Zampro® Plus, the new BASF fungicide for Late Blight control

Hit the ground running!

The healthy start for your potato crop.

Euroblight Workshop, de Werelt, Netherlands
13. - 16.05.2024

Martin Teichmann, E-APE/MT

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Zampro® Plus - combining two unique and complementary modes of action

Zampro® Plus is a suspension concentrate (SC) containing:

- 75 g/l ametoctradin (FRAC Group 45)
  forming an AI depot on plant surface
- 453 g/l potassium phosphonates (FRAC Group P07)
  (equiv. to 300 g/l phosphonic acid)
  for strong protection from inside

How to use Zampro® Plus in potato

- Possible to apply starting at formation of basal side shoots (BBCH 21)
- Max. 3 times* at 5 days intervals until 7 d PHI
- Dose rate 3,2 l/ha

* every 2nd season; in PL, CZ, SK, SI, AT, HU max. 2 applications but every season

Zampro® Plus positioning

GAP (legal frame)
From BBCH 21 (first basal side shoot visible)
until BBCH 89 (plant senescence)

Use recommendation:
2-3 applications of 3,2 l/ha
at the early start of the growth.
Apply in alternation with other MoAs

Zampro® Plus	Competitor product	Zampro® Plus	Competitor product	Zampro® Plus

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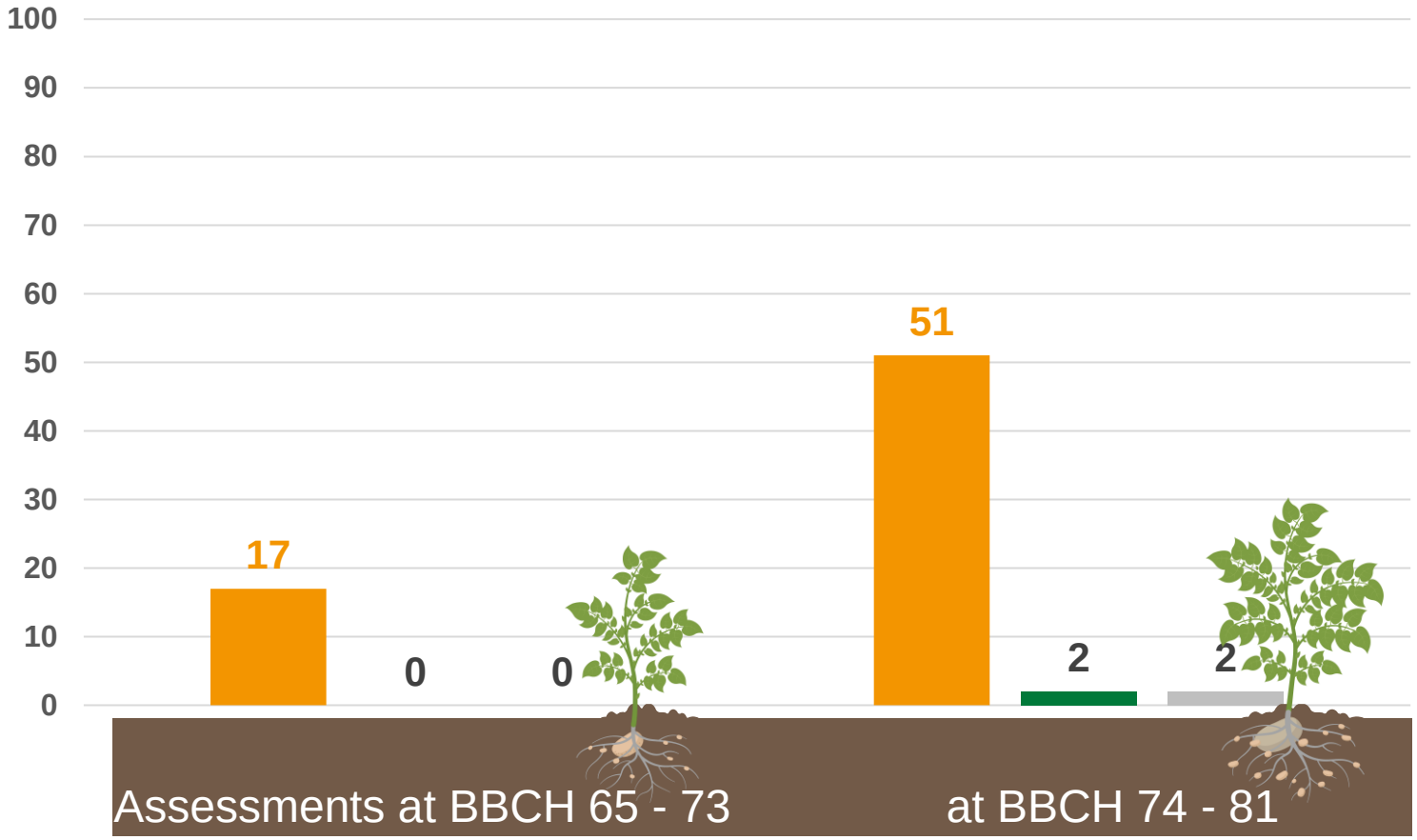
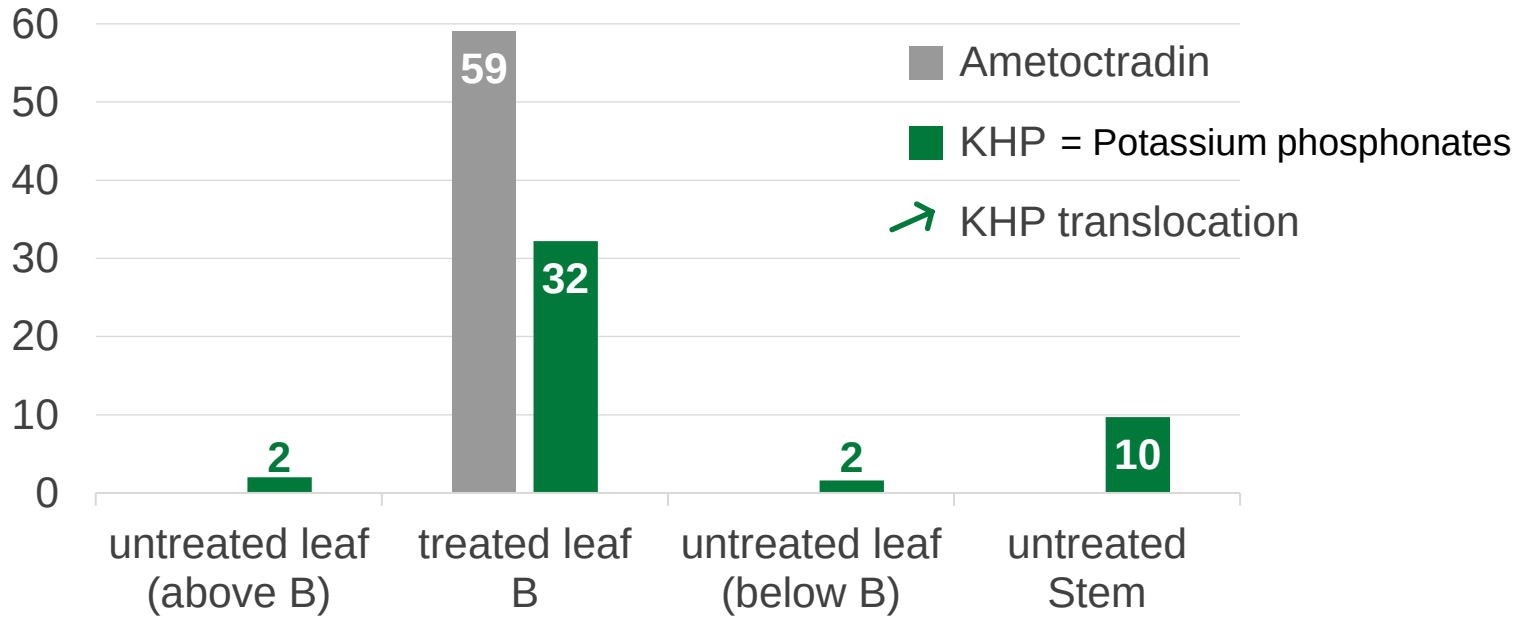
Zampro® Plus, best start for a healthy crop

