

Evaluation of mandipropamid for the control of potato late blight in Northern Ireland

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Late blight in Northern Ireland

- *Weather conditions favour blight in most years*
- *Generally 10, but up to 15 fungicide applications per season*
- *Tuber blight potentially a major problem*



Field trials 2005-2009

- *Conducted at Newforge, Belfast on cv. Up-to-Date*
- *4-drill plots (10 tubers/drill)*
- *5 replicate blocks*
- *Trials planted early May – early June*

BL1

POTATO BLIGHT FUNGICIDE EVALUATION TRIAL LAYOUT

CV. UP-TO-DATE



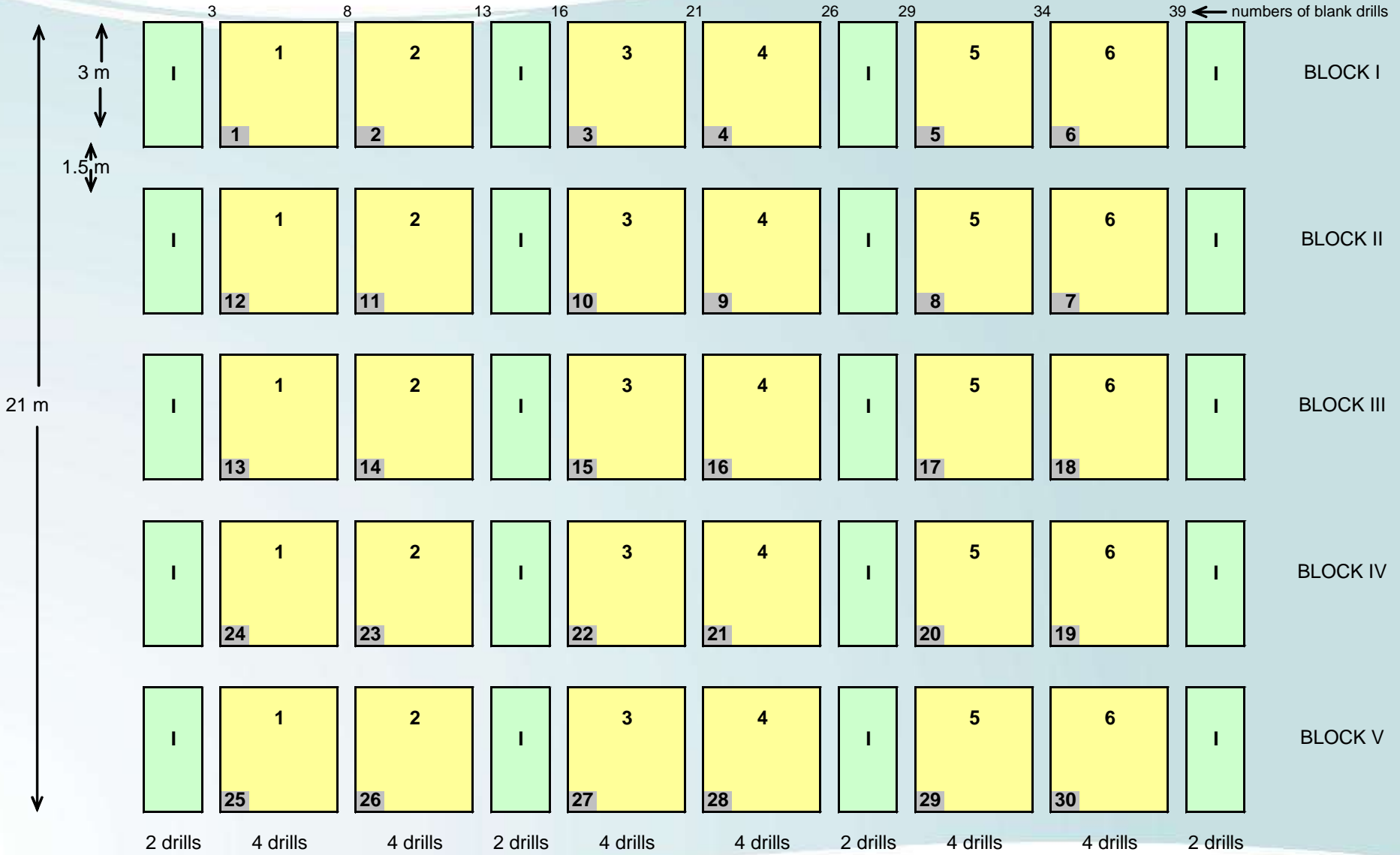
Infector drills



Plot number



Treatment nos. (randomised within blocks)



Field trials 2005-2009

- *4-drill plots (10 tubers/drill)*
- *5 replicate blocks*



Field trials 2005-2009

- *Infectors drilled inoculated with 50/50 phenylamide-resistant/sensitive N. Ireland P. infestans isolates in early July*
- *2005-2007: 100% A1*
2008-2009: 75/25 A1/A2 (new genotypes including Blue 13)



