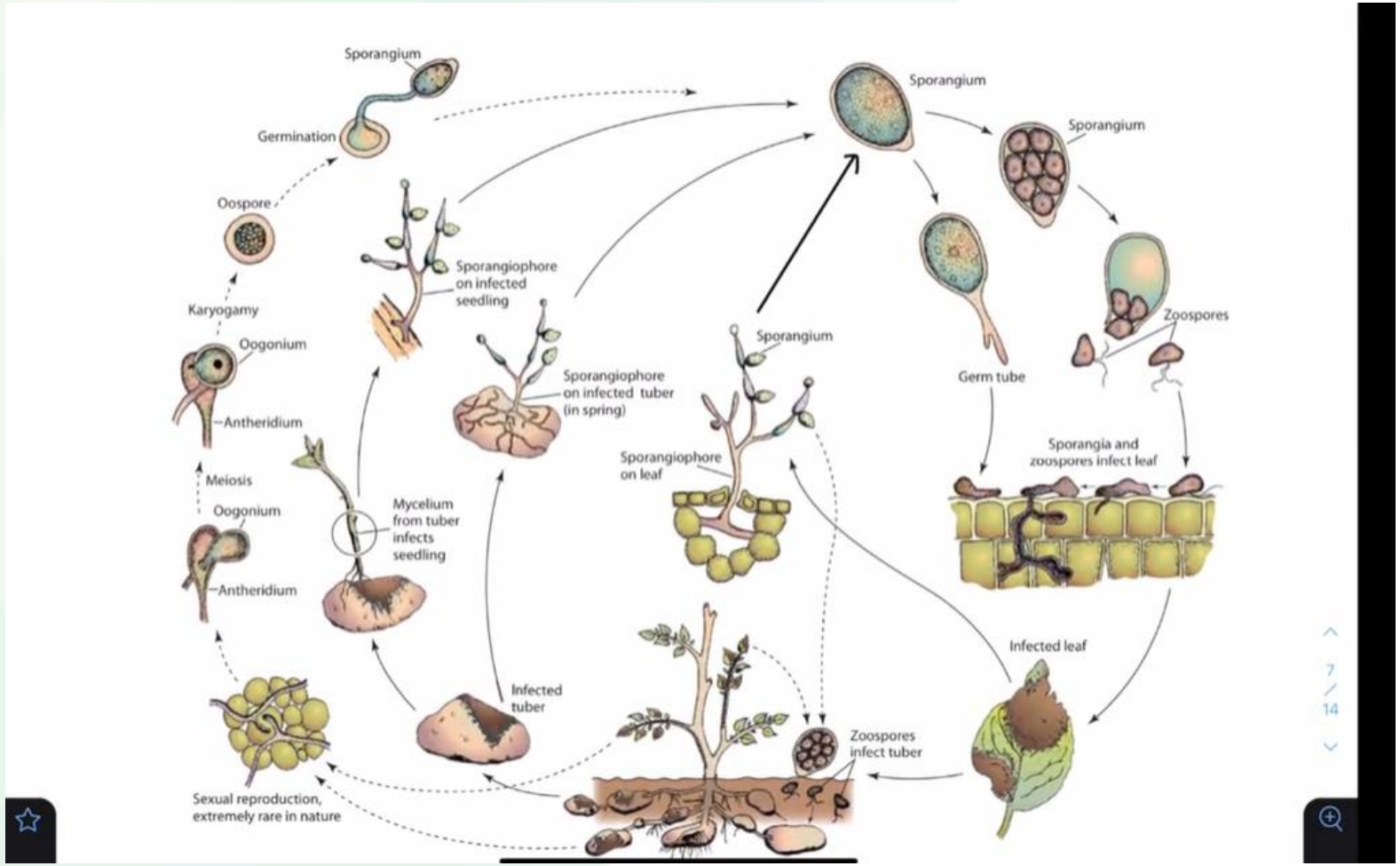
Sinala Ultra – Product Background

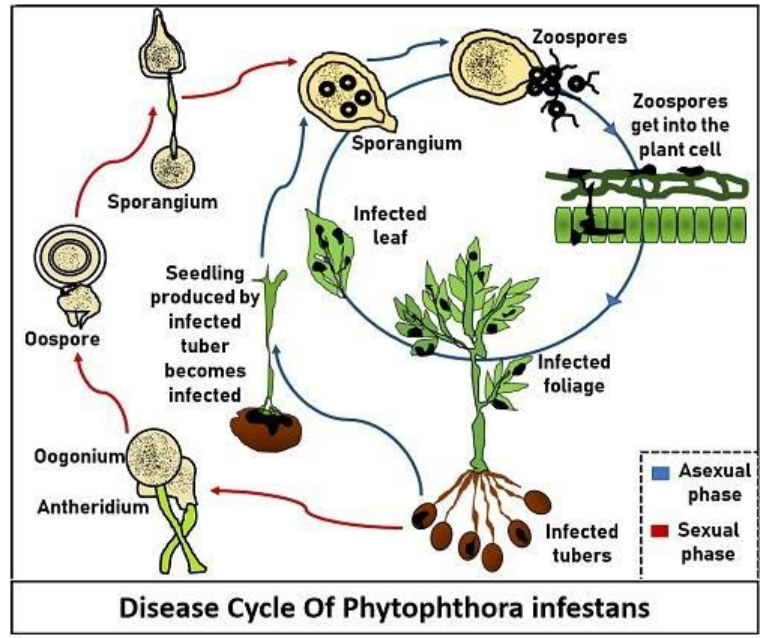
- 60g ai/l ME orange oil
- Currently registered for use in pepper, chilli and tomatoes (full enclosure)l Q4 2026
- Anticipated approval in potatoes Q4 2026
- Sales 2027
- Protectant activity
- Multisite - disrupts the cell membrane leading to desiccation
- Contact action on spores, sporangia and mycelium

Anticipated Label

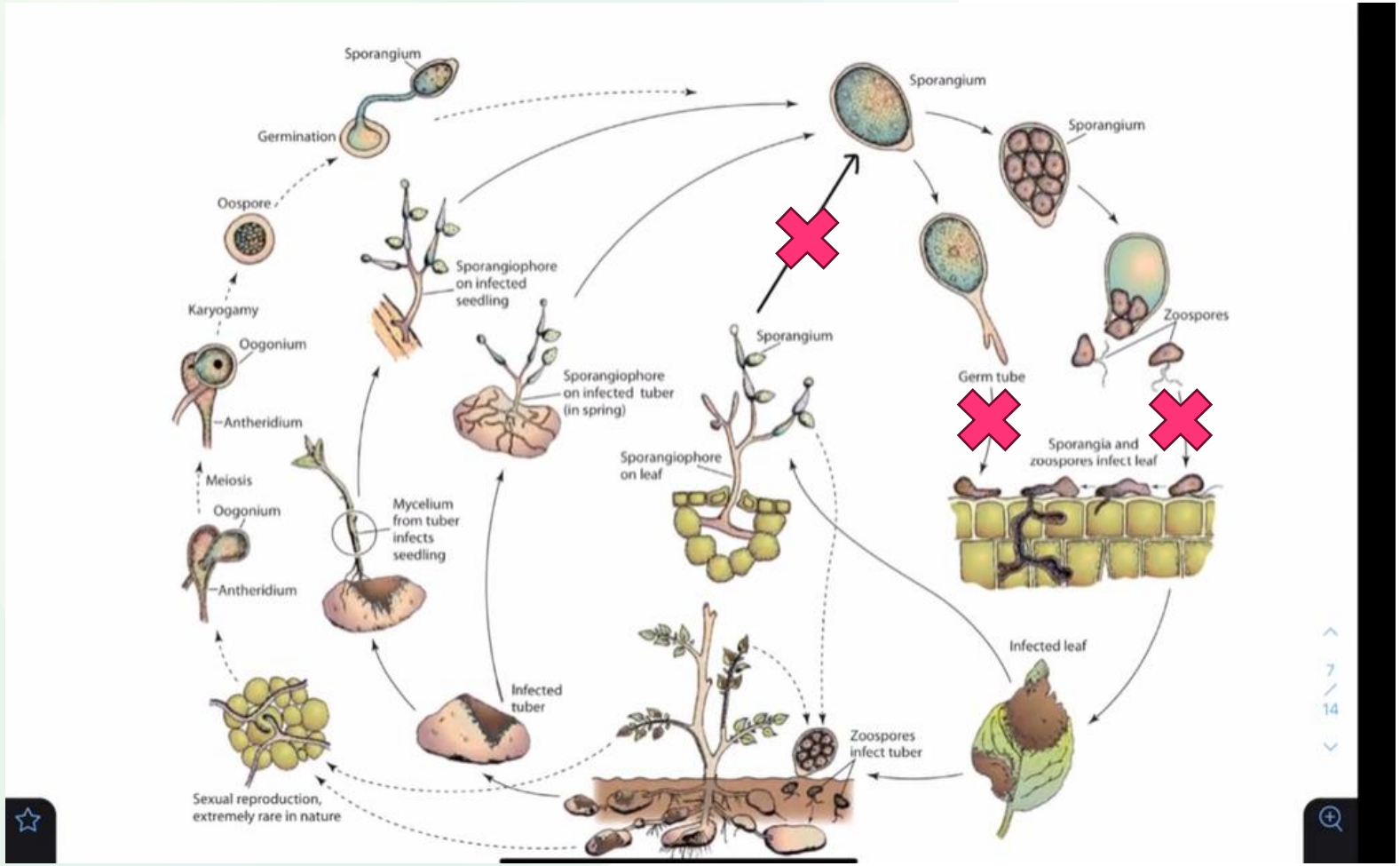
- Max label dose 4.0 L/ha in 500 L water
    - Max concentration of 0.8%
    - Anticipated field rate 2.4 L/ha in 300 L water
- Up to 12 applications / crop
- 0 day harvest interval