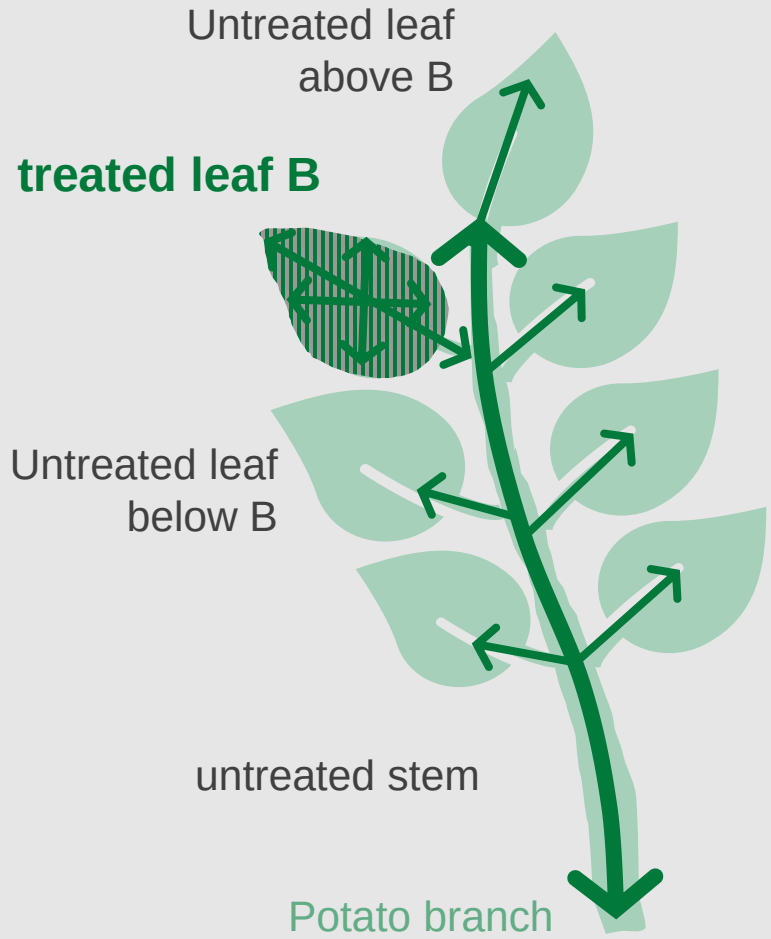


Maritime EPPO climatic zone trials in potato vs PHYTIN from 2018-2019

Zampro® Plus uptake and translocation in potato

% recovered ai in wax layer and tissue relative to applied amount
10 days after treatment on leaf B





Uptake and fully systemic translocation of KHP
Uptake to wax and local presence of ametoctradin

Complementary protection of whole plant

Study 21_0030_Nov 2021_ Limburgerhof , APR Delivery Optimisation I, Lab M. Fiess

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Zampro® Plus uptake and mobility profile:

	Contact activity	Cuticular absorption	Surface redistibution	Translaminar movement	Apical mobility	Basipetal mobility
Initium	+ + +	+ + +	+ + +	0	0*	0
KHP	+	0	0	+ + +	+ + +	+ + +

Zampro® Plus combines
the strong **contact activity** provided by ametoctradin (Initium®) with
the **systemic activity** of phosphonic acid

*Surface mobility through the wax layer under evaluation

Zampro® Plus mode of action

Unique “double” single-site inhibitor + a reliable plant defence inducer

C: Respiration

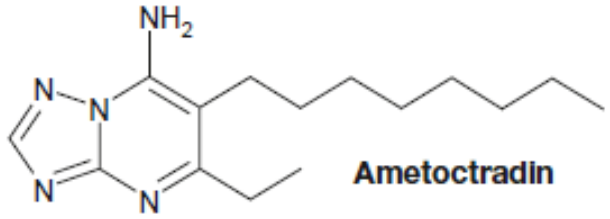
C4: Complex III

C7: ATP transport (proposed)

C3: Complex III cytochrome bc1 (ubiquinol oxidase) at Qo site (*cyt b gene*)

C8: Inhibition of complex III — **45**

Cytochrome bc 1 (ubiquinone reductase) at Qi site and at Qo site (stigmatelline binding mode)