- *Mist irrigated morning and evening when necessary to encourage infection*

Field trials 2005-2009

- *Fungicide programmes started in mid-late June (before inoculation) and continued until desiccation*
- *All sprays applied at 7-d intervals*
- *Standard programme included in all trials*
- *Plots assessed twice weekly after inoculation*
- *Desiccation late August - early September*
- *Harvesting September – early October*

Field trials 2005-2009

- *Post-harvest assessments:*
- *Graded yield (>35, 35-55, >55 mm tubers and soft-blighted tubers) assessed October-November*
- *Remaining healthy tubers >35 mm stored and tuber blight assessed:*
 - ❖ *November-December*
 - ❖ *January-February*



Field trials 2005-2009

Mandipropamid used as Revus (250 g a.i./l)

- ❖ *at 600 ml/ha (150 g a.i./ha) alone*
- ❖ *or 500 ml/ha (125 g a.i./ha) tank-mixed with Shirlan (200 ml/ha; 100 g fluazinam/ha)*
- *Standard programme in all trials:*
 - ❖ *2 x Fubol Gold*
1.9 kg/ha; 76 g metalaxyl-M + 1216 g mancozeb/ha
 - ❖ *8 x Shirlan*
2005-6: 300 ml/ha, 150 g fluazinam/ha
2007-9: 400 ml/ha, 200 g fluazinam/ha)