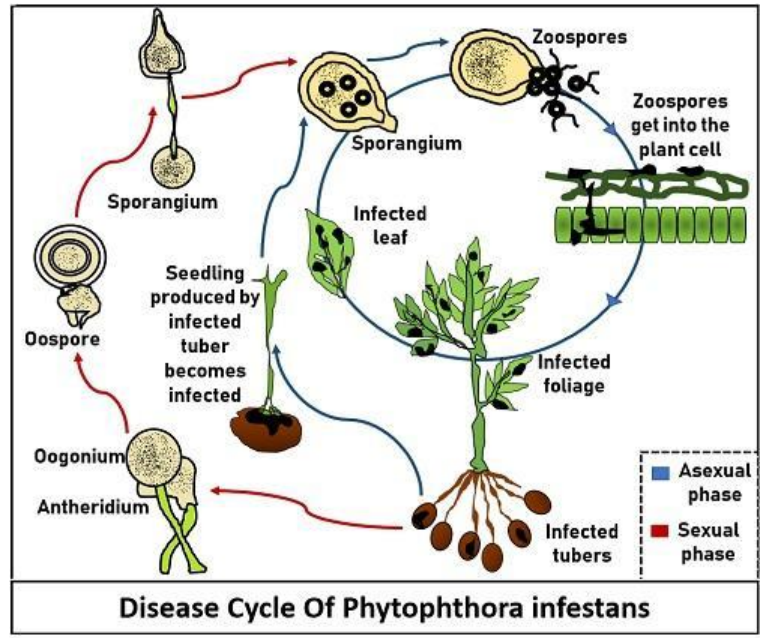
Phytophtora infestans – Life Cycle





Phytophtora infestans – Life Cycle

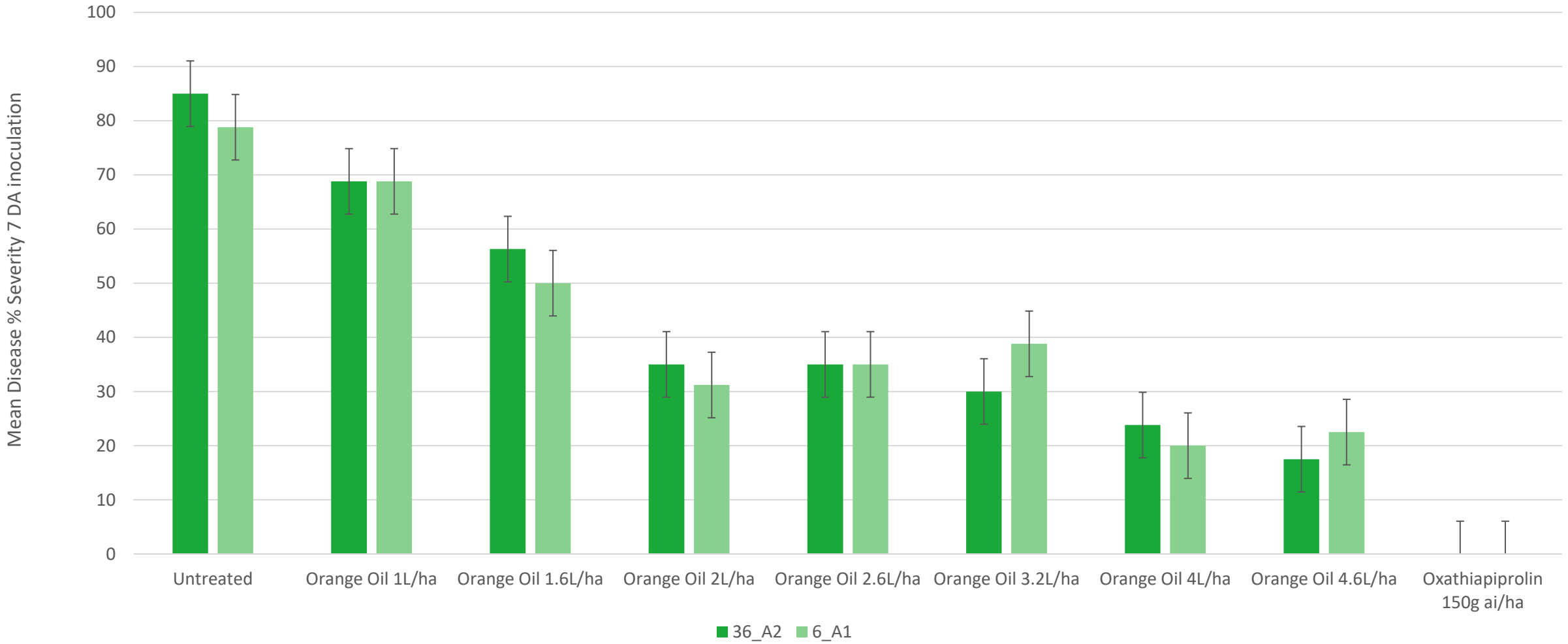




Disease Cycle Of Phytophthora infestans

BIOLOGY READER

Sinala Ultra – Dose Response *Phytophthora Infestans* (Whole Plants)

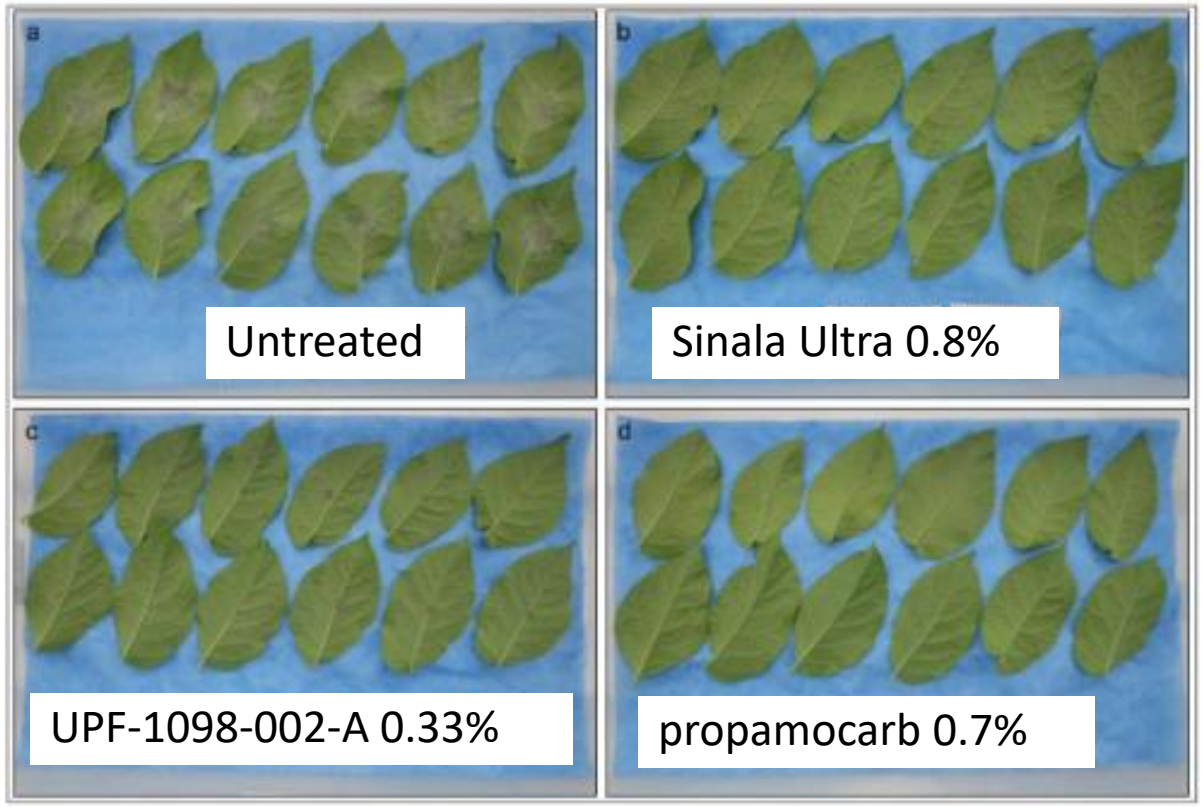


Plants inoculated with 36_A2 and 6_A1 – both isolates successfully infected.
Treatments applied 24 hours after inoculation and assessed 6 days later – 24 hr curative

