

Science For A Better Life

Late blight control strategies in the mediterranean area with Infinito and Consento

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Late blight control strategies in the mediterranean area with Infinito and Consento



Outline of the presentation

Key features of Infinito & Consento

- Mode of action and use recommendations
- Regulatory profile

Performance, disease control and yield

- Middle East countries
- Noth African countries

Summary & conclusion

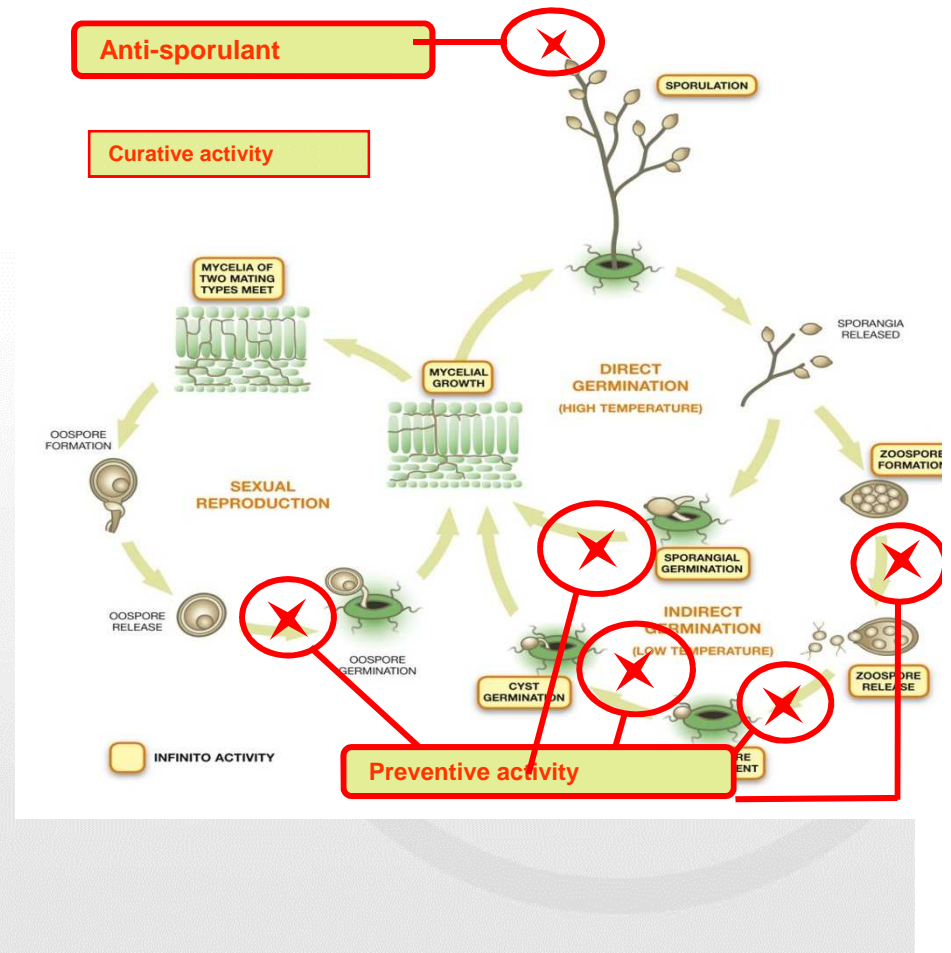
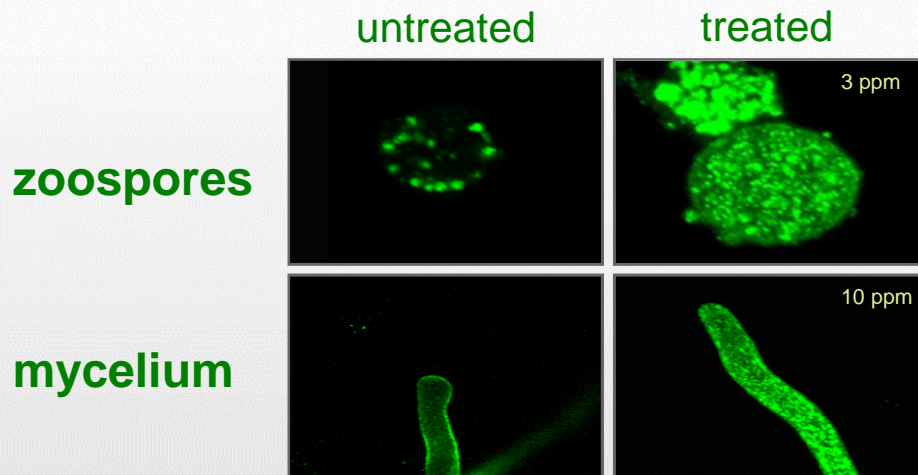