Field trials 2005, 2006

- *Standard programme:*

- ❖ 2 x *Fubol Gold*
- ❖ 8 x *Shirlan*

- *Compared with*

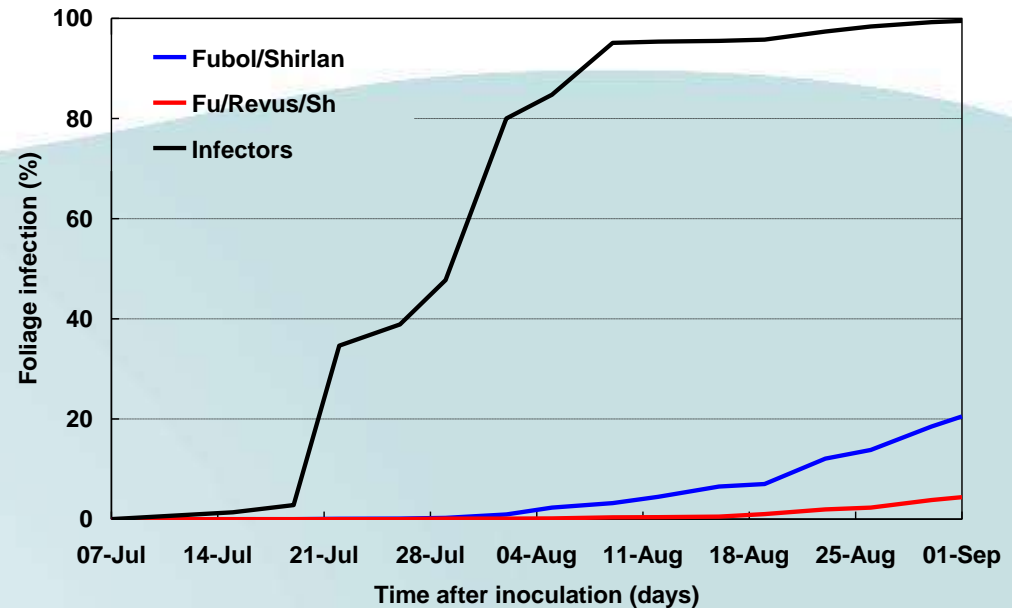
2005

- ❖ 2 x *Fubol Gold*
- ❖ 5 x *Revus*
- ❖ 3 x *Shirlan*

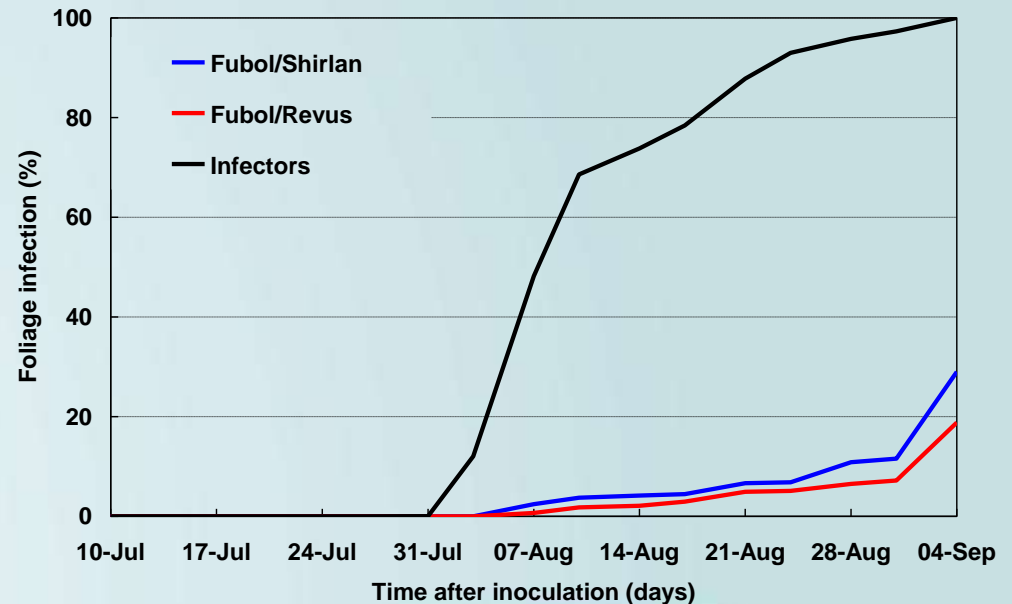
2006

- ❖ 2 x *Fubol Gold*
- ❖ 8 x *Revus*

2005 Foliage blight assessments



2006 Foliage blight assessments



The Revus programme had significantly less foliage blight than the standard at the final assessments in both years

Field trials 2005, 2006

- *Standard programme:*

- ❖ 2 x *Fubol Gold*
- ❖ 8 x *Shirlan*

- *Compared with*

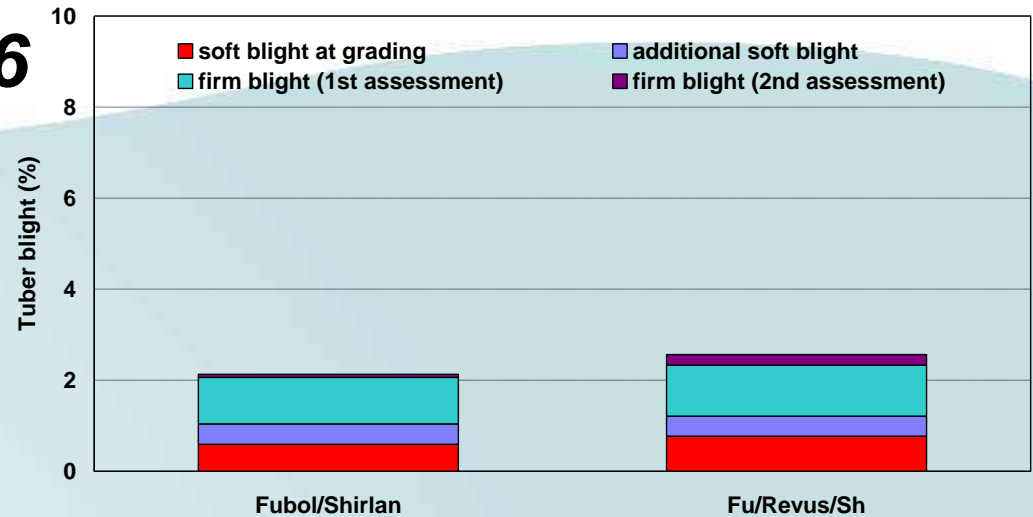
2005

- ❖ 2 x *Fubol Gold*
- ❖ 5 x *Revus*
- ❖ 3 x *Shirlan*

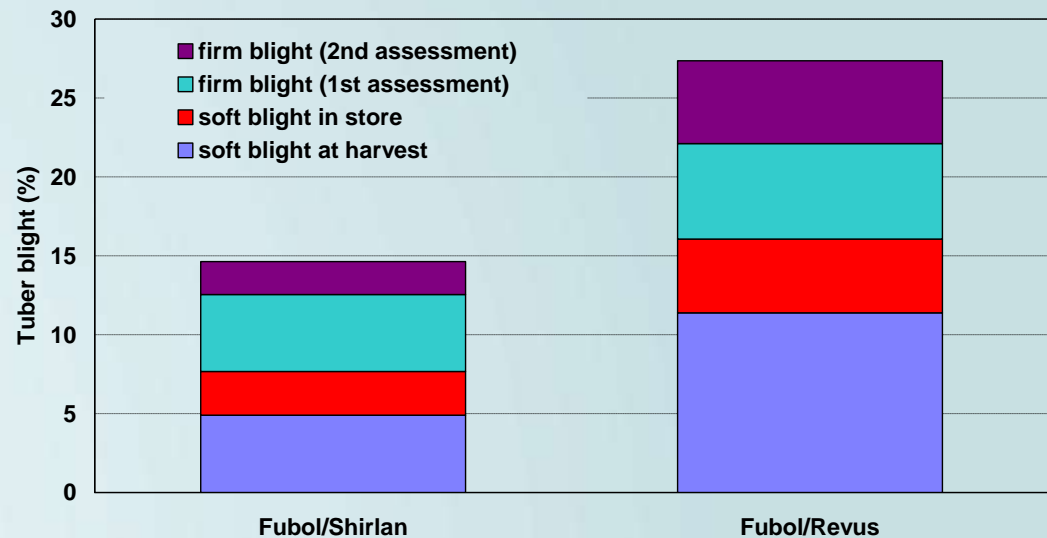
2006

- ❖ 2 x *Fubol Gold*
- ❖ 8 x *Revus*

2005 Tuber blight assessments: % blighted tubers by number



2006 Tuber blight assessments: % blighted tubers by number



Little tuber blight developed in 2005, but much more in 2006; the Fubol/Revus programmes had more tuber blight than the standard in both years, but differences were not significant