James Hutton Institute
2023, 1 trial
Variety Maris Piper

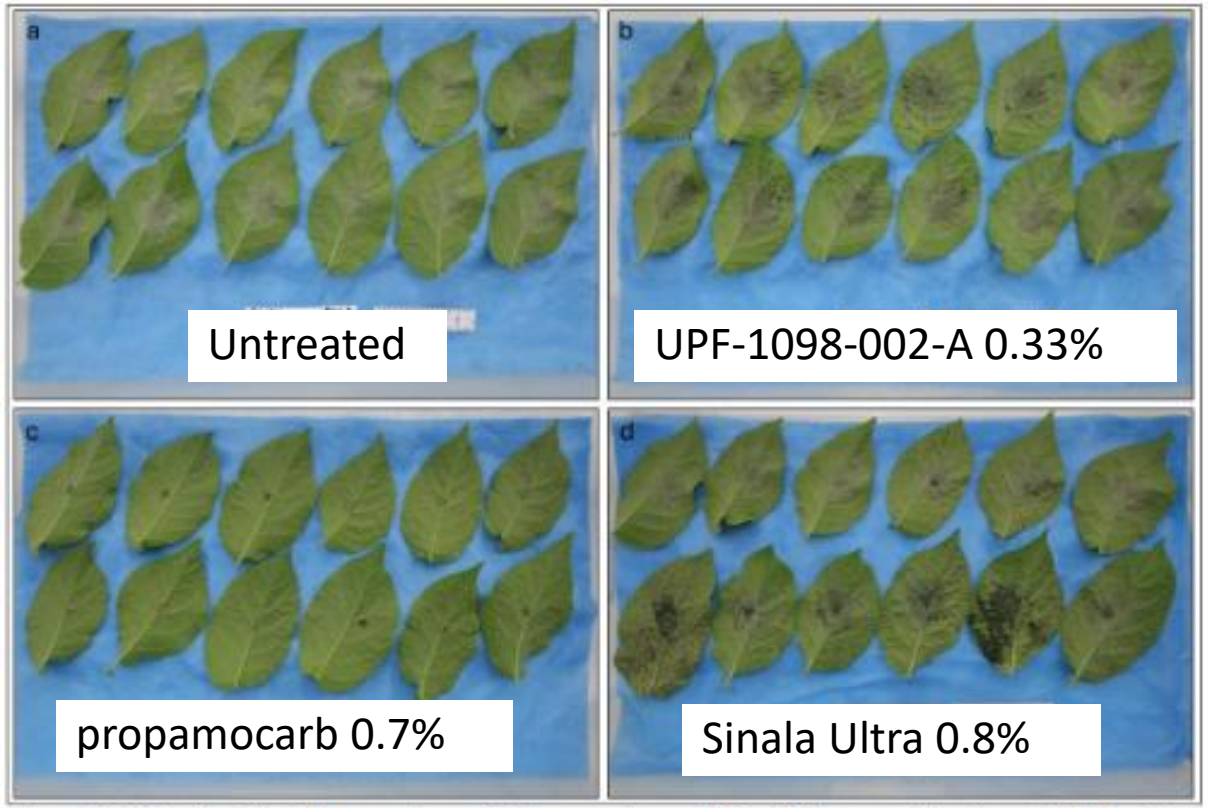
Sinala Ultra – Protectant Activity

Protectant Activity



Assessed 7 days post inoculation, 8 days post treatment

Curative Activity



Assessed 7 days post inoculation, 6 days post treatment

JHI – Detached leaf test

Sinala Ultra – Efficacy Across Different Isolates

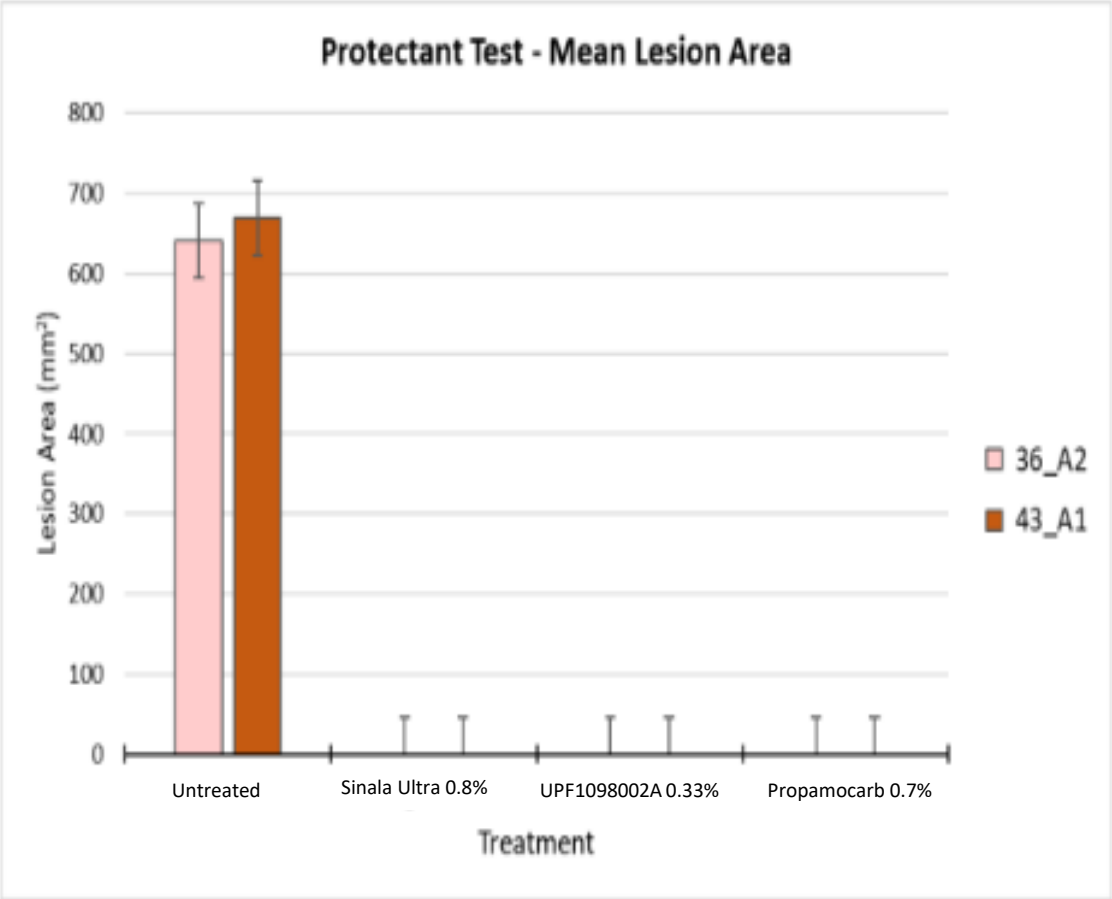


Fig 1: Protectant Test. Mean lesion size observed 7 days post inoculation. Error bars = s.e.d. (23.32).

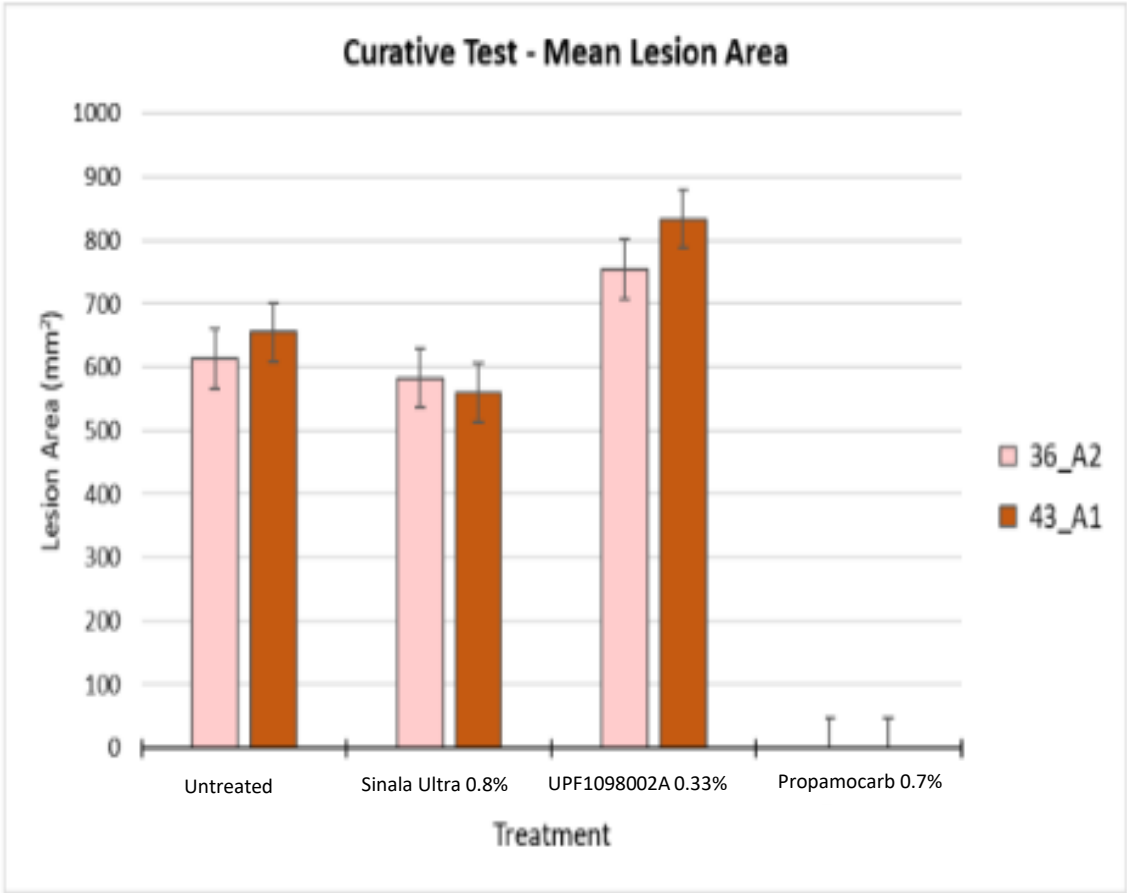
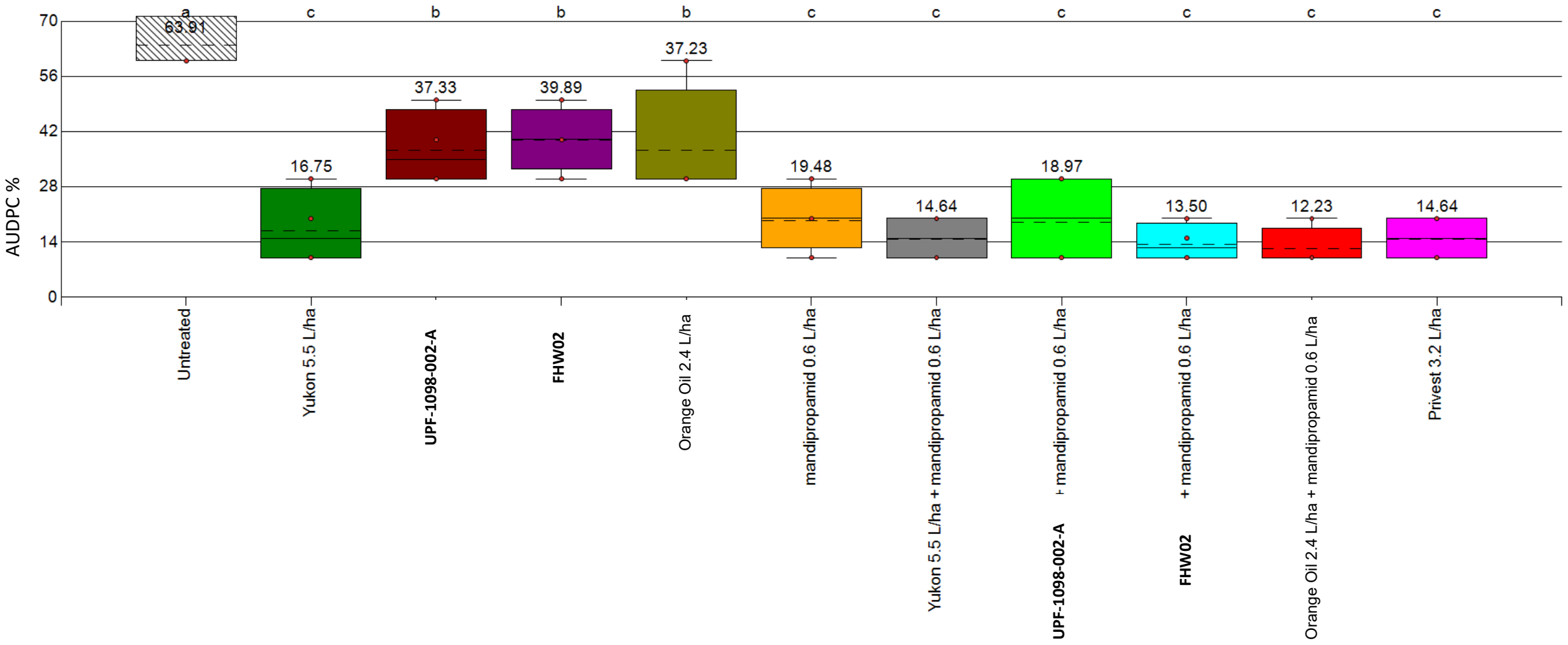


Fig 2: Curative Test. Mean lesion size observed 7 days post inoculation. Error bars = s.e.d. (46.4).

Sinala Ultra Field Trials

Ireland 2024

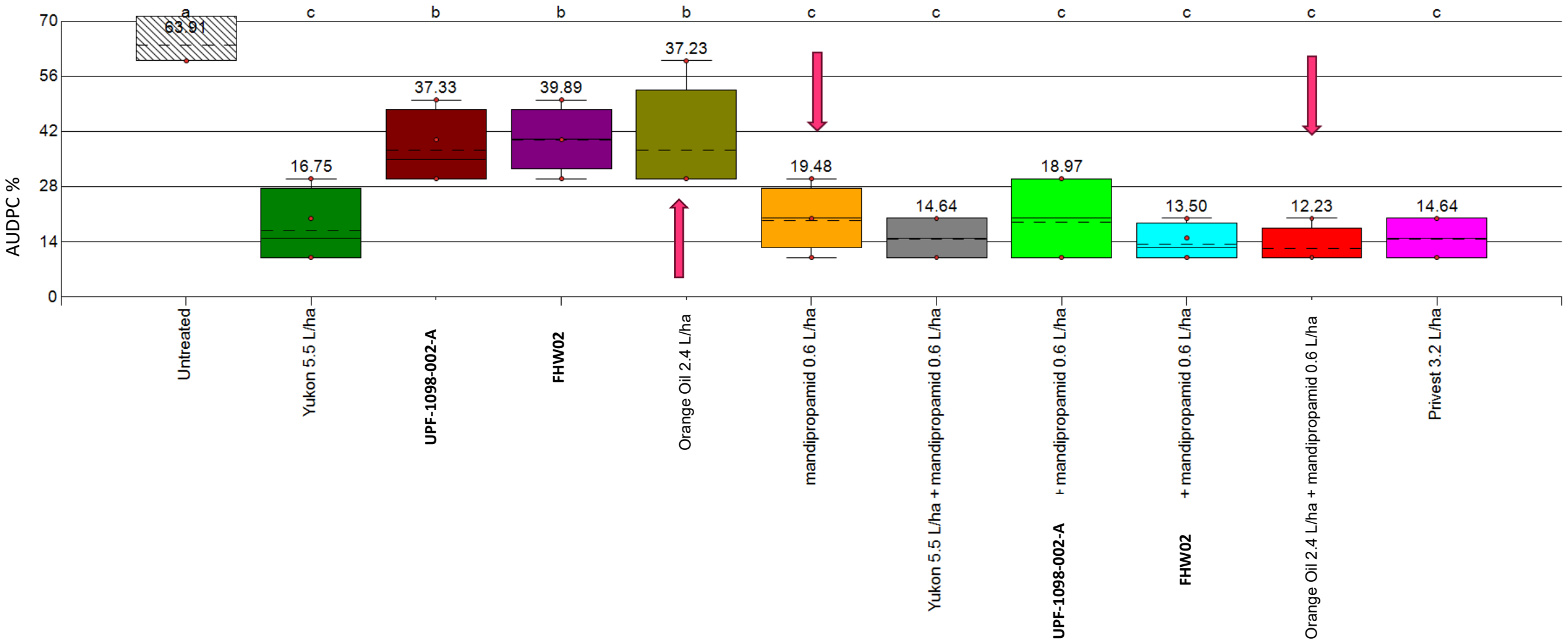
Multi Sites Control of *P. Infestans* – Ireland 2024