Infinito mode of action and interaction with the lifecycle of *Phytophthora infestans*



- ◆ **Infinito** is a co-formulation of 2 active ingredients
 - Fluopicolide (Acylpicolides) 62,5 g/l
 - propamocarb HCl 625 g/l
- ◆ **Infinito** is a Suspension Concentrate (SC), easy to handle liquid formulation
- ◆ **Infinito** has a novel mode of action: redistribution of spectrin-like proteins into the cytoplasm





Complementary fungicidal activity of the two active ingredients in **Infinito**



Fluopicolide

- ◆ New mode of action
- ◆ Contact + translaminar
- ◆ Active on all steps of Oomycete life cycle
strong and quick effect on zoospores
Anti-sporulant
- ◆ Excellent protectant activity + curative potential
- ◆ Long lasting performance

Propamocarb-HCl

- ◆ Well known fungicide with no resistance after more than 20 years of use
- ◆ Systemic (xylem distribution)
- ◆ Curative
- ◆ Active on mycelium growth, spore production and spore germination

➤ **Excellent complementarity and pro-active resistance management**



Favourable regulatory profile



- ◆ Low acute toxicity
- ◆ Not carcinogenic/mutagenic
- ◆ No developmental or reproductive toxicity
- ◆ Non-toxic to birds, bees and non target organisms (*Typhlodromus*, *Aphidius* (parasitic wasps) , earthworms)
- ◆ Not toxic to aquatic organisms
- ◆ Extremely low or No residues in potatoes
- ◆ **Short PHI ,meets required quality for storage / processing**

➤ **Infinito - a modern tool for use in integrated crop management (ICM)**





Complementary fungicidal activity of two active ingredients in **Consento**



CONSENTO is a combination of two active ingredients:

Fenomen® 75 g / l

Propamocarb-HCl 375 g / l

CONSENTO is a Suspension Concentrate easy to handle liquid formulation

The combination of **Fenomen** + **propamocarb** provides:

- excellent **preventive and curative efficacy**
- good **protection of the new growing leaves** and stems which develop after application
- **good rain fastness.**
- Good control of *Alternaria solani*

Fenomen: Breaks the Direct Cycle



Sporangia

Direct germination

Germ tube growth

Mycelial growth & Sporulation



Fenomen: Breaks the Indirect Cycle



Sporangia

Zoospore release

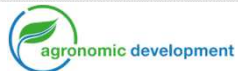
Zoospore mobility

Encystment

Cyst germination

Germ tube growth

Mycelial growth & Sporulation





Favourable regulatory profile

- **Low acute toxicity**
- **Not carcinogenic /mutagenic**
- **No developmental and reproductive toxicity**
- **Fenomen® is practically not toxic to birds and bees.**
- **Not toxic to aquatic organisms in GAP conditions**
- **No risk for beneficial insects**
- **Extremely low residue level when applied according to GAP**
- **Short Pre Harvest Interval (see recommendations)**

