Soil Technologies Corp.
Research and Development Department

Research Report

Title: Evaluation of Late Blight Treatment Protocols

Location: Japan

Principal Investigators: Satoshi Yamanaka PhD
Section Manager
SDS BioTech K.K. Tsukuba Technology Center
Biocontrol Research and Development

Crop: Tomato

Date: August 2, 2001

Abstract:
The purpose of this study was to assess the fungicidal potential of Armorex[1] and Fungastop[2] in treating late blight (*Phytophthora infestans*) on tomato plants in comparison to Chlorothalonil[3]. Each product was applied at four dilution rates. The plants were evaluated for disease severity after the treatment and a protective value was established for each of the protocols. All three products had high efficacy against *P. infestans*. Armorex had the highest average protective value of 99%, Chlorothalonil had an average protective value of 93% and Fungastop at its highest concentration tested had a protective value of 94%.

Methods:
Tomato plants grew to the five true leaf stages in a greenhouse and were inoculated with *P. infestans*. Each pot received 20 mL of one of the following 12 protocols: Fungastop at 1%, .5%, .25%, .125% concentrations; Armorex at a concentration of 15%, 7.5%, 3.75%, 1.88%; Chlorothalonil at 16.5 ppm, 8.4 ppm, 4.2 ppm, 2.1 ppm. Additionally, there was a control plot with no treatment. One day after treatment all plants were inoculated with late blight. Disease severity was observed in each of the protocols and documented as a percentage. Protective value was calculated based on relative disease severity compared to the control.

[1]Armorex is a minimum risk pesticide manufactured by Soil Technologies Corp. in Fairfield, IA USA
[2]Fungastop is an EPA 25(b) list antifungal and antibacterial product manufactured by Soil Technologies Corp. in Fairfield, IA USA
[3]Chlorothalonil is a chemical fungicide CAS# 1897-45-6

Results:

Table 1 shows the results for each treatment. Armorex had the highest average protective value of 99%, Chlorothalonil had an average protective value of 93%. Chlorothalonil demonstrated a protective value of 100% at a concentration of 8.4ppm and Armorex demonstrated a 100% protective value at a concentration of 15% with some signs of phytotoxicity. Fungastop provided a 93.89% protective value at 1%, its highest concentration.

Material	Concentration	Disease Severity (%)	Protective Value (%)	Phytotoxicity
Fungastop	1.00%	6.07	93.89%	--
	0.50%	9.42	90.51%	--
	0.25%	22.58	77.26%	--
	0.13%	46.45	53.22%	--
Armorex	15.00%	0	100.00%	++
	7.50%	1.5	98.49%	--
	3.75%	1.79	98.20%	--
	1.88%	1.57	98.42%	--
Chlorothalonil	16.5 (ppm)	0	100.00%	--
	8.4	0	100.00%	--
	4.2	0.67	99.33%	--
	2.1	22.5	77.34%	--
Control		99.3		--

Table 1: Results of tests across all protocols

Conclusions:

Armorex demonstrated the highest average protective value with Chlorothalonil providing the second strongest results. On average, Armorex provided a 98.78% protective value while Chlorothalonil provided an average of 92.67%. At a 7.5% concentration, Armorex provided a 98.49% protective value without evidence of phytotoxicity. Fungastop also demonstrated efficacy particularly at values at 1% and 0.50% concentration without evidence of phytotoxicity.