Summary 1 trial Ireland 2024, Variety Markies, planted 15th April 2024, Natural Infection
First 3 sprays across entire trial 20 Jun Shirlan 0.4 L/ha, 29 Jun Infinito 1.6 L/ha, 9th Jul Revus 0.6 L/ha
F/B 8 consecutive applications of each treatment – started 19 Jul on a 7 day interval

LSD P=.05	10.12
Standard Deviation	5.4
CV	18.8

Multi Sites Control of *P. Infestans* – Ireland 2024



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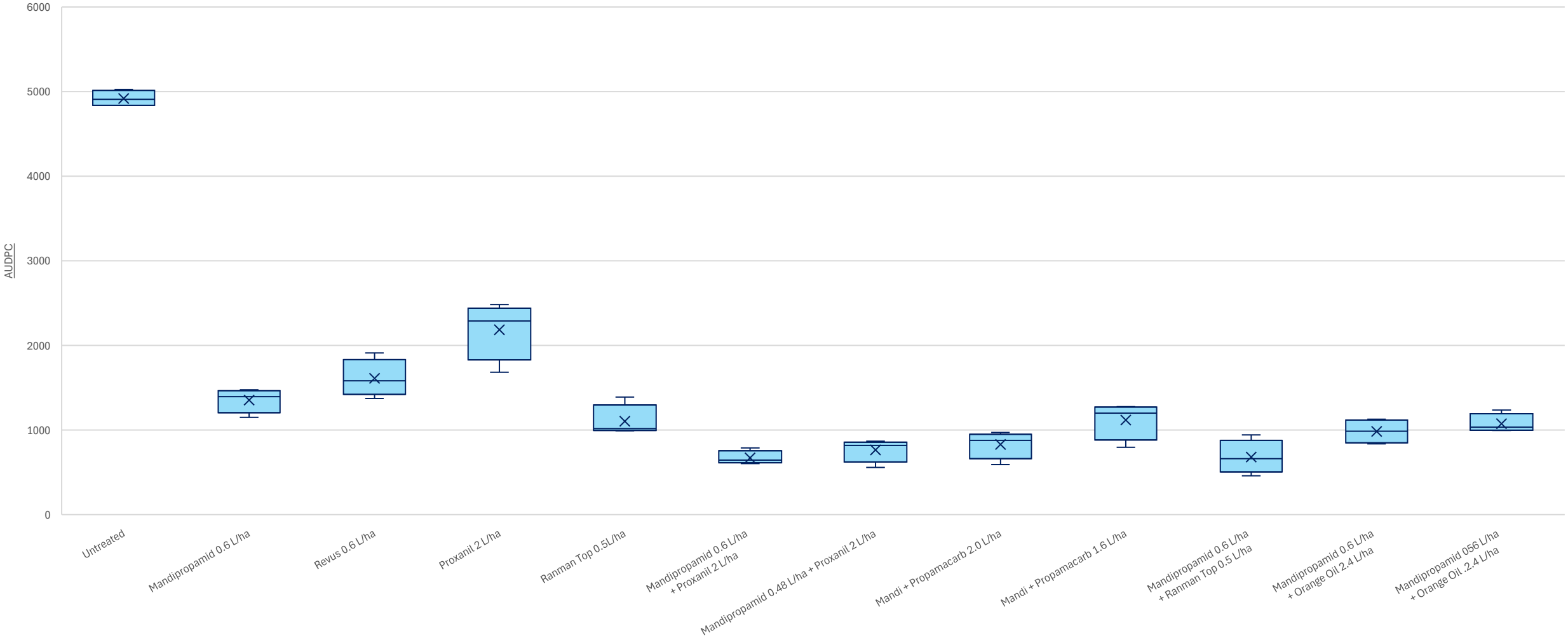
Sinala Ultra Field Trials

Eurofins 2024

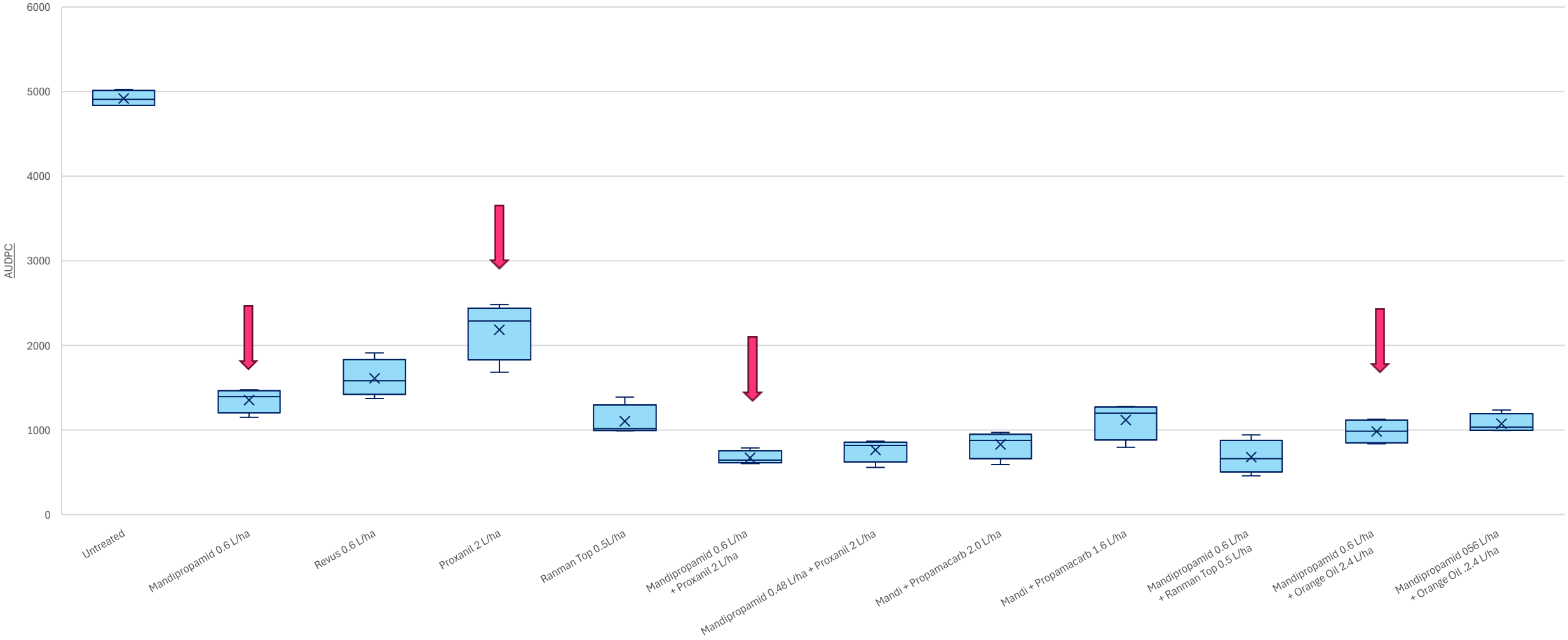
SINALA ULTRA Additive in a Program – Eurofins 2024



LSD P=.05	193.587
Standard Deviation	134.564
CV	9.34

1 trial Eurofins Blight Day 2024,
Variety Melody
9 consecutive applications 25th June – 28th Aug 2024, Water volume 300 L/ha

SINALA ULTRA Additive in a Program
Eurofins, Derbyshire 2024



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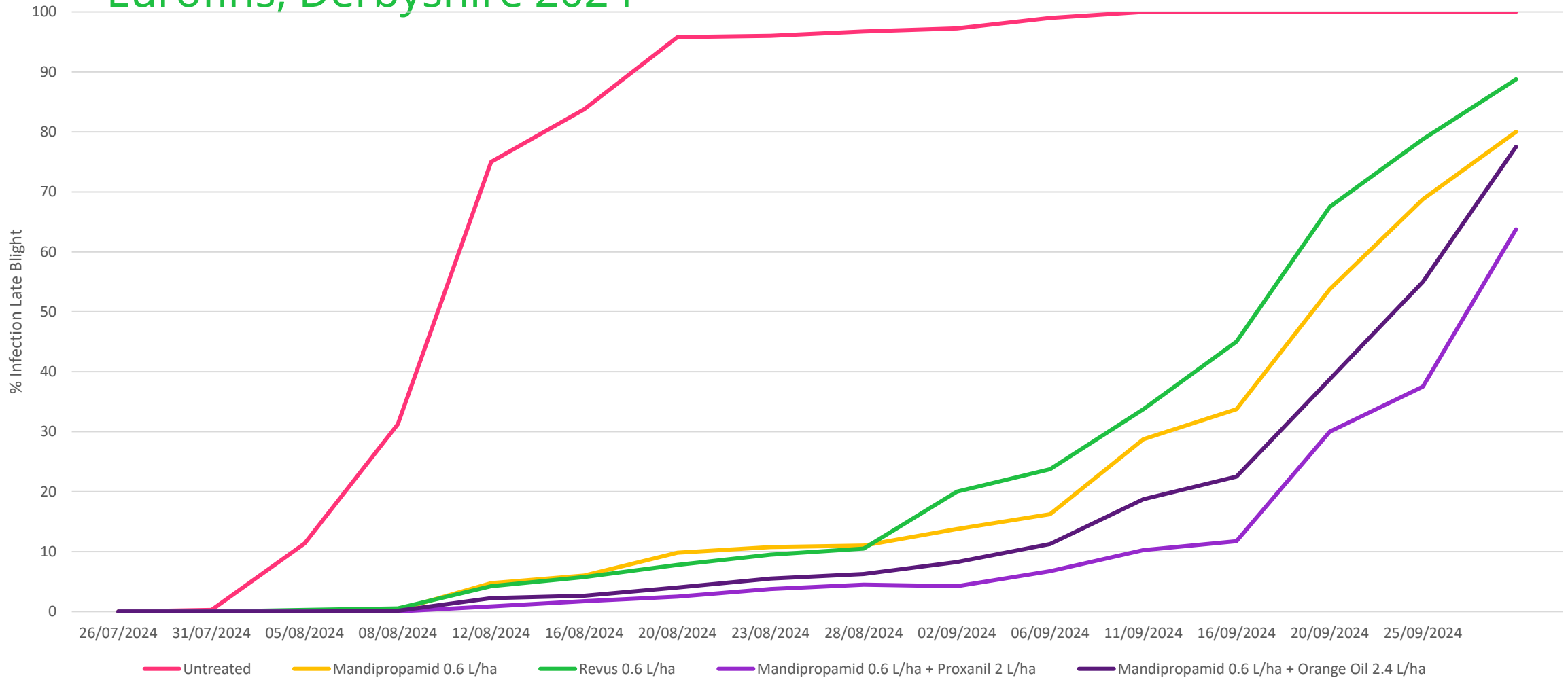
SINALA ULTRA Additive Disease Control
Eurofins, Derbyshire 2024