➤ **Consento - a modern tool for use in integrated crop management (ICM)**



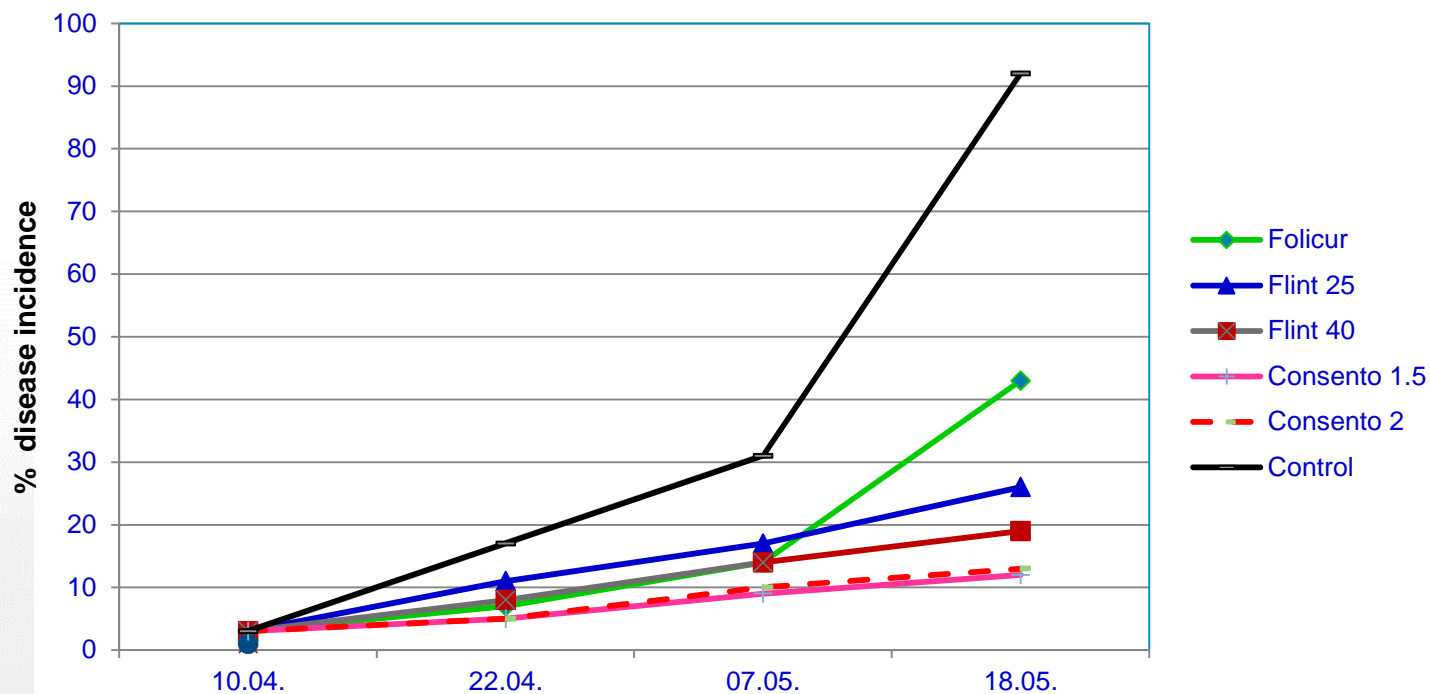


Performance against late & early blight in MEA countries (Egypt, Israel & Turkey)





Consento control of *Alternaria solani* (cultivar Mundial)



Consento at 1.5 & 2 L / ha provided excellent control of *Alternaria solani*



