



Infinito:

Protection of new growth from infection with *Phytophthora infestans*

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The objective was to evaluate the performance of Infinito in the protection of new growth of potatoes against late blight, in comparison with other leading late blight fungicides

Trials implemented in 2009

- Two tests on detached shoots, leaf and leaflets from field grown potatoes (BCS, France, 2009)
- One test with assessments both in field and in laboratory (PPO, Netherlands, 2009)

New growth is defined as:

« growth and development of leaves present at the time of the last fungicide application and/or newly formed leaflets and leaves that were not present »

Bradshaw (2006)

Expanding leaves: leaves present at the time of application without having reached their actual development

Newly formed leaves / completely new leaves: leaves which were not present at the time of application having developed later

Cut shoot: one stem separated from the plant, with several leaves.

Cut leaf: one leaf separated from its stem, with its leaflets

Detached leaflet: leaflet separated from its leaf

Top (plant top): upper part of the one plant which consists in the terminal bud + one or several unfolded leaves.

Treatments

Mode of action	Fungicide (dose rate)	Active ingredient (dose rate)
contact	Shirlan (0,4 L/ha)	fluazinam (200 g ai/ha)
	Dithane neotech (2,0 kg/ha)	mancozeb (1500 g ai/ha)
	Ranman (0,2 L/ha + 0,15 L/ha ad)	cyazofamid (80 g ai/ha)
contact + translaminar	Revus (0,6 L/ha)	mandipropamid (150 g ai/ha)
	Valbon (2,0 Kg/ha)	benthiavalicarb + mancozeb (25+1400 g ai/ha)
translaminar + systemic	Infinito (1,6 L/ha)	fluopicolide + propamocarb-HCl (100+1000 g ai/ha)

Methodology

Field & Lab trials in France, 2009



Potato crop implemented with 2 dates of planting in order to represent 2 different growth rates

- « typical growth rate » representative of active growing phase in North Europe (3-4 new leaves within 12 days)
- « high growth rate » more than 5 new leaves within 10 days



Fungicide applications done in the field at BBCH 31-32, in absence of natural infection

Methodology

Field & Lab trials in France, 2009



Potato shoots and leaves collected and transferred to the laboratory 0 to 12 days after fungicide applications

Artificial inoculations of *P. infestans* done in the laboratory the day of sampling



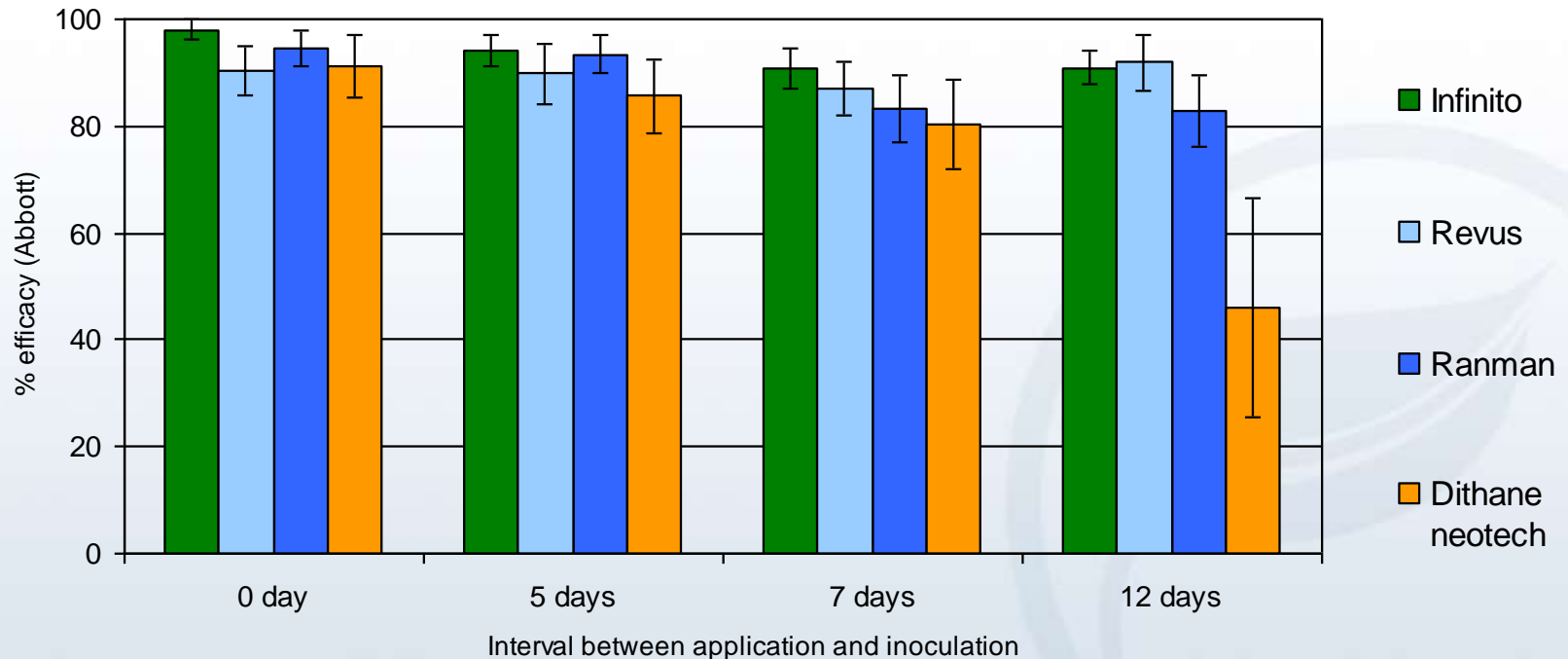
Disease assessments, 6 days after treatment:

- On cut shoots in climatic chambers
- On detached leaves

Protection of expanding leaves

Typical growth rate conditions

Efficacy results on cut shoots, France, 2009

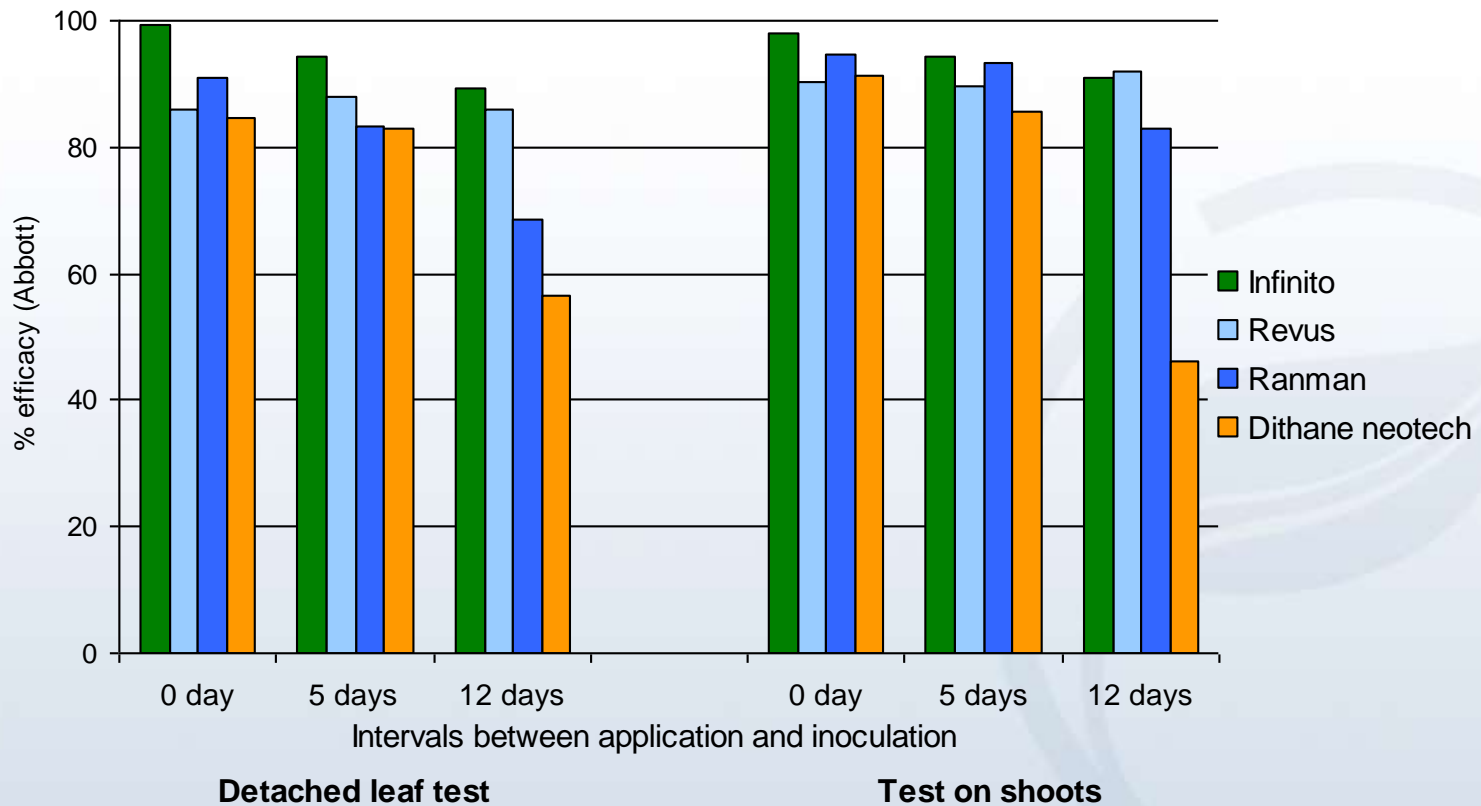


Infinito offered excellent protection of expanding leaves
Infinito = Revus = Ranman > mancozeb

Comparison of testing methods

Typical growth rate conditions