LSD P=.05	.	0.1986	3.476	3.161	3.167	3.163	2.67	3.049	4.088	4.81	4.966	9.503	9.683	12.044	9.051	5.245
Standard Deviation	0	0.1381	2.417	2.197	2.202	2.198	1.86	2.119	2.842	3.343	3.452	6.605	6.731	8.372	6.292	3.646
CV	0	581.27	245.3	78.28	23.91	20.14	14.17	14.35	18.46	17.97	16.1	22.86	19.72	16.71	10.38	4.68

Sinala Ultra In a Programme

Eurofins 2025

Trial Background – Treatments

Trt Reference	A	B	C	D	E	F	G	H	I	J	K	L	M
Untreated	Untreated												
FGP03	FGP03 0.6 L/ha												
FGP03 + Sinala	FGP03 + Sinala 0.6 + 2.4 L/ha												
FGP03 + UPF-1098-002-A	FGP03 + UPF-1098-002-A 0.6 + 1.0 L/ha												
FGP03 + FHW02	FGP03 + FHW02 0.6 + 4.0 L/ha												
2024 Programme	Untreated	Zorvec Entecta 0.25 L/ha	Privest 3.2 L/ha	Zorvec Entecta 0.25 L/ha	Privest 3.2 L/ha	Ranman Top 0.5 L/ha	Infinito 1.6 L/ha	FGP03 + Shirlan 0.6 + 0.4 L/ha	Infinito 1.6 L/ha	FGP03 + Shirlan 0.6 + 0.4 L/ha	Infinito 1.6 L/ha	Ranman Top 0.5 L/ha	Infinito 1.6 L/ha
2024 Prg + Mancozeb	Manzate 75 WG 1.7 kg/ha	Zorvec Entecta + Manzate 75 WG 0.25 L/ha + 1.7 kg/ha	Privest 3.2 L/ha	Zorvec Entecta + Manzate 75 WG 0.25 L/ha + 1.7 kg/ha	Privest 3.2 L/ha	Ranman Top + Manzate 75 WG 0.5 L/ha + 1.7 kg/ha	Infinito 1.6 L/ha	FGP03 + Shirlan 0.6 + 0.4 L/ha	Infinito 1.6 L/ha	FGP03 + Shirlan 0.6 + 0.4 L/ha	Infinito 1.6 L/ha	Ranman Top + Manzate 75 WG 0.5 L/ha + 1.7 kg/ha	Infinito 1.6 L/ha
2024 Prg + Sinala	Sinala Ultra 2.4 L/ha	Zorvec Entecta + Sinala Ultra 0.25 + 2.4 L/ha	Privest 3.2 L/ha	Zorvec Entecta + Sinala Ultra 0.25 + 2.4 L/ha	Privest 3.2 L/ha	Ranman Top + Sinala Ultra 0.5 + 2.4 L/ha	Infinito 1.6 L/ha	FGP03 + Shirlan 0.6 + 0.4 L/ha	Infinito 1.6 L/ha	FGP03 + Shirlan 0.6 + 0.4 L/ha	Infinito 1.6 L/ha	Ranman Top + Sinala Ultra 0.5 + 2.4 L/ha	Infinito 1.6 L/ha
2024 Prg + UPF	UPF-1098-002-A 1.0 L/ha	Zorvec Entecta + UPF-1098-002-A 0.25 + 1.0 L/ha	Privest 3.2 L/ha	Zorvec Entecta + UPF-1098-002-A 0.25 + 1.0 L/ha	Privest 3.2 L/ha	Ranman Top + UPF-1098-002-A 0.5 + 1.0 L/ha	Infinito 1.6 L/ha	FGP03 + Shirlan 0.6 + 0.4 L/ha	Infinito 1.6 L/ha	FGP03 + Shirlan 0.6 + 0.4 L/ha	Infinito 1.6 L/ha	Ranman Top + UPF-1098-002-A 0.5 + 1.0 L/ha	Infinito 1.6 L/ha
2024 Prg + FHW02	FHW02 4.0 L/ha	Zorvec Entecta + FHW02 0.25 +4.0 L/ha	Privest 3.2 L/ha	Zorvec Entecta + FHW02 0.25 +4.0 L/ha	Privest 3.2 L/ha	Ranman Top + FHW02 0.5 + 4.0 L/ha	Infinito 1.6 L/ha	FGP03 + Shirlan 0.6 + 0.4 L/ha	Infinito 1.6 L/ha	FGP03 + Shirlan 0.6 + 0.4 L/ha	Infinito 1.6 L/ha	Ranman Top + FHW02 0.5 + 4.0 L/ha	Infinito 1.6 L/ha
2025 Prg- no mancozeb	Privest 3.2 L/ha	Zorvec Entecta + Shirlan 0.25 + 0.4 L/ha	Privest 3.2 L/ha	Zorvec Entecta 0.25 L/ha	FGP03 + Shirlan 0.6 + 0.4 L/ha	Infinito 1.6 L/ha	FGP03 + Shirlan 0.6 + 0.4 L/ha	Privest 3.2 L/ha	Infinito 1.6 L/ha	FGP03 + Shirlan 0.6 + 0.4 L/ha	Infinito 1.6 L/ha	Ranman Top + Shirlan 0.5 + 0.4 L/ha	Infinito 1.6 L/ha
UPL Prg – no mancozeb	Edipro + FGP03 0.87 + 0.6 L/ha	Zorvec Entecta 0.25 L/ha	Diprospero 2.0 L/ha	Zorvec Entecta 0.25 L/ha	Edipro + FGP03 0.87 + 0.6 L/ha	Privest 3.2 L/ha	Shirlan + Carial Flex 0.4 + 0.6 L/ha	Privest 3.2 L/ha	Shirlan + Carial Flex 0.4 + 0.6 L/ha	Privest 3.2 L/ha	Ranman Top + Edipro 0.5 +0.87 L/ha	Shirlan + Carial Flex 0.4 + 0.6 L/ha	Ranman Top + Edipro 0.5 +0.87 L/ha

Trial Background – Treatments

Trt Reference	A	B	C	D	E	F	G	H	I	J	K	L	M
Untreated	Untreated												
FGP03	FGP03 0.6 L/ha												
FGP03 + Sinala	FGP03 + Sinala 0.6 + 2.4 L/ha												
FGP03 + UPF-1098-002-A	FGP03 + UPF-1098-002-A 0.6 + 1.0 L/ha												
FGP03 + FHW02	FGP03 + FHW02 0.6 + 4.0 L/ha												
2024 Programme	Untreated	Zorvec Entecta 0.25 L/ha	Privest 3.2 L/ha	Zorvec Entecta 0.25 L/ha	Privest 3.2 L/ha	Ranman Top 0.5 L/ha	Infinito 1.6 L/ha	FGP03 + Shirlan 0.6 + 0.4 L/ha	Infinito 1.6 L/ha	FGP03 + Shirlan 0.6 + 0.4 L/ha	Infinito 1.6 L/ha	Ranman Top 0.5 L/ha	Infinito 1.6 L/ha
2024 Prg + Mancozeb	Manzate 75 WG 1.7 kg/ha	Zorvec Entecta + Manzate 75 WG 0.25 L/ha + 1.7 kg/ha	Privest 3.2 L/ha	Zorvec Entecta + Manzate 75 WG 0.25 L/ha + 1.7 kg/ha	Privest 3.2 L/ha	Ranman Top + Manzate 75 WG 0.5 L/ha + 1.7 kg/ha	Infinito 1.6 L/ha	FGP03 + Shirlan 0.6 + 0.4 L/ha	Infinito 1.6 L/ha	FGP03 + Shirlan 0.6 + 0.4 L/ha	Infinito 1.6 L/ha	Ranman Top + Manzate 75 WG 0.5 L/ha + 1.7 kg/ha	Infinito 1.6 L/ha
2024 Prg + Sinala	Sinala Ultra 2.4 L/ha	Zorvec Entecta + Sinala Ultra 0.25 + 2.4 L/ha	Privest 3.2 L/ha	Zorvec Entecta + Sinala Ultra 0.25 + 2.4 L/ha	Privest 3.2 L/ha	Ranman Top + Sinala Ultra 0.5 + 2.4 L/ha	Infinito 1.6 L/ha	FGP03 + Shirlan 0.6 + 0.4 L/ha	Infinito 1.6 L/ha	FGP03 + Shirlan 0.6 + 0.4 L/ha	Infinito 1.6 L/ha	Ranman Top + Sinala Ultra 0.5 + 2.4 L/ha	Infinito 1.6 L/ha
2024 Prg + UPF	UPF-1098-002-A 1.0 L/ha	Zorvec Entecta + UPF-1098-002-A 0.25 + 1.0 L/ha	Privest 3.2 L/ha	Zorvec Entecta + UPF-1098-002-A 0.25 + 1.0 L/ha	Privest 3.2 L/ha	Ranman Top + UPF-1098-002-A 0.5 + 1.0 L/ha	Infinito 1.6 L/ha	FGP03 + Shirlan 0.6 + 0.4 L/ha	Infinito 1.6 L/ha	FGP03 + Shirlan 0.6 + 0.4 L/ha	Infinito 1.6 L/ha	Ranman Top + UPF-1098-002-A 0.5 + 1.0 L/ha	Infinito 1.6 L/ha
2024 Prg + FHW02	FHW02 4.0 L/ha	Zorvec Entecta + FHW02 0.25 +4.0 L/ha	Privest 3.2 L/ha	Zorvec Entecta + FHW02 0.25 +4.0 L/ha	Privest 3.2 L/ha	Ranman Top + FHW02 0.5 + 4.0 L/ha	Infinito 1.6 L/ha	FGP03 + Shirlan 0.6 + 0.4 L/ha	Infinito 1.6 L/ha	FGP03 + Shirlan 0.6 + 0.4 L/ha	Infinito 1.6 L/ha	Ranman Top + FHW02 0.5 + 4.0 L/ha	Infinito 1.6 L/ha
2025 Prg- no mancozeb	Privest 3.2 L/ha	Zorvec Entecta + Shirlan 0.25 + 0.4 L/ha	Privest 3.2 L/ha	Zorvec Entecta 0.25 L/ha	FGP03 + Shirlan 0.6 + 0.4 L/ha	Infinito 1.6 L/ha	FGP03 + Shirlan 0.6 + 0.4 L/ha	Privest 3.2 L/ha	Infinito 1.6 L/ha	FGP03 + Shirlan 0.6 + 0.4 L/ha	Infinito 1.6 L/ha	Ranman Top + Shirlan 0.5 + 0.4 L/ha	Infinito 1.6 L/ha
UPL Prg – no mancozeb	Edipro + FGP03 0.87 + 0.6 L/ha	Zorvec Entecta 0.25 L/ha	Diprospero 2.0 L/ha	Zorvec Entecta 0.25 L/ha	Edipro + FGP03 0.87 + 0.6 L/ha	Privest 3.2 L/ha	Shirlan + Carial Flex 0.4 + 0.6 L/ha	Privest 3.2 L/ha	Shirlan + Carial Flex 0.4 + 0.6 L/ha	Privest 3.2 L/ha	Ranman Top + Edipro 0.5 +0.87 L/ha	Shirlan + Carial Flex 0.4 + 0.6 L/ha	Ranman Top + Edipro 0.5 +0.87 L/ha