Infinito control of *Phytophthora infestans* (cultivar Niata)



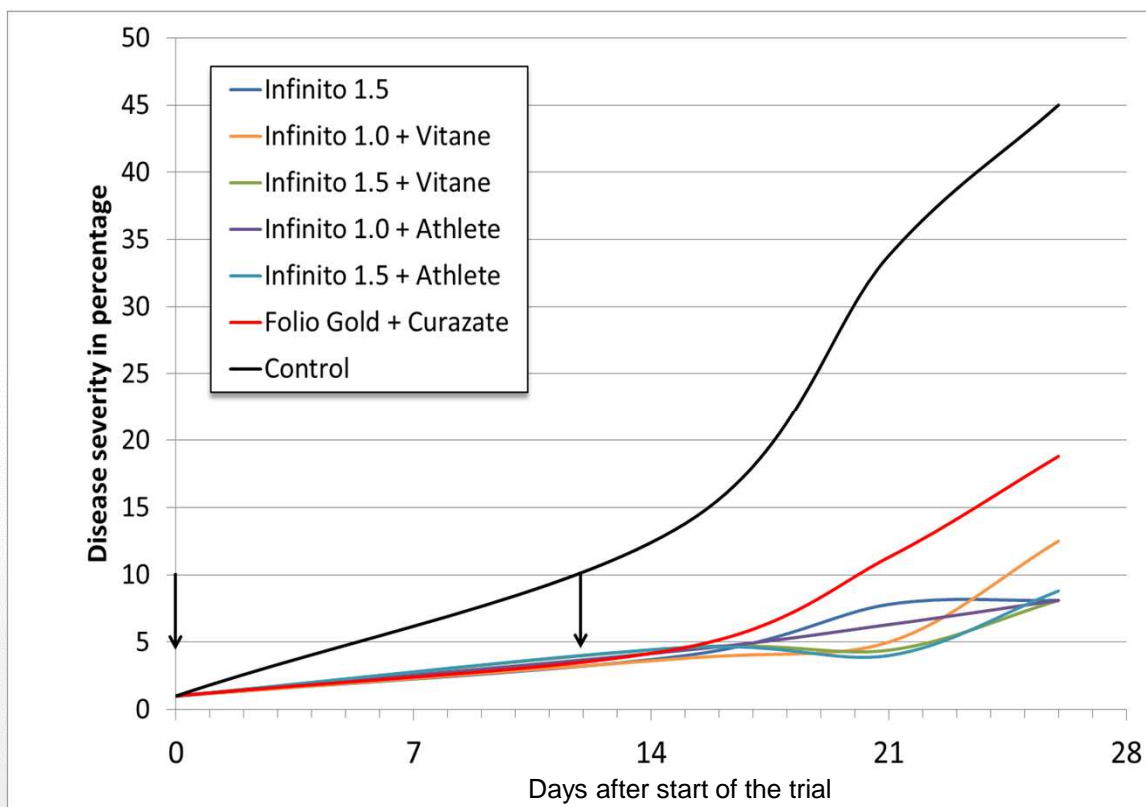
Treatment	AUDPC	% Efficacy	Yield t/ha	Added yield vs. Control relative
Infinito 1.5l/ha	20.25 b	91.3 ab	62.2 a	159
Infinito 2l/ha	12.63 b	94.5 ab	65.2 a	166
Standard	11.75 b	95.4 a	60.4 a	154
Control	246.63 a	N/R	39.2 b	100