Ametoctradin

Triazolo-pyrimidylamine

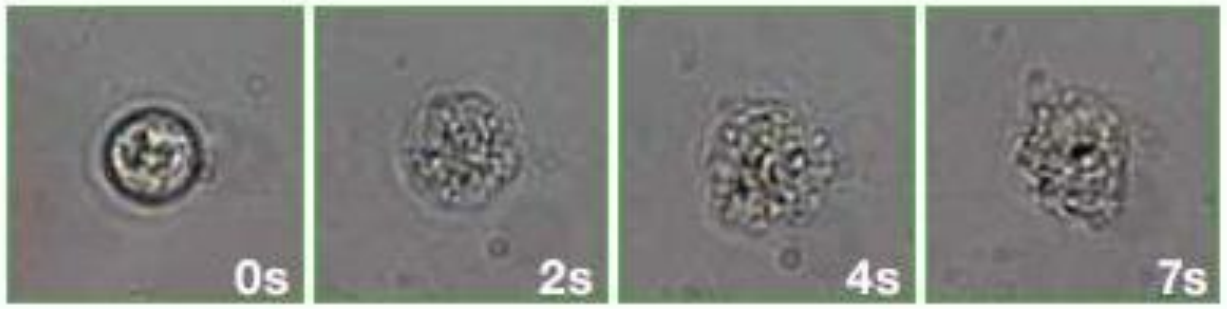
- Initium is a double single-site inhibitor of the Complex III of the mitochondrial respiratory chain
- FRAC classification: QioSI* (Quinone inside and outside inhibitor (Stigmatelline binding mode))

→ **Initium mode of action is unique**

*nomenclature change in FRAC expected in Q1 2024

Effect of Initium® on Zoospores

Untreated Control: Zoospore Germination



With Initium: Zoospore destruction within very short time

- Strong **preventive** activity (zoospore release and spore germination)
- **No curative efficacy** (on mycelium, sporangia formation)

Zampro® Plus mode of action:

Unique single-site inhibitor + **a reliable plant defence inducer**

P: Host Plant Defence Inducers

P1: salicylate related

P2: salicylate related

P3: salicylate related

P4: polysaccharide elicitors

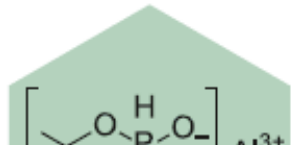
P5: anthraquinone elicitors

P6: microbial elicitors

NC: Not classified

P7: Phosphonates — **P07**

#P07 phosphonates



fosetyl-al

Ethyl-phosphonates

phosphorous acid

Phosphorous acid

→ **Phosphonates have a complex mode of action**

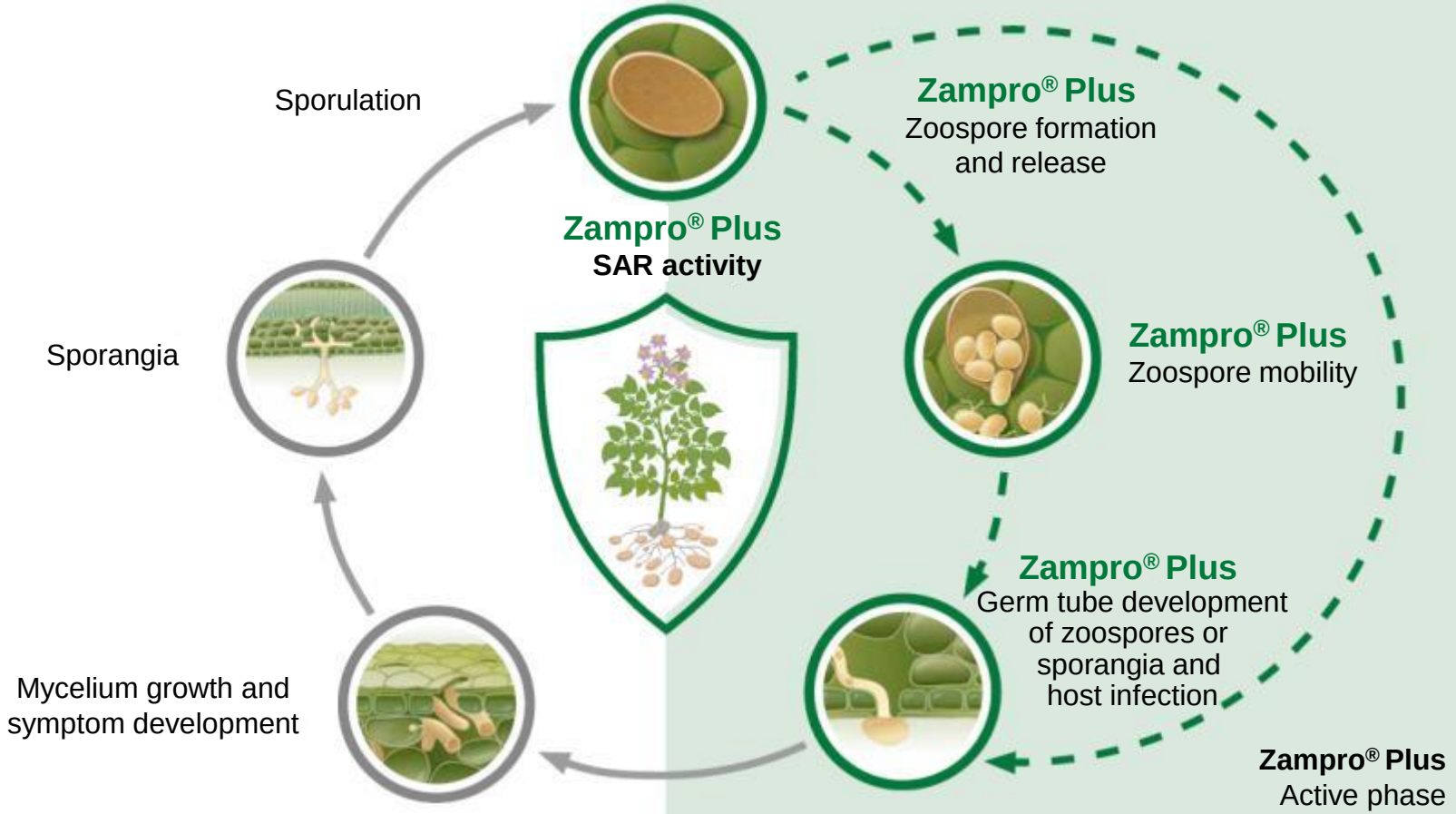
→ **Phosphonates are reliable plant defence inducers**