Trial Background – Treatment Multisites added at 5 timings

Trt Reference	A	B	C	D	E	F	G	H	I	J	K	L	M
Untreated	Untreated												
FGP03	FGP03 0.6 L/ha												
FGP03 + Sinala	FGP03 + Sinala 0.6 + 2.4 L/ha												
FGP03 + UPF-1098-002-A	FGP03 + UPF-1098-002-A 0.6 + 1.0 L/ha												
FGP03 + FHW02	FGP03 + FHW02 0.6 + 4.0 L/ha												
Programme	Untreated	Zorvec Entecta 0.25 L/ha	Privest 3.2 L/ha	Zorvec Entecta 0.25 L/ha	Privest 3.2 L/ha	Ranman Top 0.5 L/ha	Infinito 1.6 L/ha	FGP03 + Shirlan 0.6 + 0.4 L/ha	Infinito 1.6 L/ha	FGP03 + Shirlan 0.6 + 0.4 L/ha	Infinito 1.6 L/ha	Ranman Top 0.5 L/ha	Infinito 1.6 L/ha
Prg + Mancozeb	Manzate 75 WG 1.7 kg/ha	Zorvec Entecta + Manzate 75 WG 0.25 L/ha + 1.7 kg/ha	Privest 3.2 L/ha	Zorvec Entecta + Manzate 75 WG 0.25 L/ha + 1.7 kg/ha	Privest 3.2 L/ha	Ranman Top + Manzate 75 WG 0.5 L/ha + 1.7 kg/ha	Infinito 1.6 L/ha	FGP03 + Shirlan 0.6 + 0.4 L/ha	Infinito 1.6 L/ha	FGP03 + Shirlan 0.6 + 0.4 L/ha	Infinito 1.6 L/ha	Ranman Top + Manzate 75 WG 0.5 L/ha + 1.7 kg/ha	Infinito 1.6 L/ha
Prg + Sinala	Sinala Ultra 2.4 L/ha	Zorvec Entecta + Sinala Ultra 0.25 + 2.4 L/ha	Privest 3.2 L/ha	Zorvec Entecta + Sinala Ultra 0.25 + 2.4 L/ha	Privest 3.2 L/ha	Ranman Top + Sinala Ultra 0.5 + 2.4 L/ha	Infinito 1.6 L/ha	FGP03 + Shirlan 0.6 + 0.4 L/ha	Infinito 1.6 L/ha	FGP03 + Shirlan 0.6 + 0.4 L/ha	Infinito 1.6 L/ha	Ranman Top + Sinala Ultra 0.5 + 2.4 L/ha	Infinito 1.6 L/ha
Prg + UPF	UPF-1098-002-A 1.0 L/ha	Zorvec Entecta + UPF-1098-002-A 0.25 + 1.0 L/ha	Privest 3.2 L/ha	Zorvec Entecta + UPF-1098-002-A 0.25 + 1.0 L/ha	Privest 3.2 L/ha	Ranman Top + UPF-1098-002-A 0.5 + 1.0 L/ha	Infinito 1.6 L/ha	FGP03 + Shirlan 0.6 + 0.4 L/ha	Infinito 1.6 L/ha	FGP03 + Shirlan 0.6 + 0.4 L/ha	Infinito 1.6 L/ha	Ranman Top + UPF-1098-002-A 0.5 + 1.0 L/ha	Infinito 1.6 L/ha
Prg + FHW02	FHW02 4.0 L/ha	Zorvec Entecta + FHW02 0.25 +4.0 L/ha	Privest 3.2 L/ha	Zorvec Entecta + FHW02 0.25 +4.0 L/ha	Privest 3.2 L/ha	Ranman Top + FHW02 0.5 + 4.0 L/ha	Infinito 1.6 L/ha	FGP03 + Shirlan 0.6 + 0.4 L/ha	Infinito 1.6 L/ha	FGP03 + Shirlan 0.6 + 0.4 L/ha	Infinito 1.6 L/ha	Ranman Top + FHW02 0.5 + 4.0 L/ha	Infinito 1.6 L/ha
2025 Prg	Privest 3.2 L/ha	Zorvec Entecta + Shirlan 0.25 + 0.4 L/ha	Privest 3.2 L/ha	Zorvec Entecta 0.25 L/ha	FGP03 + Shirlan 0.6 + 0.4 L/ha	Infinito 1.6 L/ha	FGP03 + Shirlan 0.6 + 0.4 L/ha	Privest 3.2 L/ha	Infinito 1.6 L/ha	FGP03 + Shirlan 0.6 + 0.4 L/ha	Infinito 1.6 L/ha	Ranman Top + Shirlan 0.5 + 0.4 L/ha	Infinito 1.6 L/ha
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Treatment Summary

Comparison of new multisites
Typical programme from 2024 without multisite
Typical programme from 2024 including mancozeb
Typical programme from 2024 including Sinala Ultra
Typical programme from 2024 including FHW02
Typical programme from 2024 including UPF-1098-002-A

Trial Background – Applications & Inoculation

APPLICATION DATES	A	B	C	D	E	F	G	H	I	J	K	L	M
	19-Jun	25-Jun	03-Jul	09-Jul	16-Jul	23-Jul	30-Jul	08-Aug	14-Aug	20-Aug	26-Aug	02-Sep	12-Sep
Interval (days)		6	8	6	7	7	7	9	6	6	6	7	10

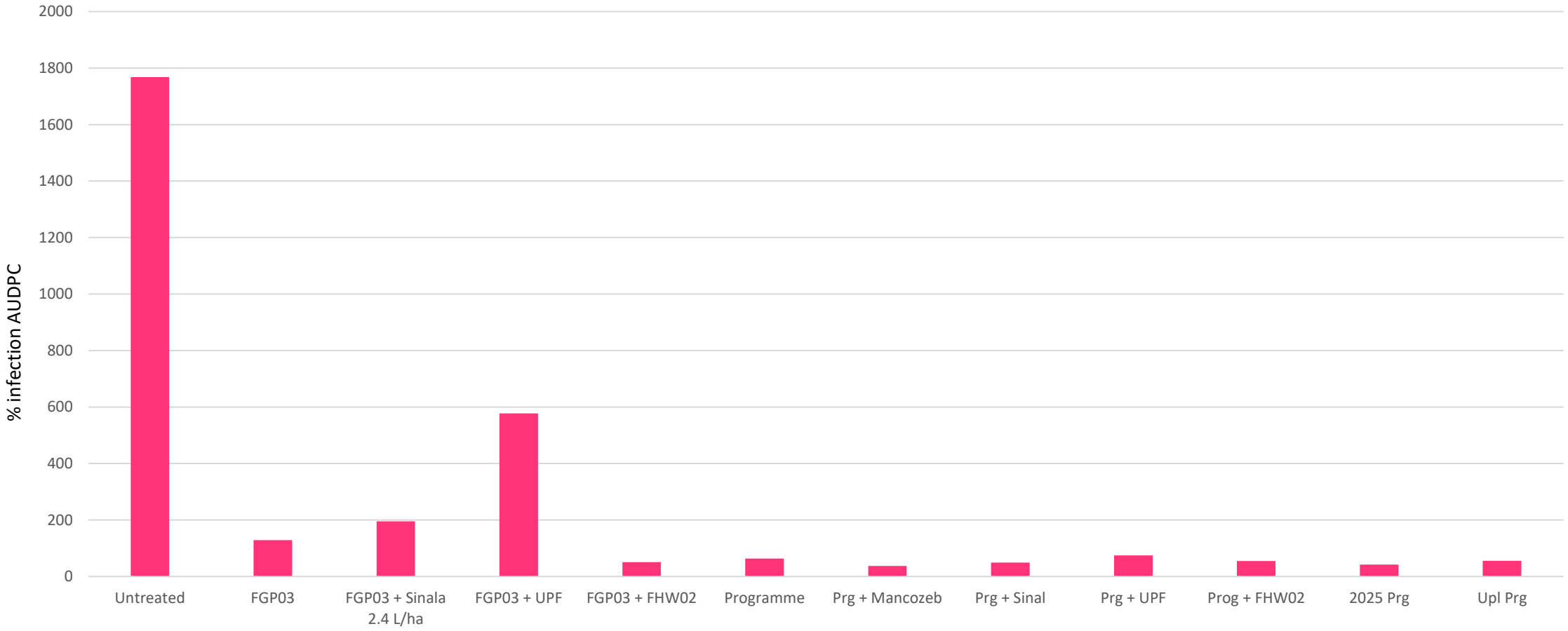
INNOCULATION	02-Jul-25	25-Jul-25	18-Aug-25
Inoculation date	24 hours before application C	2 days after F	4 days after I
Ground cover	70%	100	100
PHYTIN Strains	Green 37_A2 + Pink 36_A2	Green 37_A2 + Pink 36_A2	Green 37_A2 + Pink 36_A2

Blight first detected on site on 14th August 2025 – only strain present was EU46

Trial Background – Product Brand Names and AI

Brand name	ai	from	ai/L	Max label dose	Max no appl	HI (days)	Dose in trial	Aquatic buffer (m)
Privest	ametoctradin + potassium phosphonates	SC	5 + 453	3.2	3	7	3.2	5
Zorvec Entecta	amisulbrom + oxathiapiprolin	SC	240 + 48	0.25	4	7	0.25	5
Shirlan	fluazinam	SC	500	0.4	3	-	0.4	7
Revus	mandipropamid	SC	250	0.6	4	3	0.6	n/a
Infinito	fluopicolide+propamocarb hydrochloride	SC	62.5 + 625	1.6	4	7	1.6	n/a
Ranman Top	cyazofamid	SC	160	0.5	6	7	0.5	n/a
Carial Flex	mandipropamid+cymoxanil	WG	250 + 180g ai/kg	0.6	6	7	0.6	n/a
Diprospero	propamocarb + dimethomorph	SC	500 + 90	2	5	14	2	n/a
Edipro	propamocarb hydrochloride	SC	722	1.4	6	14	0.87	n/a

Eurofins Blight Day 2025 – Control of Late Blight (AUDPC)



Summary 1 trial Eurofins Blight Day 2025, Variety Melody 13th May 2025, Blight first detected 14th Aug 2025 only EU46 strain present