* Statistical analysis according to Tukey-Cramer at significance level of 0.05. The efficacy data were transformed via arcsinus prior to the analysis

- Infinito is effective against active late blight infection = standard
- Infinito at dose rates of 1.5 and 2 l/ha resulted in better yield > standard in average of 61% more yield compared to 54% achieved by standards.



Does Infinito needs a tank mix partner? Cultivar: Shipody



Conclusions:

- Infinito solo at 1.5 L / ha > Standard and = similar to all other tankmix combinations
- Infinito does not need to be tank mixed with other partners to achieve effective control of *Phytophthora infestans* on potato

Vitane WG
Athlete WG
Folio Gold SC
Curazate

45% Cymoxanil
50% Dimethomorph
Mefenoxam 37.5 g/l + Chlorothalonil 500 g/l
60% Cymoxanil

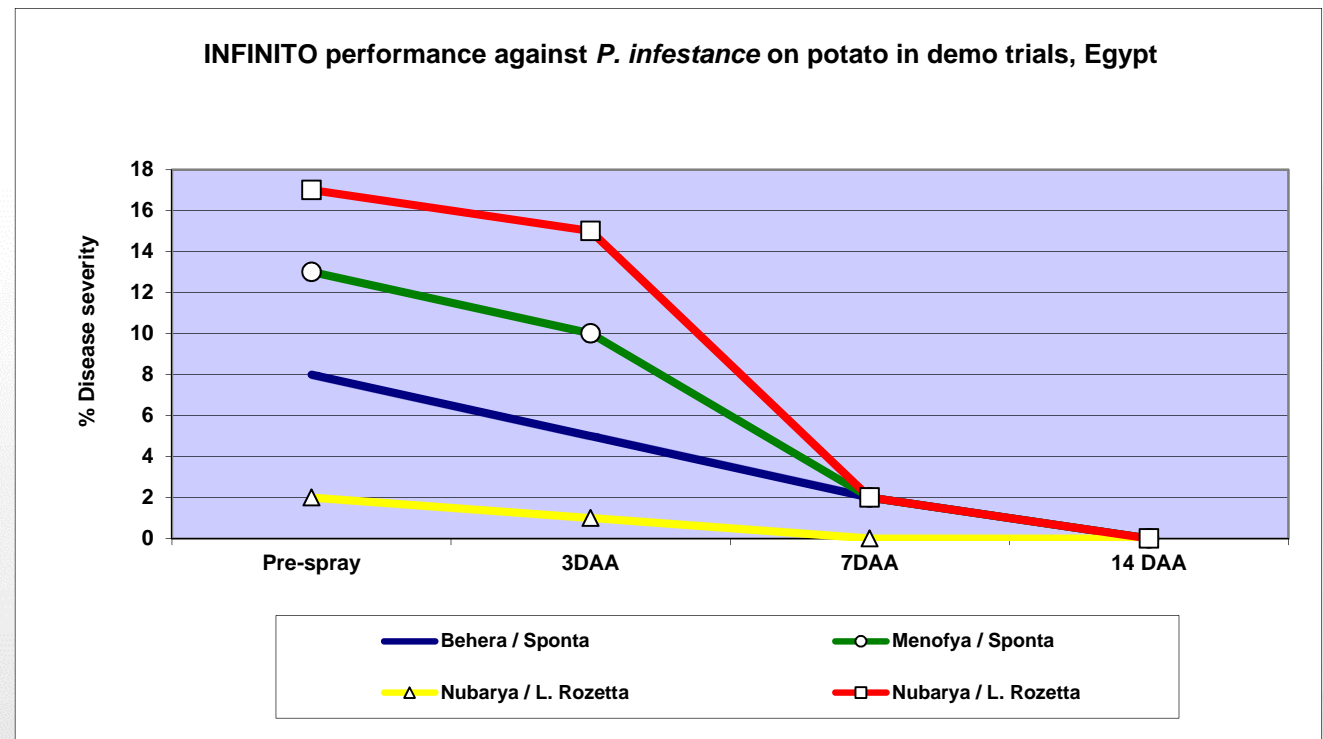


Infinito control of late blight in different potato varieties



In all trials, INFINITO was tested at 1.5 l/ha curatively e.g. at the beginning of infection 2 – 5% or later on at first disease establishment e.g. 8 – 17% disease severity on different potato varieties at several locations.

- INFINITO could stop the disease very quickly at 3 DAA and showed 85 – 100% efficacy at 7 DAA and continued up to 14 DAA.
- The new leaves were healthy
- Farmers reported INFINITO to show up > 20 days long lasting efficacy compared to standards.





Farmers feedback on Infinito performance to control *P. infestans* at key potato exporting farms in Egypt



Overall Farmers's feedback:



Farm name /location	Area treated ha	Pre-spray infection (% disease severity)	Sprayer/ spray volume ha	Farmer feedback
Copenhagen / Nubarya	0.8 ha	17%	boom sprayer 240 l / ha	"Excellent as disease has been stopped quickly & for long time"
Copenhagen / Nubarya	2 ha	2%	boom sprayer 200 l / ha	"Happy, disease disappeared..."
Ramadan Khoryes Menofya	0.5 ha	13%	knapsack sprayer 250 l / ha	"New leaves are clean"
International potato center Behera	0.2 ha	8%	knapsack/ sprayer 240 l / ha	Very effective as disease was stopped long time. We need new a.i. because of Metalaxyl resistance
Salma - Nubarya	Commercial Fields (large area)	5 – 10%	boom sprayer 200 l / ha	Excellent: stopped the disease + long lasting efficacy >20 days compared with standard



Field treated with Infinito (1.6 l / ha - Menofya)