Field trials 2007, 2008

- *Standard programme:*

- ❖ *2 x Fubol Gold*
- ❖ *8 x Shirlan*

- *Compared with*

- ❖ *2 x Fubol Gold*
- ❖ *2 x Revus*
- ❖ *1 x Shirlan*
- ❖ *2 x Revus*
- ❖ *3 x Shirlan*

- *and*

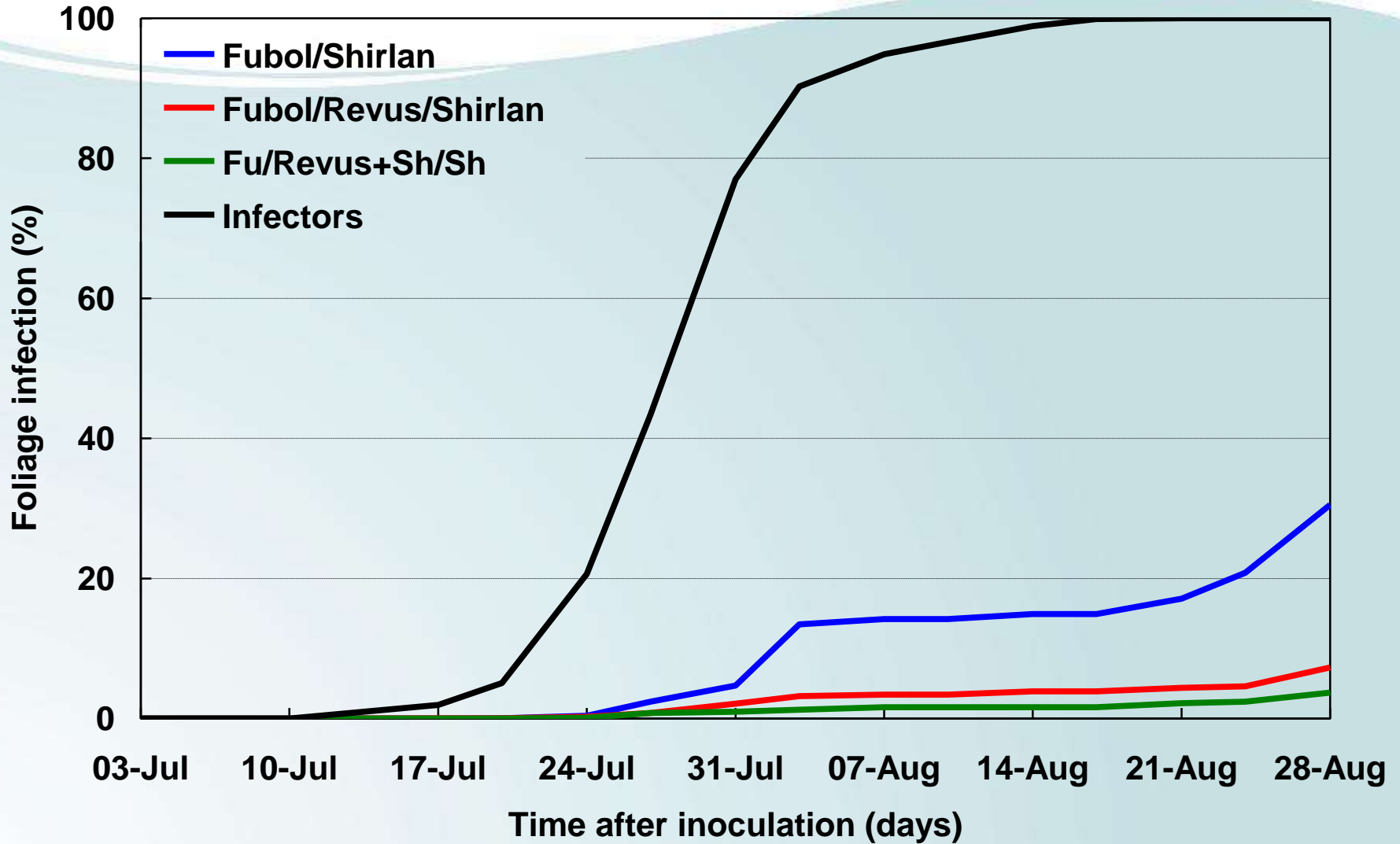
- ❖ *2 x Fubol Gold*
- ❖ *2 x Revus + Shirlan*
- ❖ *1 x Shirlan*
- ❖ *2 x Revus + Shirlan*
- ❖ *3 x Shirlan*