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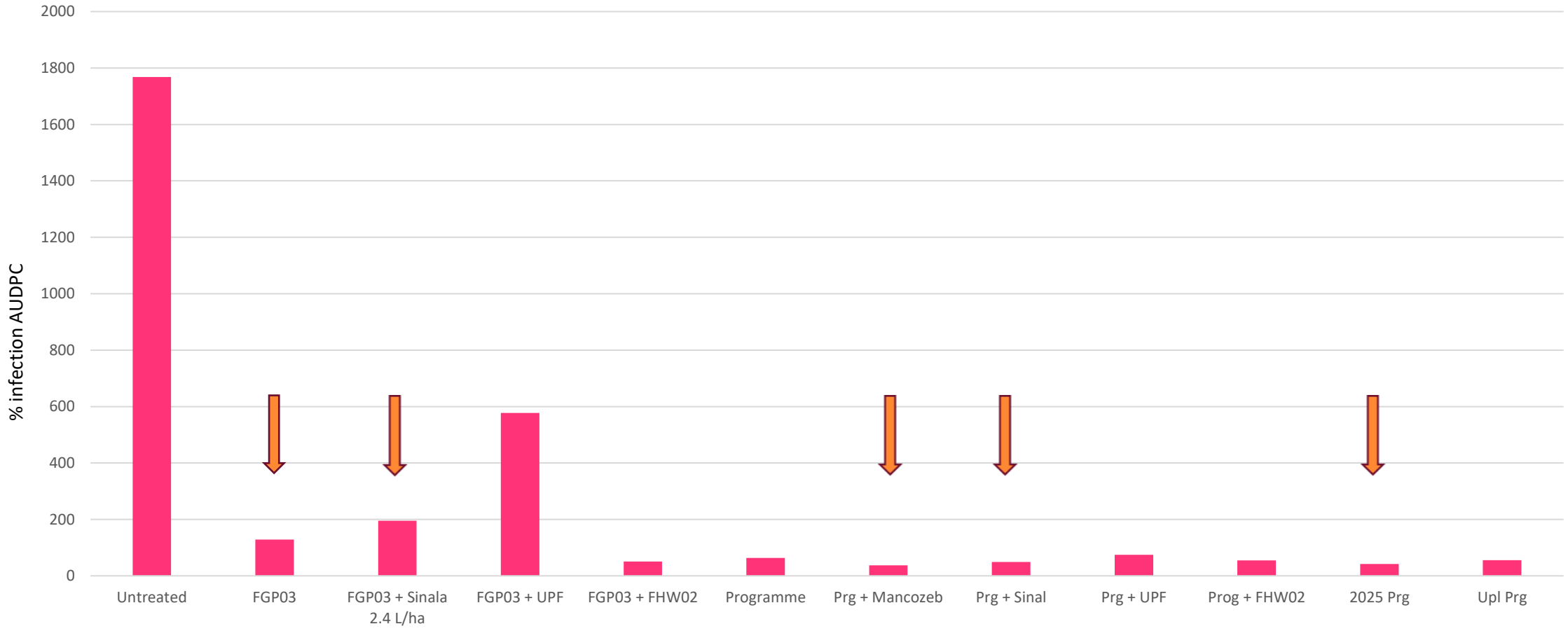

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LSD P=.05	108.817
Standard Deviation	75.64
CV	29.31

Sinala Ultra - Summary

- Multisite
  - Additive disease control
  - Resistance management – controls all strains
  - As effective in a programme as mancozeb
- 2026 glasshouse study with whole plants to look at combinations and persistence of multi-sites

Volunteers late in season

The James Hutton Institute

25 September - Image from Eric Anderson

- Volunteers act to shorten rotations

13 Nov Image from Martyn Cox

Key messages for blight control

- Knowledge on evolving population is key
- Primary inoculum
  - Oospore risk managed by rotation
  - Volunteer potato management critical
- Cultivar resistance increasingly important to complement fungicides
- Complacency risk in 2026 after dry summer?
- Fungicide use
  - Positive message – following FRAG and manufacturers advice works and can control spread of EU 43!

ARGOS

UPL

What is ARGOS ?

Orange Oil 844 g/L HN

Main characteristics:

- Natural active substance
- No solvent, food grade
- No residue
- No PHI (no safety period)
- No unpleasant odour when applied, no smell or taint to end product

ARGOS (19799) Identity Card

Active (s)	g a.i./l	Crops	Max. no. apps	Max. ind. dose	Max. total dose	Latest time of Application
Orange Oil	843.2 g	Potato	9	100 ml/ tonne	900 ml/ tonne	48hrs before removal from store

Argos is a natural, contact product and physically damages the sprouts	
Interval between application	21 days
Hot Fogging (HN):	Only equipment with temperature control. Fog temp max 175C
Cold fogging (KN):	Equipment on test
MRL	Not applicable
PHI	No PHI – but 48 hrs for efficacy
Rinsing potatoes	Respect a period of 24 hrs between last application and industrial rinsing
When to apply	At onset of sprouting (20% tubers with visible sprouts) – regular crop inspections required
Seed potatoes	Not registered

WHY USE ARGOS?

Controls Sprouting

- Very effective at controlling sprouting and minimising weight loss for long term storage
- Light, dry fog which reaches all parts of the store whether box or bulk storage
- Sprout kill is very fast – often within hours
- Achieves high quality in all markets – fresh, chipping, crisping (no effect on fry colour)
- Very cost-effective to grower and processor/retailer – similar interval to spearmint oil

Sustainable and Natural

- No residue in potatoes, zero MRL – excellent sustainability profile, appeals to Food Value Chain
- No taint or smell on end product – can supply customers with confidence
- No residue or lingering smell in storage shed- easier crop inspections

WHY USE ARGOS?

Flexible to Use

- Up to 9 applications for long term storage
- Contact – allows full use of natural dormancy & easy to spot areas of poor air movement
- Only 24hrs needed to achieve full efficacy – cooling on sooner for reduced yield loss/pressure bruising etc
- Can be applied shortly before delivery for a good shelf life
- Only 24hrs between the last application and industrial rinsing of potatoes
- Potato skins/stock feed fraction can be incorporated into animal feed

Support

- Applied by NAAC PHTG professional contractors, fully certified and with authorised machines
- Proven in use in many European countries with high market share even with 1,4-SIGHT in the market
- Made, supplied and supported by UPL - a global leading CPC and Biocontrol Co.

ARGOS timing

- For best results inspect regularly and start early – max 20-30% of tubers with 1-2mm sprouts
- Will control longer, soft sprouts with good quality fog but may trigger more sprouting and will lead to shorter intervals
- Potatoes at 12-14C, interval around 4 weeks
- Potatoes < 10C, interval 6-8 weeks

Before and after treatment with Argos

Argos on large sprouts

Larger than recommended but possible with correct store management!

Best Use Guidelines

UPL

ARGOS – best use guidelines

Best Practice

- General Box & Bulk
- Box stores - stacking
- Box stores - ventilation

Store application

- Preparation
- During application
- After application

ARGOS – General Best Practice

- Before fogging switch off fridge and circulate air to homogenize temperatures
- Argos needs to go through the bulk potatoes or boxes
- Ensure fans are sufficient and at correct settings to give a uniform slow air flow throughout the store (50-60%?)
- Fans should have variable speed capability and be able to operate independently of refrigeration. Airspeed 0.5-2.0 m/s
- There should be sufficient ‘headspace’ above the potatoes to allow the fog to fully disperse
- There should be sufficient space in front of the fog outlet to allow dispersion before contact with the potatoes
- The fogging port(s) location should be carefully chosen to give optimal distribution
- Stores should be filled to design capacity to avoid dilution and poor results from part filled stores
- Stores should be well insulated to avoid condensation issues
- Stores must be free of leaks
- Lift cabling from surface of potatoes to avoid condensation
- Flow rates 25-60 lit/hr have proved effective – lower speeds if lack of space
- Maintain recirculation after fogging

Argos Storage 2020-2021
Impact of storage closure period on efficacy

All following Fazor MH
All Argos at 100ml/T in 10T stores

Keep stores closed for 24 hours
Potatoes can be shipped after 48 hours

VSD Potato Research Centre Germany over 3 years 2020/21 – 2022/23

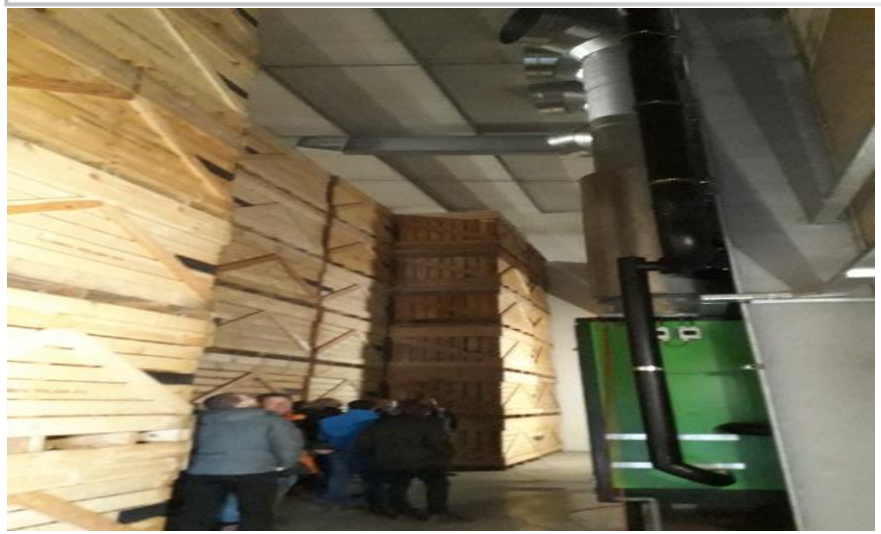
8 varieties Fontane, Innovator, L Claire, Verdi, Gesamt, Favola, Papageno, Rumba

ARGOS UK Potato Sprout Inhibitor Stewardship

Big Data Project

- Collect detailed grower, store and application information
- Work closely with all stakeholders – growers, merchants, industry (processors & fresh), consultants, food chain
- Improved understanding leading to better and more cost effective sprout control
- Best way to use programmes of different products for short, medium and long term storage for different markets

Grower, store & application details



Grower and Store

Location, Box/Bulk, Capacity

Box Stacking

Stacking design, head space

Ventilation System

Ambient/Fridge etc, OHT/Positive etc, Plenum, pressure wall

Fans (numbers/speed/inverters)

Crop

Soil type, varieties, tonnages

Application

Contractor/machine

Fogging and condensation checks

Sprouting, fogging port, space in front, condensation checks

Air Measurements

Temperatures - outside, store, crop

Airspeed – front/back, side to side

Ventilation Settings

Duration and speed before during and after fogging

Fogging Details

Temps, volume/speeds, dose, date and timings

UPL Data analysis 2022-23

29 Growers - 38 stores (28 bulk/10 box)

120 — **Tonnage treated** — **3,700**

6 Crisping varieties

Brooke Taurus
Pirol VR808
Arsenal Amanda

12 Chipping varieties

M Piper Ramos
Sagitta Royal
Innovator Markies
Challenger Fontane
Russet Wilja
Melody Rooster

Soil types

8 Sand (Norfolk/Bucks)
7 Sandy Loam
4 Clay Loam
3 Silt (Cambs/Lincs)
1 Peat (Suffolk)
1 Moss (Lancs)

UPL Data analysis 2022-23 STORAGE & APPLICATION

	AMBIENT	AMBIENT + FRIDGE	FRIDGE ONLY			OHT + PRESSURE WALL	OHT +PLENUM / SUCTION	OHT ONLY	
BULK	22	6	0						
BOX	3	3	3			2	2	4	
	FAN INVERTERS					SUPERFOG CROPFOG	SYNOFOG	PUROFOG	
YES	32			FAN SPEED DURING FOGGING (Max 50Hz)		80-100%	20- 40%	20- 35%	
NO	6			FLOW RATE		(50) 60 L/HR	25 L/HR	45L/HR	

ARGOS – Trials

- On-going investment to evaluate Argos performance in different store designs
- Use of anenometers and sensors etc to understand air movement and conditions in different stores
- Crop safety comparison in experimental stores (James Hutton Institute)

Visual reference key used for evaluating tuber scorch illustrating the 0–5 severity scale used for scoring assessments.