- For Phosphonates both direct and indirect activity (SAR) have been reported
- FRAC classification: Host plant defence inducer
- Among the diverse family of plant defence inducers, phosphonates show the most reproducible and reliable activity in the field

Effect of Zampro® Plus on Potato late blight

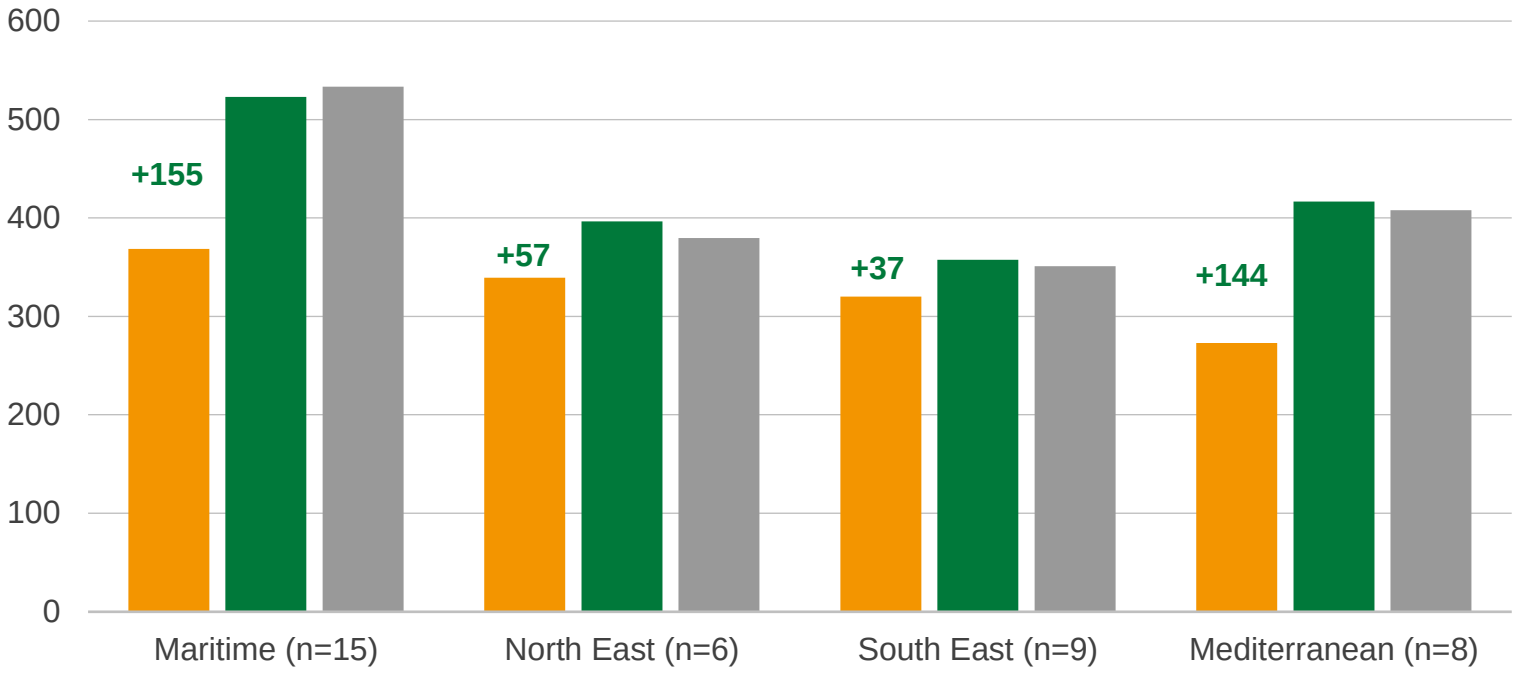
(Phytophthora infestans)