Field trials 2007, 2008

Programmes evaluated

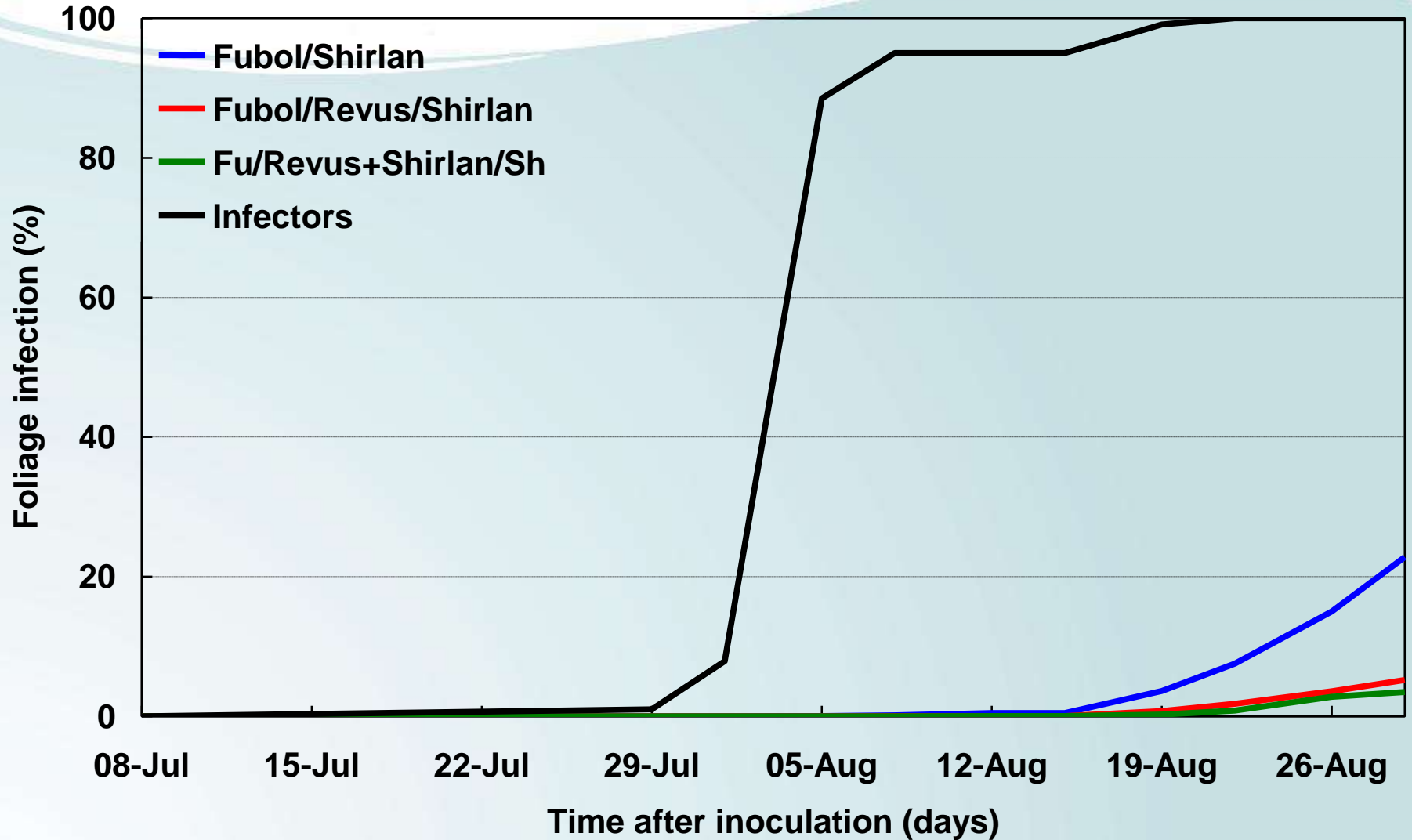
Tr.	Spray number												
	1	2	3	4	5	6	7	8	9	10			
1	Fubol Gold	Fubol Gold	Shirlan	Shirlan	Shirlan	Shirlan	Shirlan	Shirlan	Shirlan	Shirlan			
2	Fubol Gold	Fubol Gold	Revus	Revus	Shirlan	Revus	Revus	Shirlan	Shirlan	Shirlan			
3	Fubol Gold	Fubol Gold	Revus	Shirlan	Revus	Shirlan	Shirlan	Revus	Shirlan	Revus	Shirlan	Shirlan	Shirlan

2007 Foliage blight assessments



At the end of the season, the two Revus programmes had significantly less blight than the Fubol/Shirlan programme

2008 Foliage blight assessments



At the end of the season, the two Revus programmes had significantly less blight than the Fubol/Shirlan programme

