FytoSol, a new COS-OGA derivative to fight potato late blight
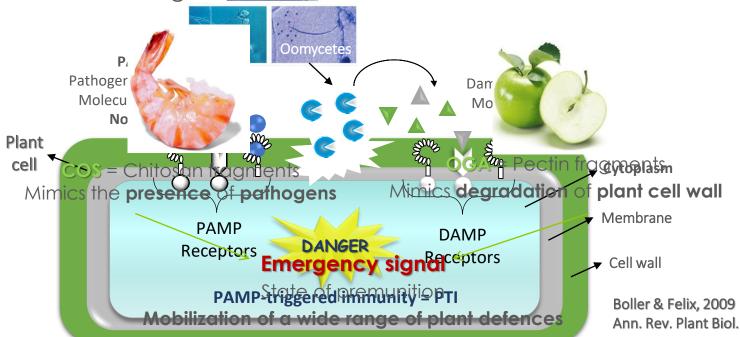

fytoSol

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ABIM
Annual Biocontrol Industry Meeting®

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fytofend
Pioneering Biological Alternatives

FytoFend, an innovative company

➢ Belgian company

➢ Oligosaccharides production → PTI stimulation

➢ Mimicking plant pathogen interaction for plant protection

➢ Patented and reg

Pathogens

Bacteria

Oomycetes

OGA

PAMP
Pathogen
Molecu
No

Damp
Mo

Plant
cell

Cytoplasm

COS = Chitosan fragments
Mimics the **presence** of **pathogens**

OGA = Pectin fragments
Mimics **degradation** of **plant cell wall**

Membrane

PAMP
Receptors

DAMP
Receptors

Cell wall

DANGER
Emergency signal

State of premunition
PAMP-triggered immunity = PTI
Mobilization of a wide range of plant defences

Boller & Felix, 2009
Ann. Rev. Plant Biol.

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Bringing COS-OGA to the next level

➢ FytoSave: 12,5 g/L COS-OGA

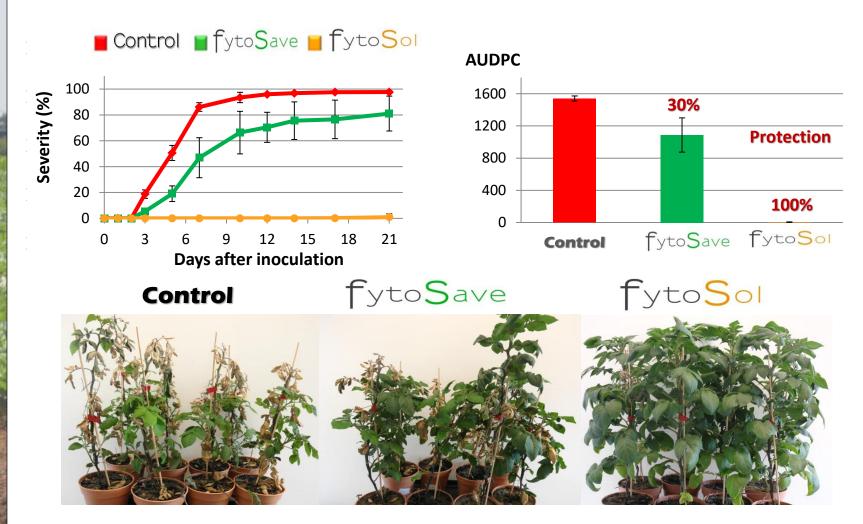➢ Effective against PM and DM on grapes, vegetables, apple scab, rice blast

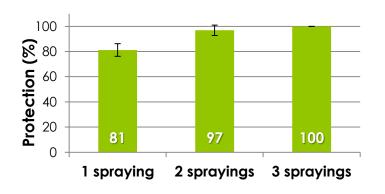➢ Polycyclic disease requiring 15 sprayings/year

➢ More aggressive strains

New !!!
12,5 g/L COS-OGA

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FytoSol against potato late blight

Control · fytoSave · fytoSol

AUDPC

Control   fytoSave   fytoSol

30%

Protection
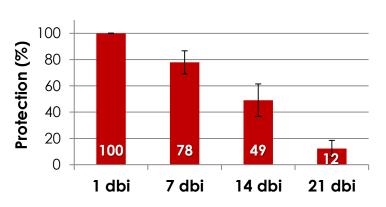
100%

Control

fytoSave

fytoSol

FytoSol: How to use?

➢ Timed application procedure?

➢ Cumulative effect: 1, 2 or 3 sprayings before *P. infestans*

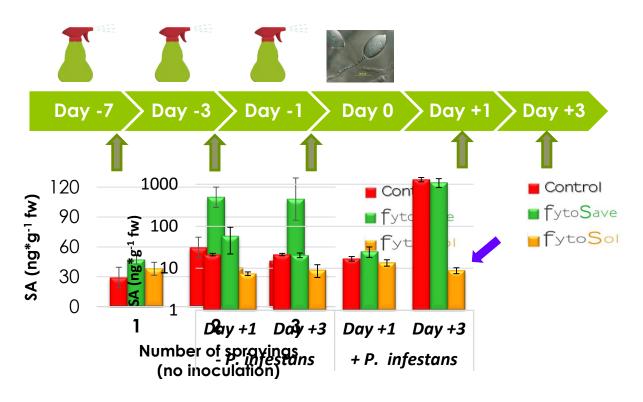➢ Persistence: 1, 7, 14 or 21 days before infection (dbi) with *P. infestans*

| Day -7 | Day -3 | Day -1 | Day 0 | Day +7 | Day+14 | Day +21 |

FytoSol: Mode of action

➢ SA quantification 1 day after each sprayings or 1 and 3 after *Pi*

➢ SA accumulation for FytoSave but not for FytoSol!

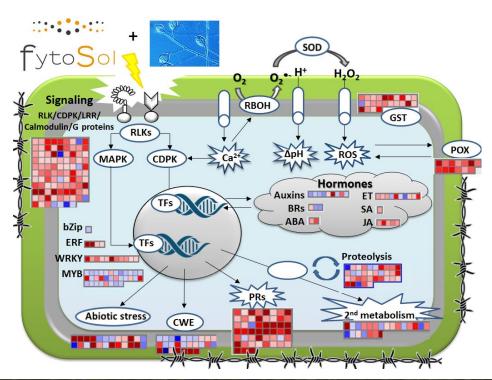➢ *P. infestans* induced SA accumulation except in FytoSol-treated plants

FytoSol: Mode of action

➢ Potato plants sprayed 3 times with FytoSol 0,5% or water

➢ Leaves harvest 24h after infection with *P. infestans* at $1.5 * 10^4$ sporangia/ml

➢ RnaSeq and MapMan of mRNA involved in biotic stress

Log$_2$ (fold change) of gene expression

- 3	- 2	-1	0	+ 1	+ 2	+ 3

Effect of FytoSol
on infected plants:

→ Massive upregulation of
biotic stress responses!

Conclusions / perspectives

➢ Preventive and repeated applications crucial for efficacy

➢ FytoSol blocks SA hijacking by *P. infestans*

➢ FytoSol induces massive upregulation of biotic stress responses

➢ Promising results → Field trials

➢ **FytoSol to be integrated in a program**

- o Repeated sprayings over the whole season

- o Combining with DSS

- o Reduced fungicide doses → IPM

- o Reduced copper doses → OF

Thank you for your attention