Protection of new growth on cut shoots vs detached leaves, France, 2009

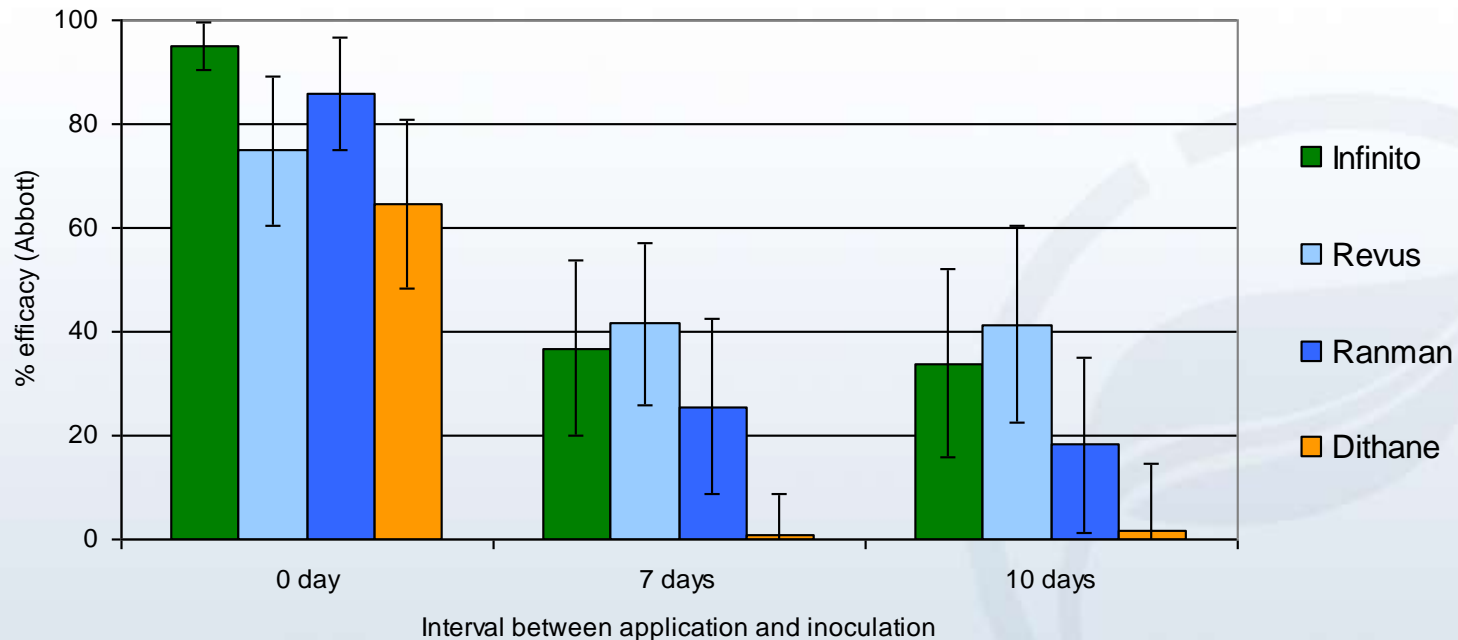


Both methods provided comparable efficacy results

Protection of newly formed leaves

High growth rate conditions

Efficacy results on cut shoots, France, 2009



None of the treatments was able to provide sufficient protection in a weekly interval
Infinito had an advantage over contact fungicides