Excellent product to prevent blight infections



Effect of Zampro® Plus on potato yield

(in 38 European trials across EPPO climatic zones)



Healthier potato plants after Zampro® Plus applications are able to produce higher potato yield

- Clear yield increase (dt/ha) to untreated
- Effect comparable to main market standard

UTC

Zampro® Plus 3.2 l/ha

Market standard 1

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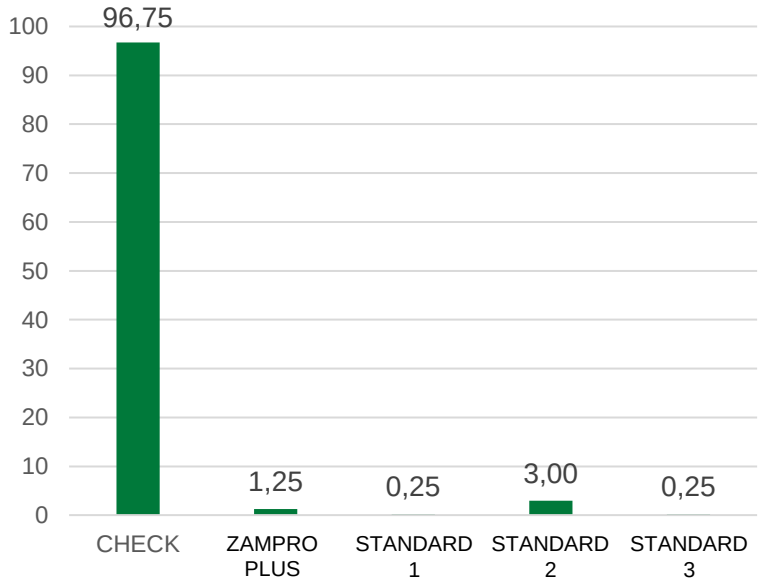
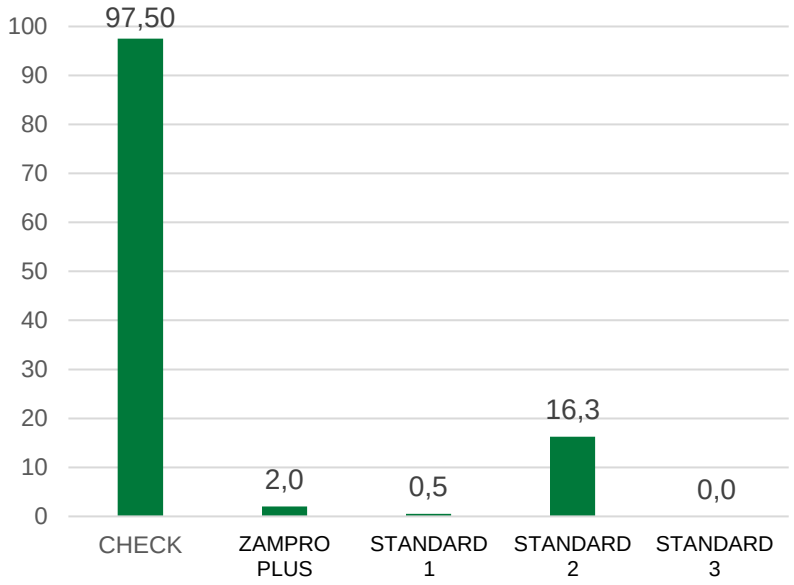
Zampro® Plus rainfastness in potatoes