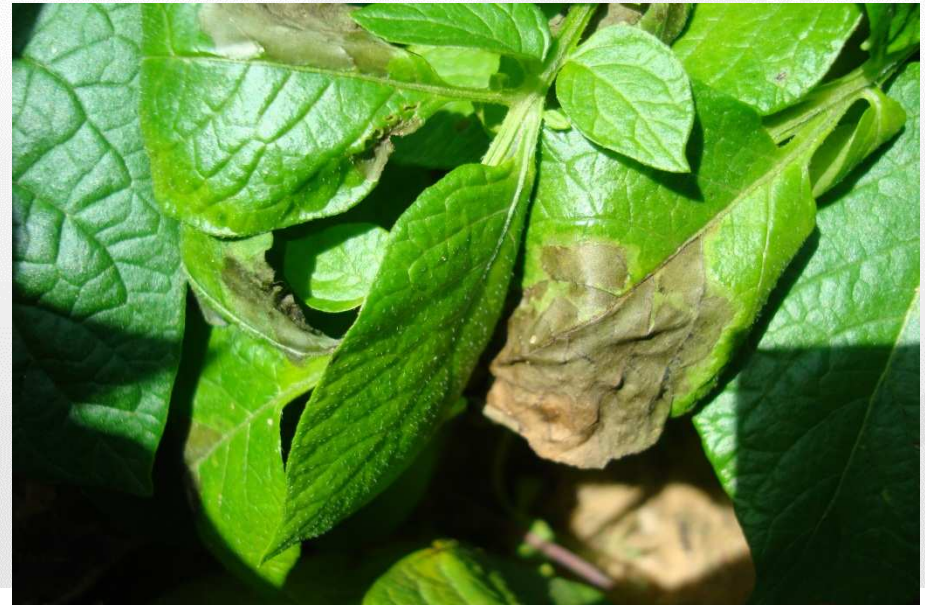




Treated potato plants

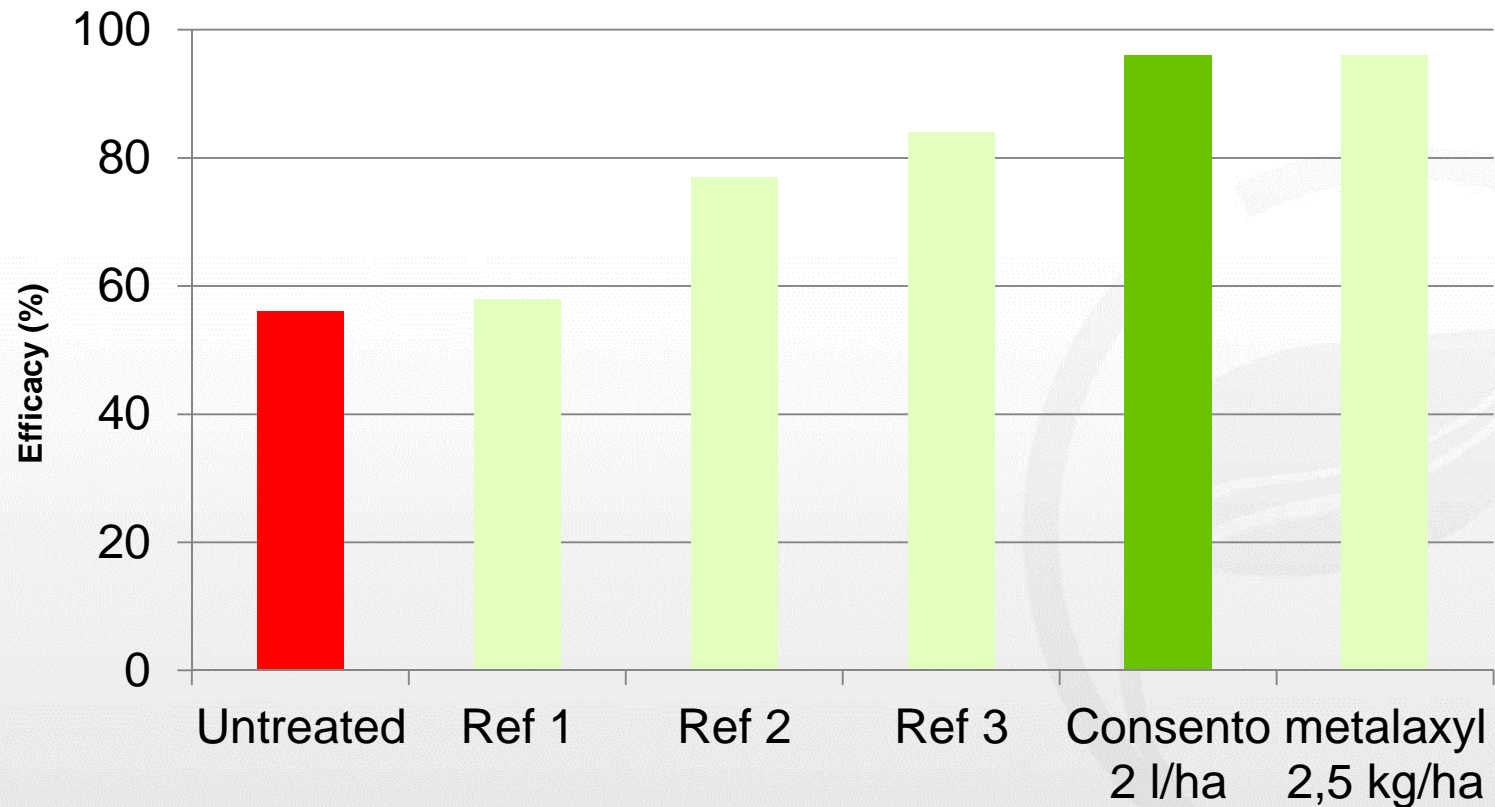


Untreated potato plants





Consento control of *Phytophthora infestans* in tomato (Turkey)



➤ Consento showed excellent efficacy against tomato late blight = Standard.



* Untreated = % infection

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Bayer CropScience



Performance in North African countries (Tunis, Morocco)