Fubol/Shirlan, 29 August 2008



Fubol/Revus/Shirlan, 29 August 2008



Fubol/Revus+Shirlan/Shirlan, 29 August 2008

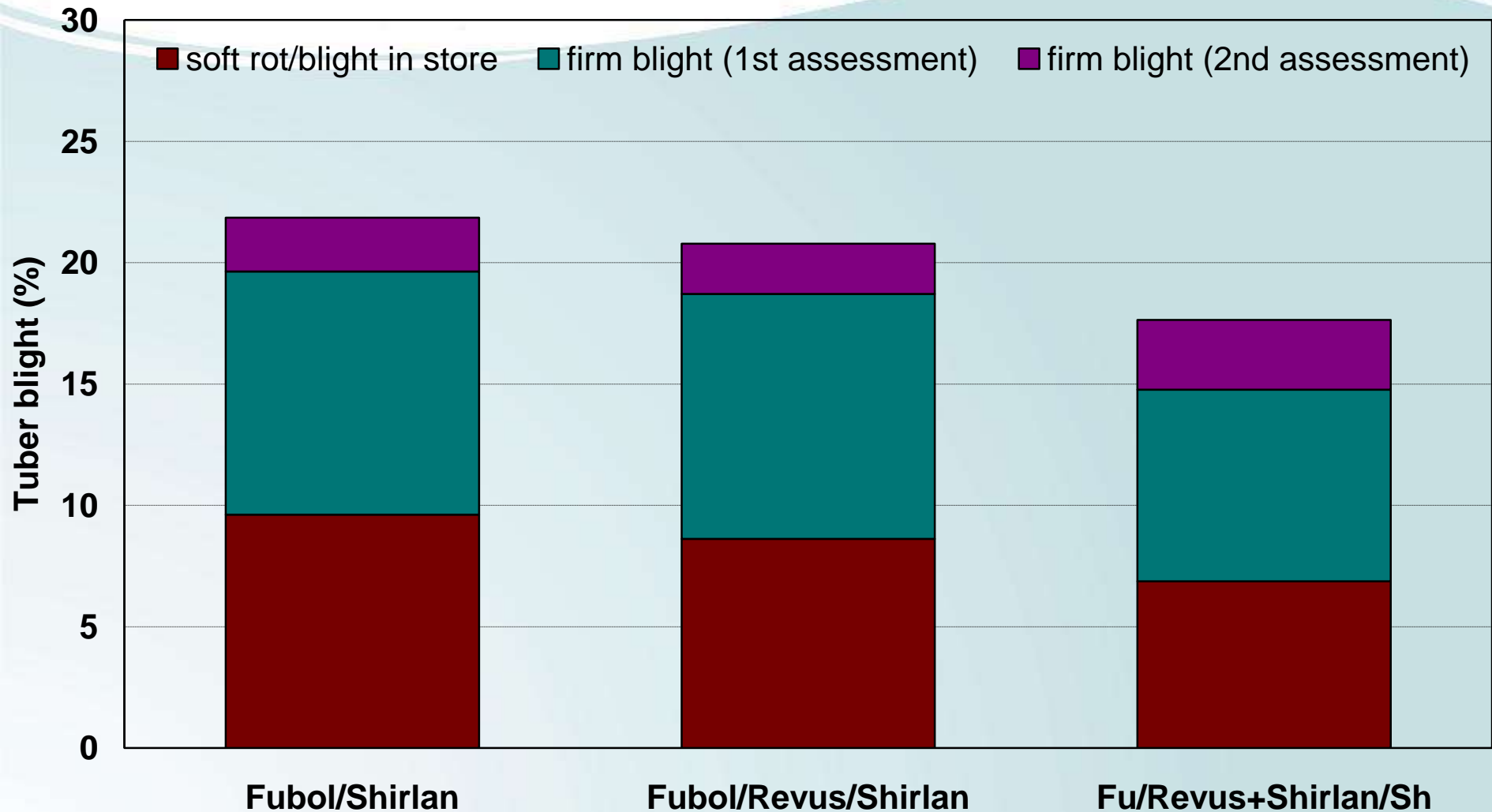


2007 Tuber blight assessments: % blighted tubers by number



The Fubol/Revus+Shirlan programme had significantly fewer blighted tubers than the Fubol/Revus/Shirlan, but did not differ significantly from the standard

2008 Tuber blight assessments: % blighted tubers by number



Much more tuber blight was present in store in 2008 than in 2007, but there were no significant differences between programmes (although the Fubol/Revus+Shirlan had least); assessment was complicated by mixed blight/soft rot/pink rot infections