Methodology

Field & Lab tests in the Netherlands, 2009



Overview of the trial design



First application

Second application

Crop development

Potato crop implemented according to local good agricultural practice

- ◆ planting on 29 April
- ◆ cover treatment with Dithane prior to specific fungicide applications

2 applications of test fungicides in the field within 7 days interval

- ◆ first spray: 17 June
- ◆ second spray: 24 June

Growth rate = 2 new leaf layers within 6 days

Methodology

Field & Lab tests in the Netherlands, 2009



One artificial inoculation done in the field under humid conditions on June 23.

- 6 days after the first fungicide spray (= 1 day before the second application)

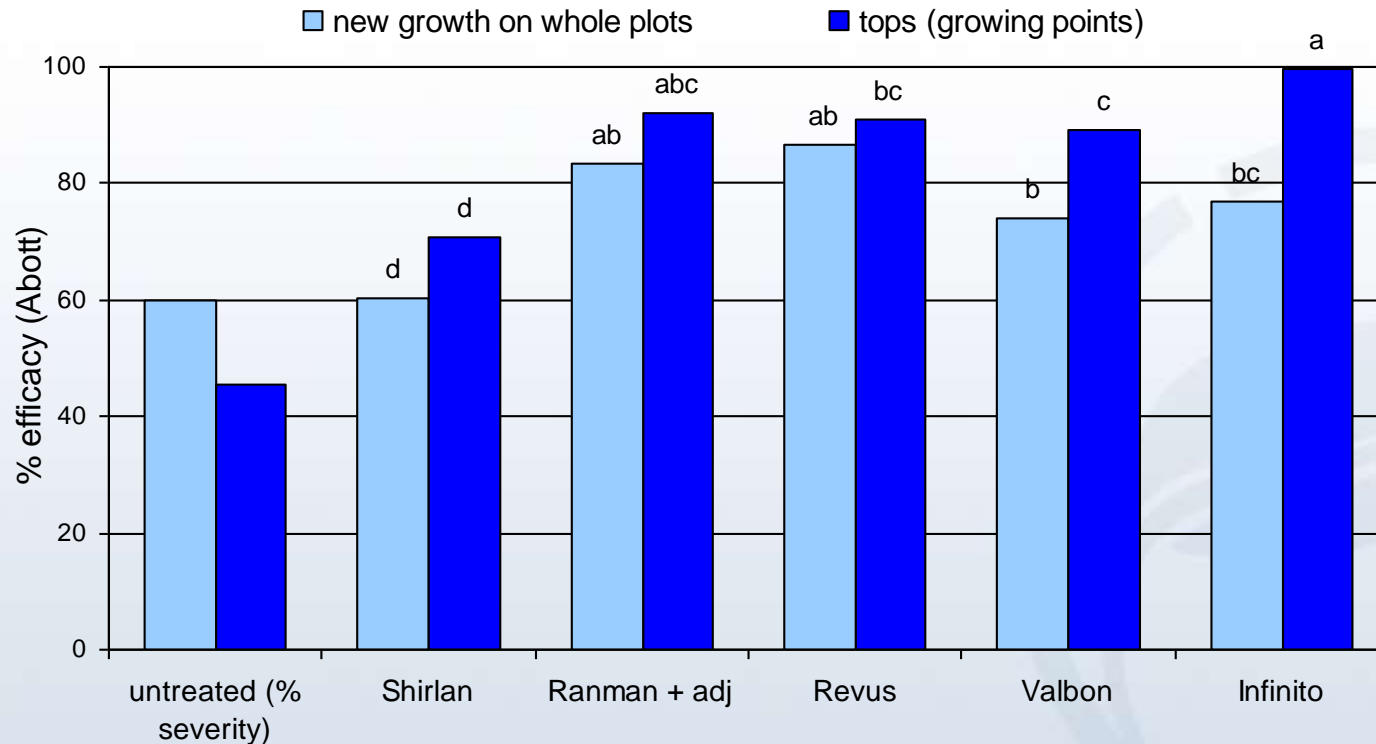


Bioassay on detached leaves

- Sampling 6 days after first fungicide application
- Detached leaves placed in climatic chambers after artificial inoculation
- Disease assessments 1 week after inoculation

