

PROPHYT

IS A SYSTEMIC FUNGICIDE REGISTERED FOR USE ON A NUMBER OF FRUIT AND VEGETABLE CROPS BY LUXEMBOURG CHEMICAL.

PROPHYT IS A POTASSIUM PHOSPHITE FUNGICIDE THAT IS CLASSIFIED AS A BIOPESTICIDE BY EPA.

THE PRIMARY ACTIVITY OF PROPHYT IS AGAINST DOWNY MILDEWS, *PHYTOPHTHORA* AND *PYTHIUM spp.* but HAS A MEASURABLE EFFECT ON A NUMBER OF OTHER DISEASES.

PROPHYT IS BIMOBILE IN THE PLANT, AND CAN BE READILY TAKEN UP BY THE ROOTS AND FOLIAGE.

MODE OF ACTION OF PHOSPHITE FUNGICIDES.

AT HIGH PHOSPHITE CONCENTRATIONS:

PROPHYT WORKS DIRECTLY ON THE PATHOGEN BY INHIBITING ITS GROWTH, THUS THE FUNGUS IS UNABLE TO ESTABLISH AN INFECTION COURT.

NOTE: The host defenses remain unchanged.

AT LOW PHOSPHITE CONCENTRATIONS:

PROPHYT INTERACTS WITH THE PATHOGEN AT THE SITE OF INGRESS (ALTERING THE FUNGAL CELL WALLS) WHICH RESULT IN THE RELEASE OF ELICITORS, WHICH IN TURN STIMULATE THE RELEASE OF HOST DEFENSE ENZYMES.

MODE OF ACTION OF H₃PO₃

H₃PO₃ HAS A DIRECT EFFECT ON VARIOUS STAGES OF THE LIFE CYCLE OF *PHYTOPHTHORA SPP.*

<u>LIFE CYCLE STAGE</u>	<u>TYPICAL EC 50</u>
Mycelium	5-224 ppm
Sporulation	2-5 ppm
Zoospore release	~ 6 ppm
Chlamydospore production	50 ppm
Oospore production	“Highly Sensitive”

Coffey and Bower (1984)

PROPHYT ON TOMATO **GREENHOUSE TRIAL:**

Control of *P. infestans*:

<u>TREATMENT</u>	<u>RATE /A.</u>	<u>AUDPC (40 Days)*</u>
1. Untreated		2800
2. ProPhyt	2.4 pints	2375
3. Mancozeb	2.0 lbs.	600
4. ProPhyt + Mancozeb	2.4 + 2.0	225
5. ProPhyt + Bravo	2.4 + 2.0	300

*** = % blight leaf area in a trial conducted in Israel, 2001.**

PROPHYT ON TOMATO FIELD TRIALS:

Control of *P .infestans*:

TREATMENT	RATE / A.	INFECTIONS % LEAF (1)	# LESIONS (2)	INFECTIONS % FRUIT
1. Untreated		14.0 a	60	3 a
2. ProPhyt	4 pints	1.0 b	33	0 b
3. ProPhyt + Mancozeb	2.5 pints + 2 lbs.	0 b	14	0 b
4. Manzate 200	3 lbs.	0.3b		0.3 b
	LSD (P=0.1)	1.02		1.02

(1) = LABServices, Hamburg, PA.

(2) = Mexico

Control of *P. infestans*:

TREATMENT	RATE / A.	INFECTION		
		% LEAF	% FRUIT	
		7/31	8/21	8/21/02
1. Untreated		47.5 a	90.0 a	88.2 a
2. ProPhyt + Kocide 25 WP.	2.2 pts. + 525 gr.	14.8 c	57.5 c	39.4 c
3. ProPhyt + CTL 650 SC	2.2 pts. + 315 gr.	16.2 c	60.1 c	42.4 c
4. ProPhyt + CTL	2.0 pts. + 368 gr.	6.8 d	50.0 d	43.4 c
5. Forum R(Dimeth + Cu Oxy)	2.67 lbs.	15.0 c	65.1 c	42.9 c
6. ProPhyt 500 SC	3.4 pts.	32.4 b	72.6 b	56.6 b
7. Aliette + Cu Oxy 67WP.	3.56 lbs.	17.4 c	60.0 c	29.6 d
<u>LSD (P=0.05%)</u>		<u>4.42</u>	<u>4.27</u>	<u>3.40</u>

Trial conducted in Italy, 6 applications sprayed on a 10-14 day interval in 50gpa.

Control of *P. infestans*:

INFECTION

TREATMENT	RATE/A	% FOLIAR	% FRUIT
1. Untreated		55	38
2. ProPhyt 500 SC	3.75 pints.	15	18
3. ProPhyt 500 SC	2.55 pints	18	17
4. ProPhyt + CTL (WDG)	2.2 pts + 0.67 lbs.	8	10
5. ProPhyt + CTL (WDG)	2.55pts + 0.67 lbs.	5	5
6. CTL (WDG)	1.34 lbs.	10	7.5

Trial conducted in Italy. Ratings made after 5 applications on a 10 day interval

Control of *P. infestans*:

<u>TREATMENT</u>	<u>RATE/A</u>	<u>% DEAD PLANTS</u>
1. Untreated		49.0 b
2. Cymoxanil	0.5 lb.ai	8.8 a
3. ProPhyt + Cymoxanil	2.5 pts. + 0.5 lbs ai.	1.7 a
4. Mancozeb + Cymoxanil	1.78 + 0.5 lbs. ai	15.0 a

Trial conducted in Israel.

CONCLUSIONS:

- **PROPHYT IS AN EXCELLENT SYSTEMIC MIXING PARTNER TO IMPROVE THE ACTIVITY OF PROTECTANT FUNGICIDES AGAINST LATE BLIGHT OF TOMATOES. DATA PRESENTED SHOWS THE RATE OF PROTECTANT IN THE MIXTURE CAN BE REDUCED**
- **PROPHYT PLUS A PROTECTANT OFFERS A STRONG ALTERNATE SPRAY FOR RESISTANCE MANAGEMENT.**
- **WHEN USED ALONE PROPHYT MUST BE APPLIED PREVENTIVELY AGAINST LATE BLIGHT.**
- **PROPHYT IS SAFE ON TOMATOES, THERE ARE NO SIGNS OF PHYTOTOXICITY AT 4 pints/A.**

OPPORTUNITIES:

- **EVALUATE PROPHYT IN MIXTURES AGAINST BACTERIAL DISEASES.**
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