Field trial 2009

- *Standard programme:*

- ❖ *2 x Fubol Gold*

- ❖ *8 x Shirlan*

- *Compared with*

- ❖ *2 x Revus*

- ❖ *1 x Shirlan*

- ❖ *2 x Revus*

- ❖ *5 x Shirlan*

- ❖ *2 x Revus + Shirlan*

- ❖ *1 x Shirlan*

- ❖ *2 x Revus + Shirlan*

- ❖ *5 x Shirlan*

- ❖ *2 x Infinito**

- ❖ *1 x Shirlan*

- ❖ *2 x Infinito**

- ❖ *5 x Shirlan*

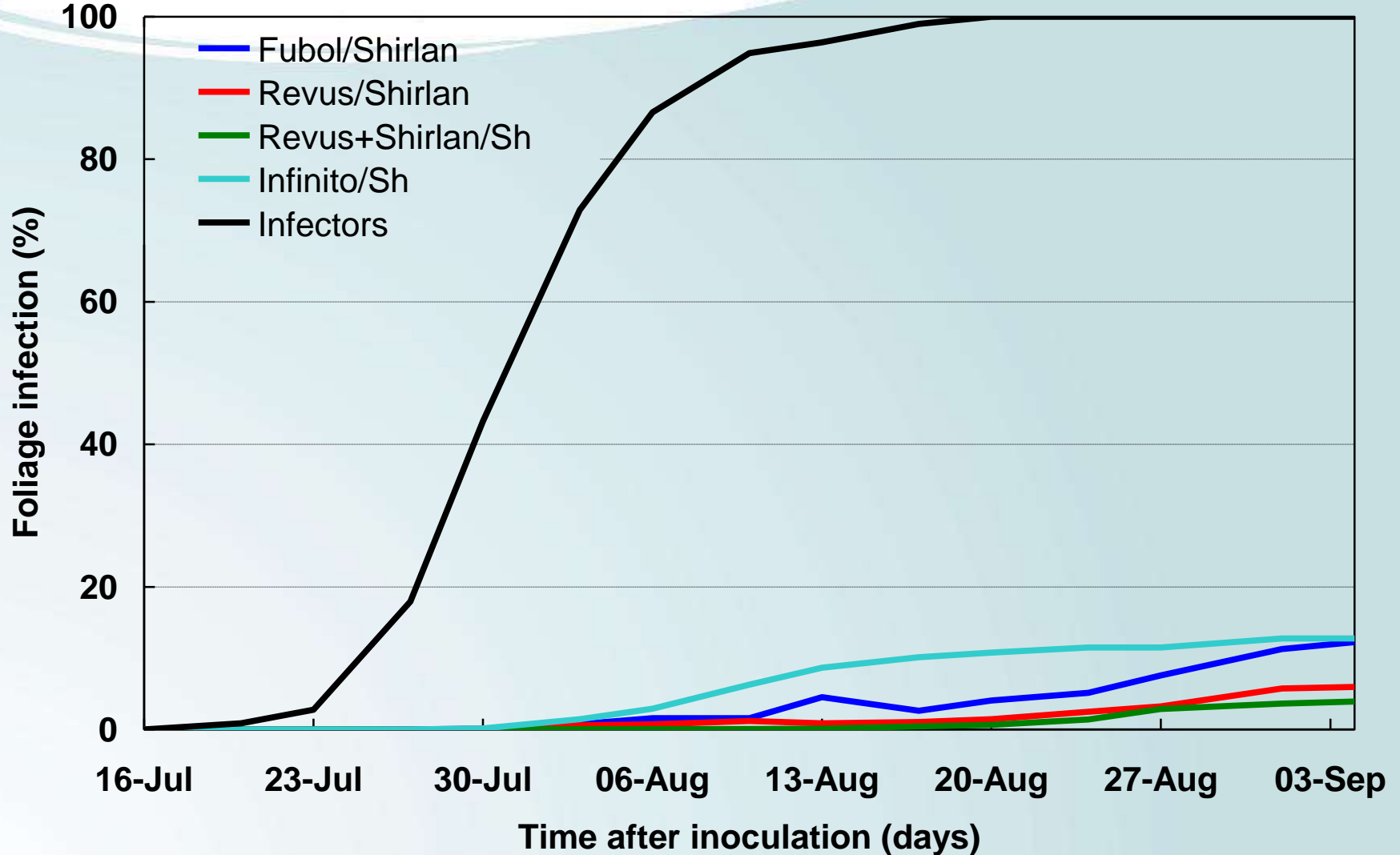
* *Infinito applied at 1.6.l/ha; 100 g fluopicolide+1,000 g propamocarb HCl/ha*

Field trial 2009

Programmes evaluated

Tr.	Spray number										
	1	2	3	4	5	6	7	8	8	9	10
1	Fubol Gold	Fubol Gold	Shirlan	Shirlan	Shirlan	Shirlan	Shirlan	Shirlan	Shirlan	Shirlan	Shirlan
2	Revus	Revus	Shirlan	Revus	Revus	Shirlan	Shirlan	Shirlan	Shirlan	Shirlan	Shirlan
3	Revus Shirlan	Revus Shirlan	Shirlan	Revus Shirlan	Revus Shirlan	Shirlan	Shirlan	Shirlan	Shirlan	Shirlan	Shirlan
4	Infinito	Infinito	Shirlan	Infinito	Infinito	Shirlan	Shirlan	Shirlan	Shirlan	Shirlan	Shirlan

2009 Foliage blight assessments



At the end of the season, the two Revus programmes had significantly less blight than the Fubol/Shirlan programme and the Infinito/Shirlan programme (NB we normally advocate using Infinito later in the programme in N. Ireland conditions)