Protection of new growth and tops

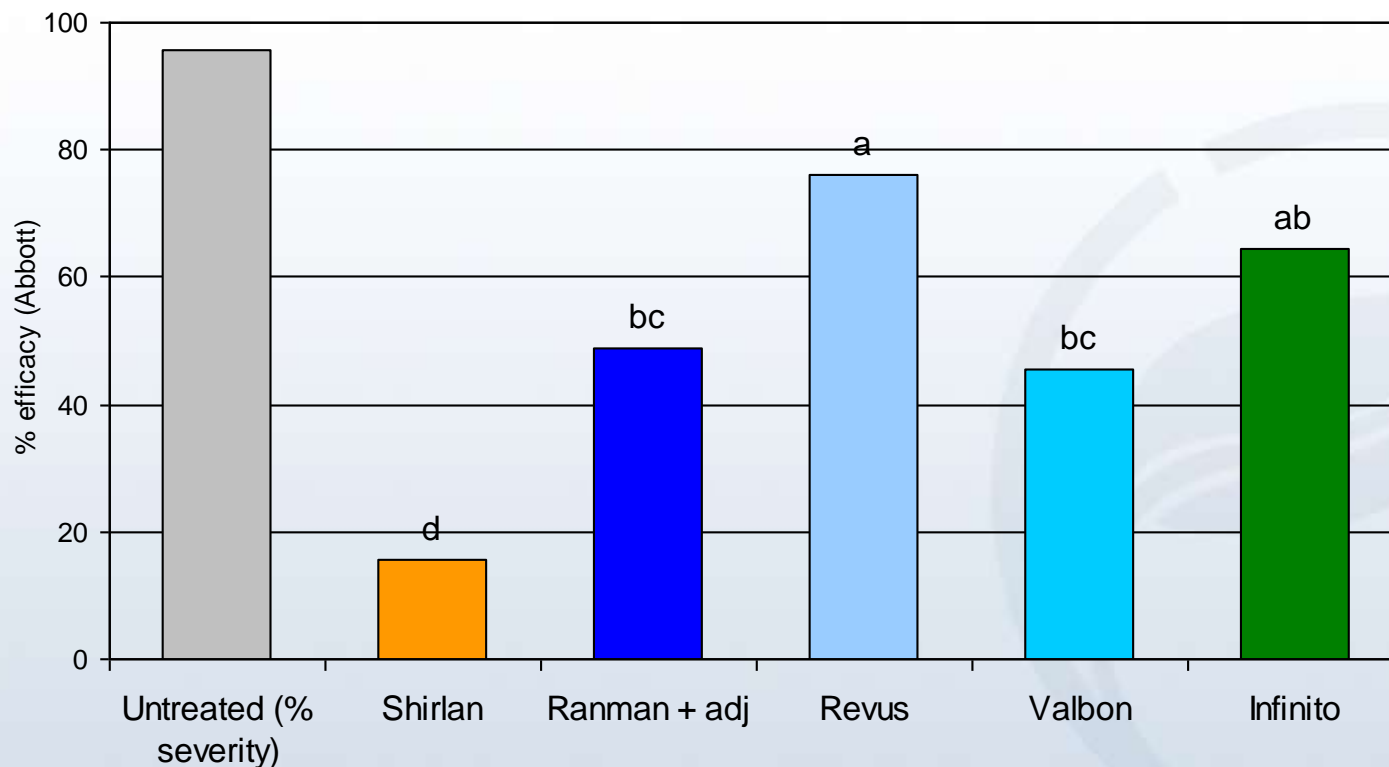
Field results on new growth and tops (Netherlands, 2009)



**Infinito offered new growth protection at the level of other new growth references
Infinito showed excellent protection of growing points (newly formed leaves).**

Protection of newly formed leaves

Bioassay results on detached leaves from Layer 1 (Netherlands, 2009)



Infinito provided very good protection of newly formed leaves

Discussion & Conclusions

- ✓ Consistent results were achieved with all testing methods
- ✓ Growth rates recorded in practice are often too low to make differences between observations on newly formed leaves and expanding leaves
- ✓ Infinito demonstrated good protection of new growth in comparison to the best market standards
- ✓ Results from 2009 trials confirm previous data and support the Infinito rating (++) for new growth effectiveness in the EuroBlight table
- ✓ During the active growing phase of the crop, practical recommendations to growers based on EuroBlight new growth ratings should be related to a minimum growth rate

Acknowledgments



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