No rain



20 mm (2h after treatment)



2020 potato var. Bintje Limburgerhof; 5 appl , 7-10 d;
A: 27.05.2020 – E: 26.06.2020
20 mm 2 hr after each appl. (+6 mm each night)

Excellent rainfastness of Zampro® Plus in potatoes

Resistance risk management

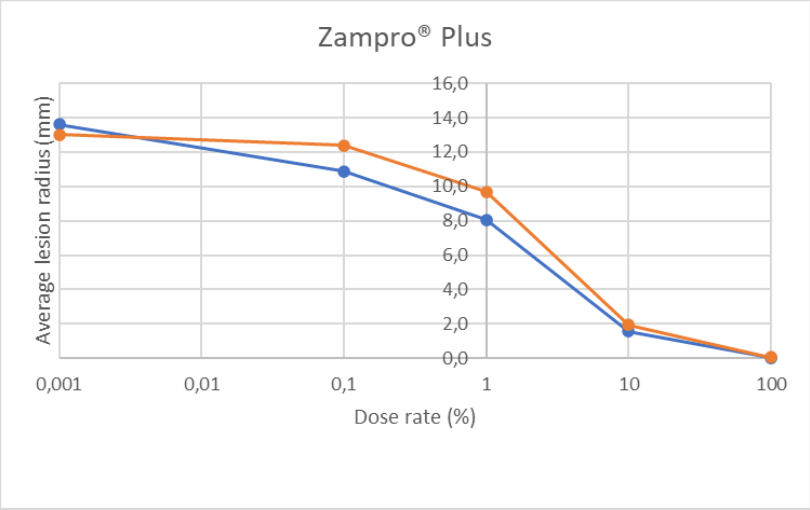
Summary

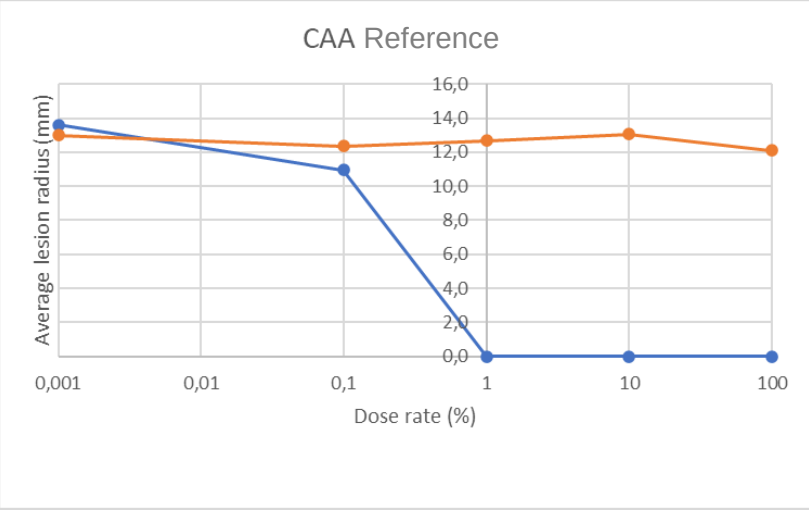
Target pathogens	Resistance risk FRAC	BASF monitoring
Phytophthora infestans	MEDIUM	YES

- BASF monitoring in potatoes is focused in *Phytophthora infestans*. So far, no decrease of Zampro® Plus sensitivity has been observed in field.
- Zampro® Plus is an excellent tool for resistance management.
- To minimize resistance risk: spray always in preventive timing, alternating with other modes of action & according to registered GAP.

Resistance risk management

Susceptibility of PHYTIN EU36 and EU43 to Zampro® Plus





Zampro® Plus controls the most relevant *P. infestans* lineages when used at target rate and preventively.
In spray programs the use in alternation is recommended.

BASF NL, conducted by PPO Lelystad, 2023

Best start for a healthy crop

Starting with Zampro® Plus allows you to take advantage of its full benefits optimizing your spray program.

Protection of the whole plant

Zampro® Plus combines two unique complementary active ingredients into one optimized formulation protecting the whole plant with contact, systemic and SAR activity.

Increased quality & marketable yield

Healthier plants protected with Zampro® Plus produce higher yield.

Zampro® Plus meets the most strict secondary standards from supermarkets.

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