Fubol/Shirlan, 4 September 2009



Revus/Shirlan, 4 September 2009



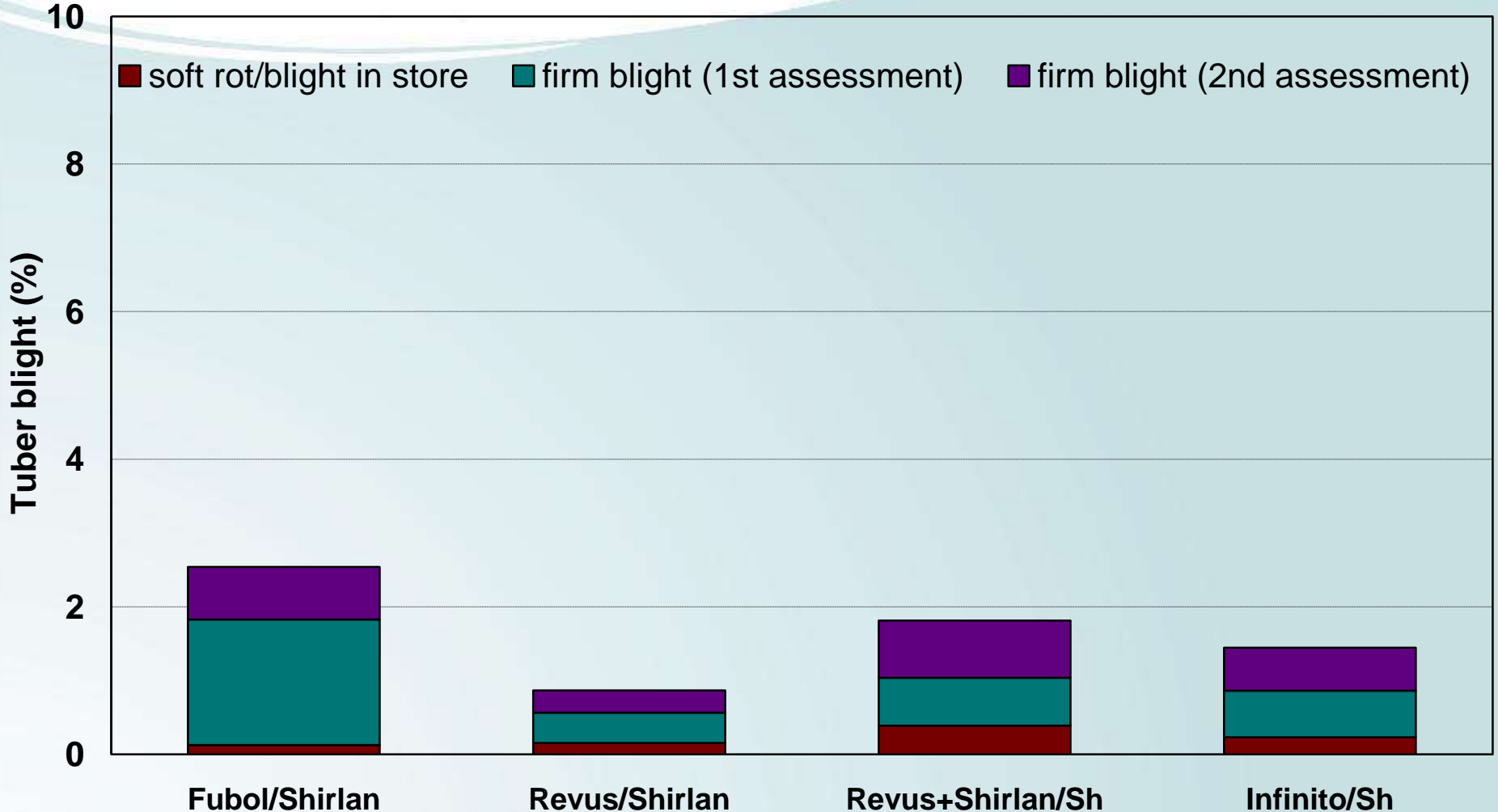
Revus+Shirlan/Shirlan, 4 September 2009



Infinito/Shirlan, 4 September 2009



2009 Tuber blight assessments: % blighted tubers by number



The percentage tuber blight in store was low compared with 2008 (when it was 22% with the Fubol/Shirlan programme); there were no significant differences between the programmes, although unexpectedly the Revus/Shirlan programme had the least

Conclusions: mandipropamid use in N. Ireland

- *Programmes including Revus give excellent foliage blight control, better than the standard*
- *In most years, reduced rate Revus+Shirlan gave slightly better foliage blight control than programmes including Revus alone*
- *Programmes including Revus+Shirlan generally had less tuber blight than the standard, while those including Revus alone tended to have more tuber blight*
- *In Northern Ireland, where there is a high risk of tuber infection, a tank-mix of Revus+Shirlan is the best way of using mandipropamid*

Acknowledgements

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