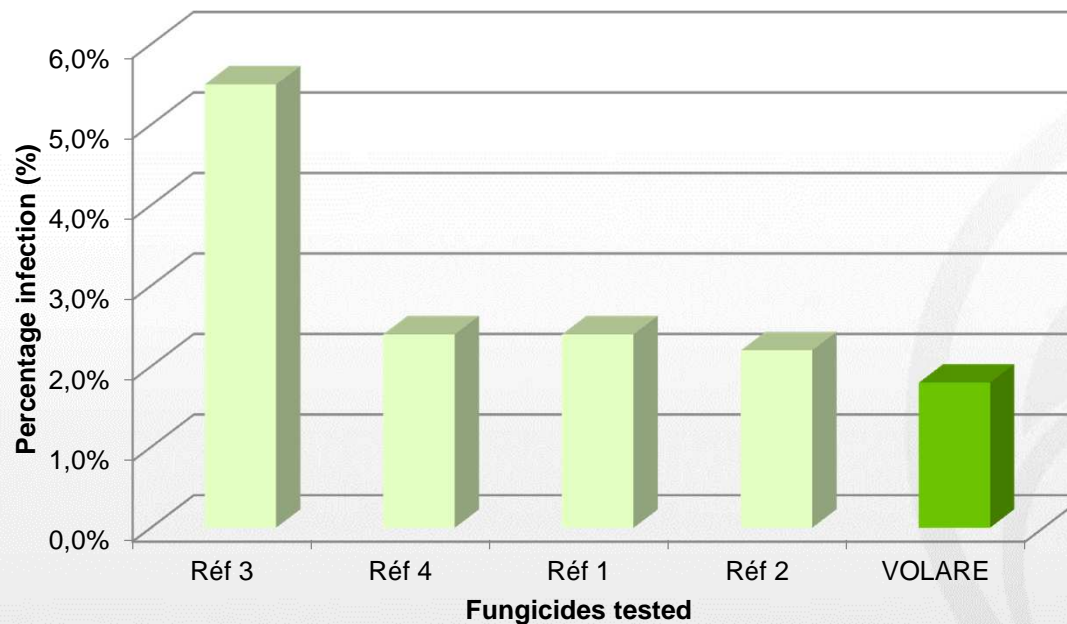




VOLARE control of *Phytophthora infestans* (Tunis – Jendouba)



Foliar blight (%) 10 days after 4th application



Volare (Infito) excellent control of *Phytophthora* compared to standards



Disease conditions in the trial, 18 days after the 2nd application of Volare



VOLARE treated plot: no visible symptom of late blight on leaves



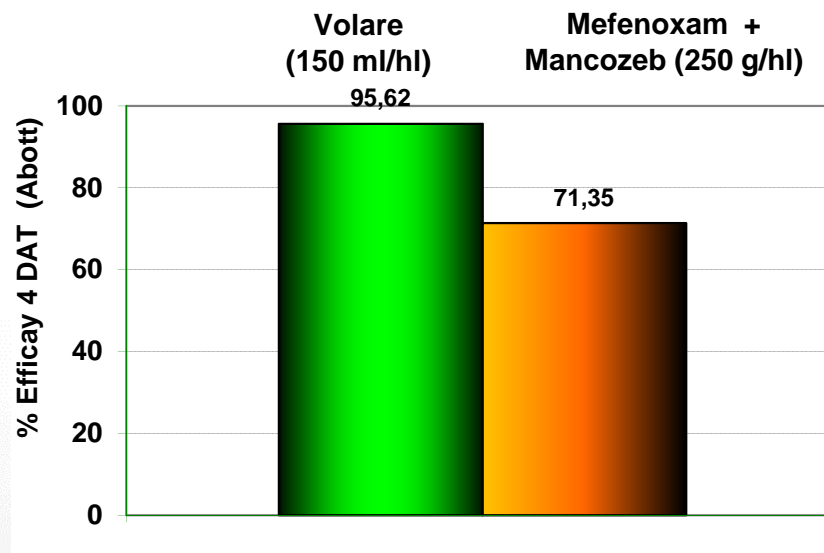
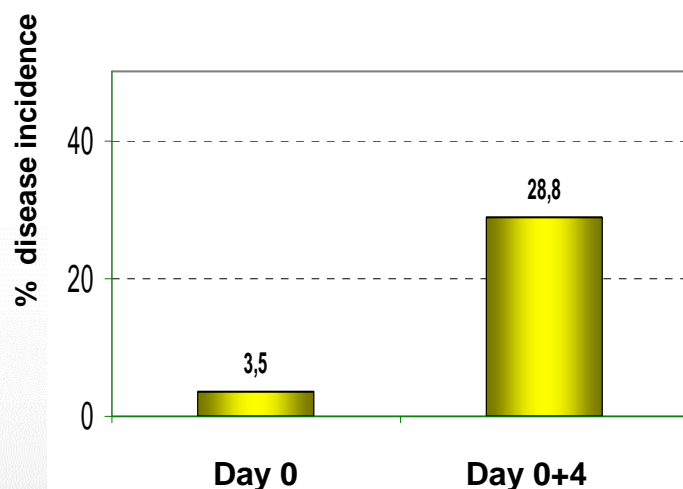
Reference treatment: New late blight spots are visible on leaves