up to 5% | 6-10% | 11-20% | 21-30% | over 40%

Maris Piper tubers directly spot treated

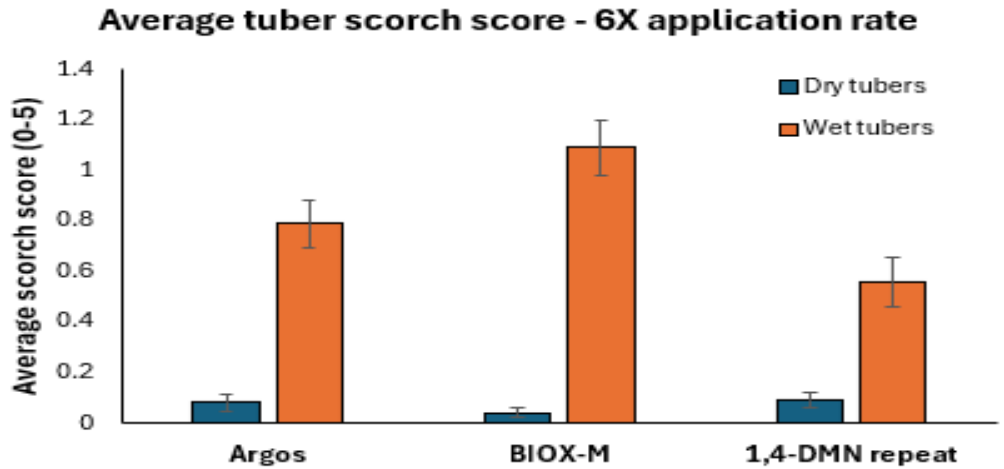
Scorch on wet tubers at 6x rate, 7 days after treatment

Argos

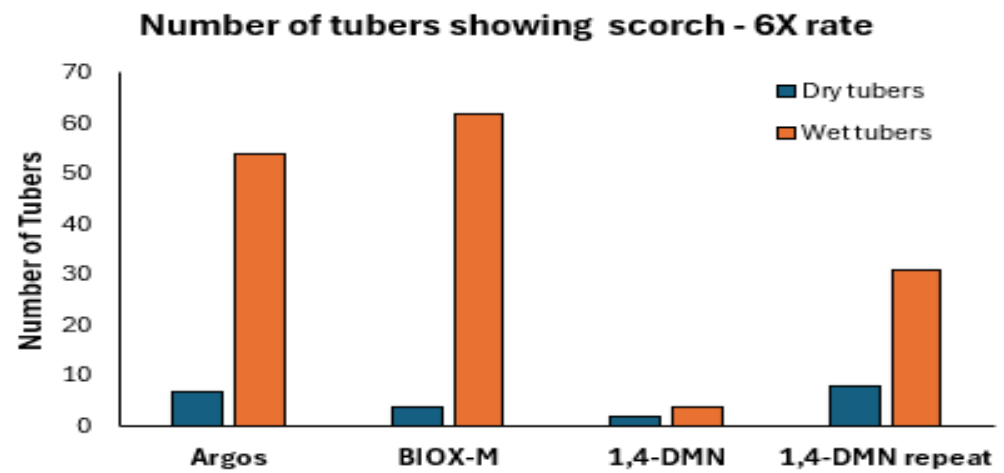
BIOX-M

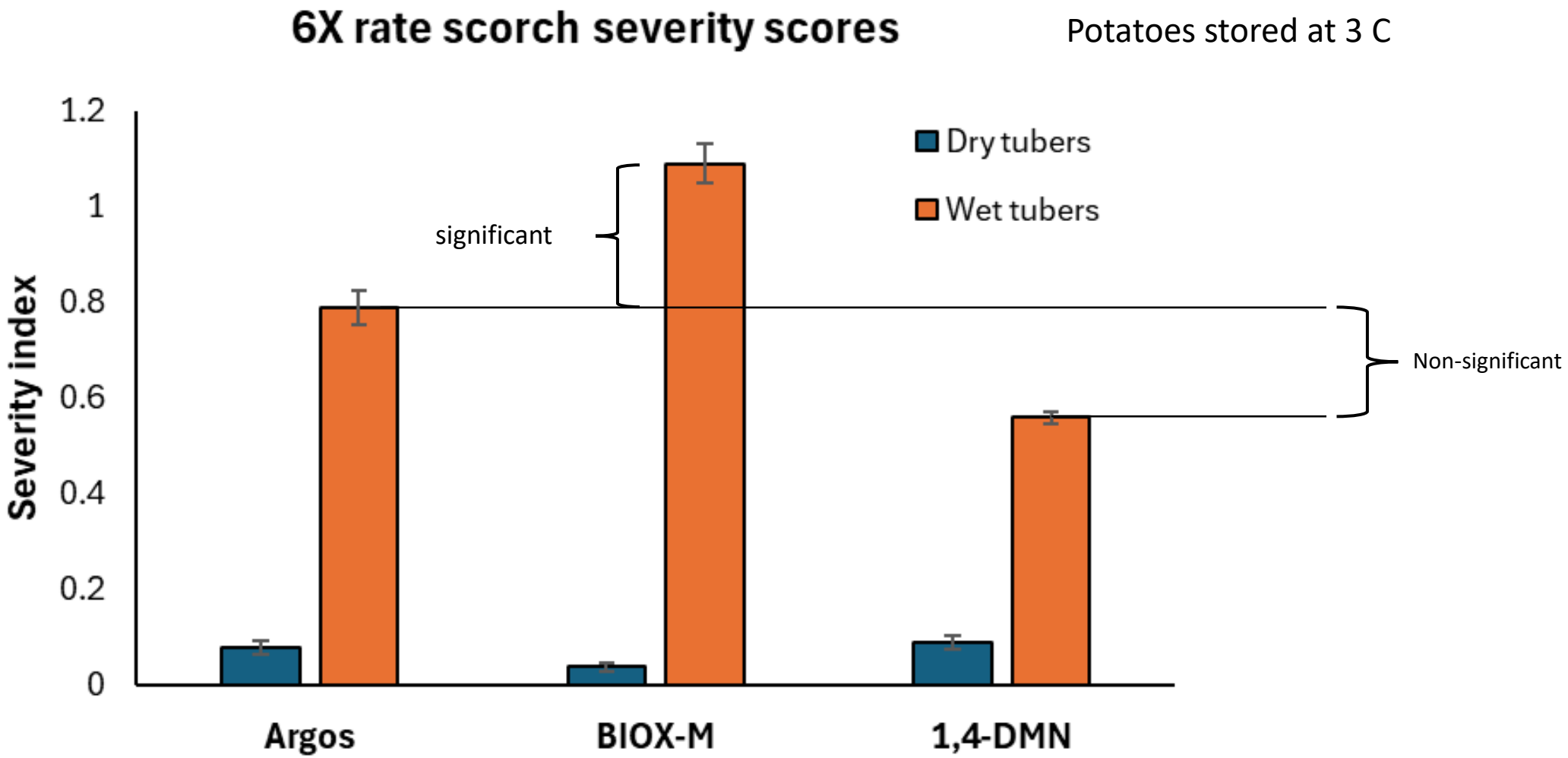
1,4-DMN

(A)

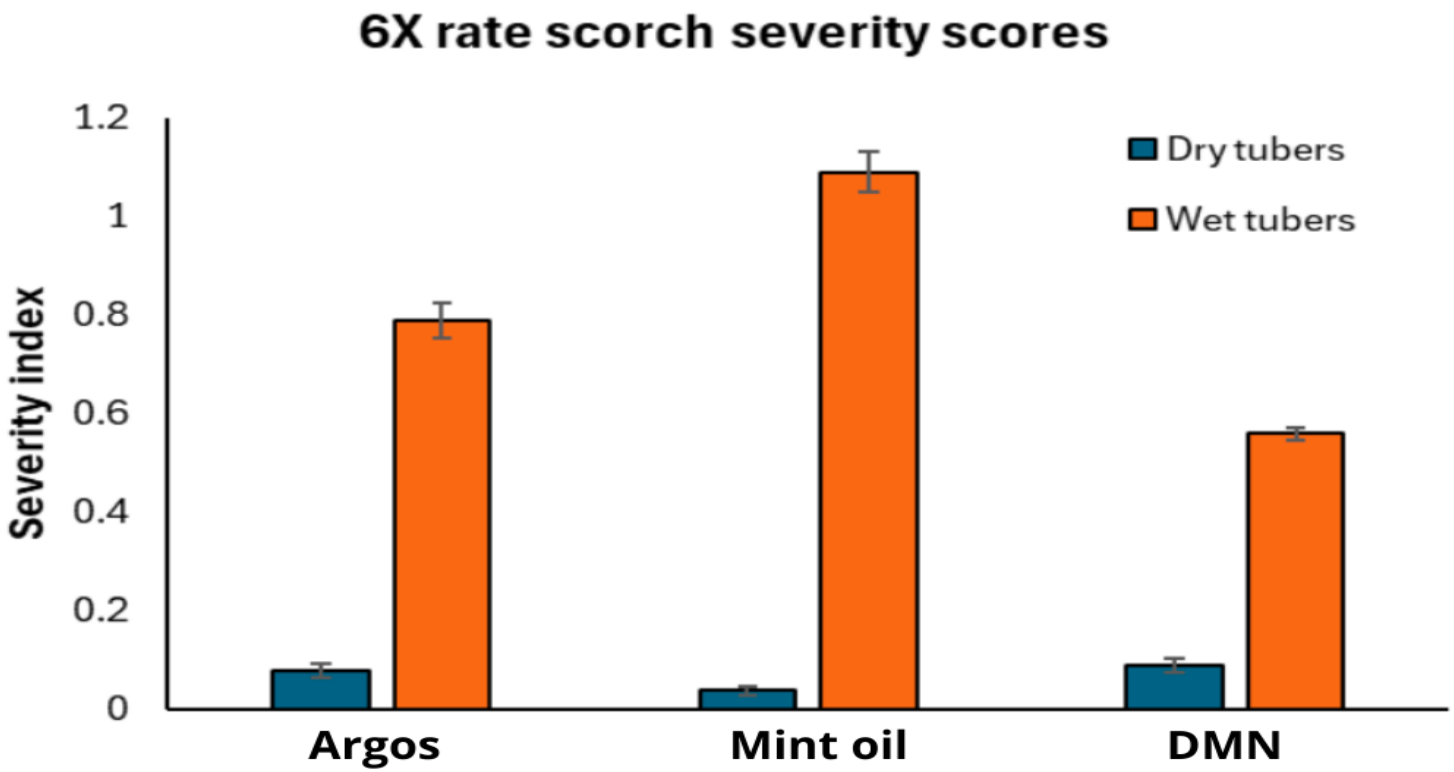

Average tuber scorch score - 6X application rate
Average scorch score (0-5)
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Dry tubers
Wet tubers
Argos
BIOX-M
1,4-DMN repeat

(B)


Number of tubers showing scorch - 6X rate
Number of Tubers
70
60
50
40
30
20
10
0
Dry tubers
Wet tubers
Argos
BIOX-M
1,4-DMN
1,4-DMN repeat



Severity Index (score x tuber numbers) / Total tuber numbers



Treatment pair	Adjusted p-value	Significant (p < 0.05)
Argos wet vs mint oil wet	3.75e-08	Yes
Argos wet vs DMN wet	1	No
DMN wet vs mint oil wet	5.4e-27	Yes

Figure 1. Severity index for scorch at 6x label rate. James Hutton Institute, 2025. Variety: Maris Piper. Limited data set size.

ARGOS – SUMMARY

- Argos is a new product and very technical like other sprout suppressants
- Orange oil is a volatile oil and as such is very different in properties and behaviour to CIPC
- Every store is unique and getting the best performance in some stores will require adjustments/investments
- There are big advantages in speed of kill, speed to market, mobility in store, efficacy and cost
- Argos orange oil offers real advantages to the food chain

Thank You

Any questions?