Curative effect of Volare at Morocco, 2011



UNTREATED: aggressive disease development within 4 days



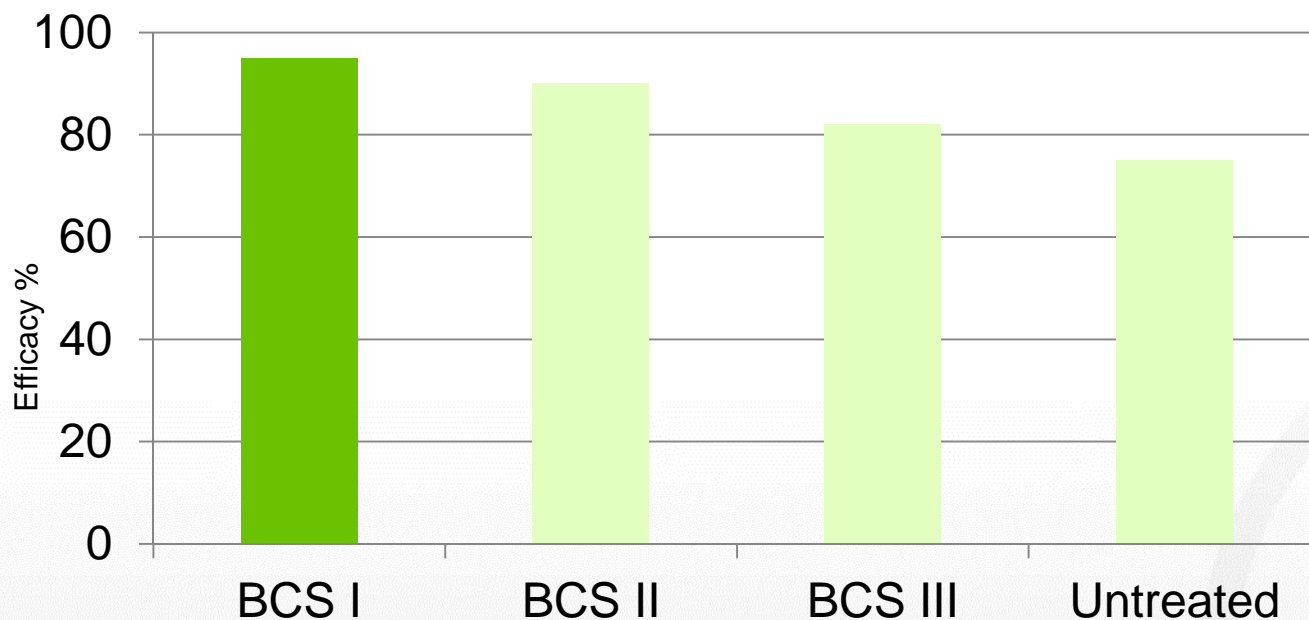
Successful curative control with Volare (Infinito) at 1.5 Ltr. / ha

4 DAT > Ridomil Gold





Bayer spray programs with & without Volare against late blight disease , Morocco



Summary BCS I program:

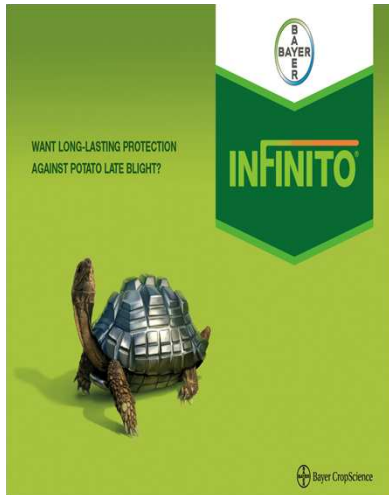
The inclusion of 2X Volare provided the best efficacy

Programme	BCS I	BCS II	BCS III	Untreated
1st Application	Antracol 250 g/hl	Mancozeb 200 g/hl	Mancozeb 200 g/hl	Untreated
2nd application	Volare 150 ml/hl	Mefenoxam + Mancozeb 250 g/hl	Cymoxanil + Famoxadone 400 g/ha	Untreated
3rd application	Volare 150 ml/hl	Mefenoxam + Mancozeb 250 g/hl	Cymoxanil + Famoxadone 400 g/ha	Untreated



Summary & Conclusions

- Both Infinito and Consento are combinations based upon two different active ingredients with excellent complementary performance enabling pro-active resistance management.
- Consento provides both control of *Alternaria* and *Phytophthora*
- Infinito and Consento provided reliable and consistent control across the region at various disease levels
- Both products showed excellent efficacy , increased the potato yield when applied either protective or curative
- In the Middle East and North Africa Consento and Infinito have become important parts of potato spray programs to control early and late blight diseases



Thank you for your kind attention

