

In-vitro tests on the inhibitory effects of Bio-Film's Rhizomax™ and Carbamate against *Phytophthora sp.* isolated from apple tree roots.

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Summary

Applications of Bio-Film's Rhizomax™ at concentrations of 2% and 5% were shown to be effective at suppressing the growth of *Phytophthora sp.*. The addition of Biofilm's Carbamate™ at a rate of 2% had minimal effect on the efficacy of Rhizomax at 2% and 5%. *Phytophthora sp.* is a common plant pathogenic fungus. It causes significant economic impact on a wide range of crops including tree crops, solanaceae and tubers.

Aims

To determine if Rhizomax™ with or without carbamate can suppress *in vitro* mycelial growth of *Phytophthora sp.*. The *Phytophthora sp.* was isolated from apple roots from Stanthorpe.

Materials & Methods

Inhibition of the pathogen *Phytophthora sp.* by Rhizomax™ was determined by comparing the radial growth of the fungal pathogen on Sabourad's dextrose agar (SAB) in the presence of Rhizomax™ at concentrations of 2% and 5% with/ without the addition of "Carbamate" additive.

Rhizomax™ solutions (100ml of each) with concentrations of 2%, 5% were prepared with sterile deionised water. The "Carbamate" product was then added to each solution to achieve a concentration of 2% w/v. Then 0.1 ml of each Rhizomax™ with Carbamate solution was pipetted onto cooled SAB plates and then spread evenly onto the entire agar surface aseptically. A 5mm diameter disc containing mycelium of the pathogen was then taken from a known culture grown on SAB. This was then placed upside down in the middle of the agar plate containing the Rhizomax™. After seven days the growth of the pathogen was assessed by measuring the radial growth out from the fungal disc. The growth of the pathogen in the presence of the varying Rhizomax™ concentrations was compared and the levels of fungal suppression on the plates calculated. 3 Plates were tested at each concentration of Rhizomax™. The percentage inhibition compared to the water only control was tabulated from the mean values.

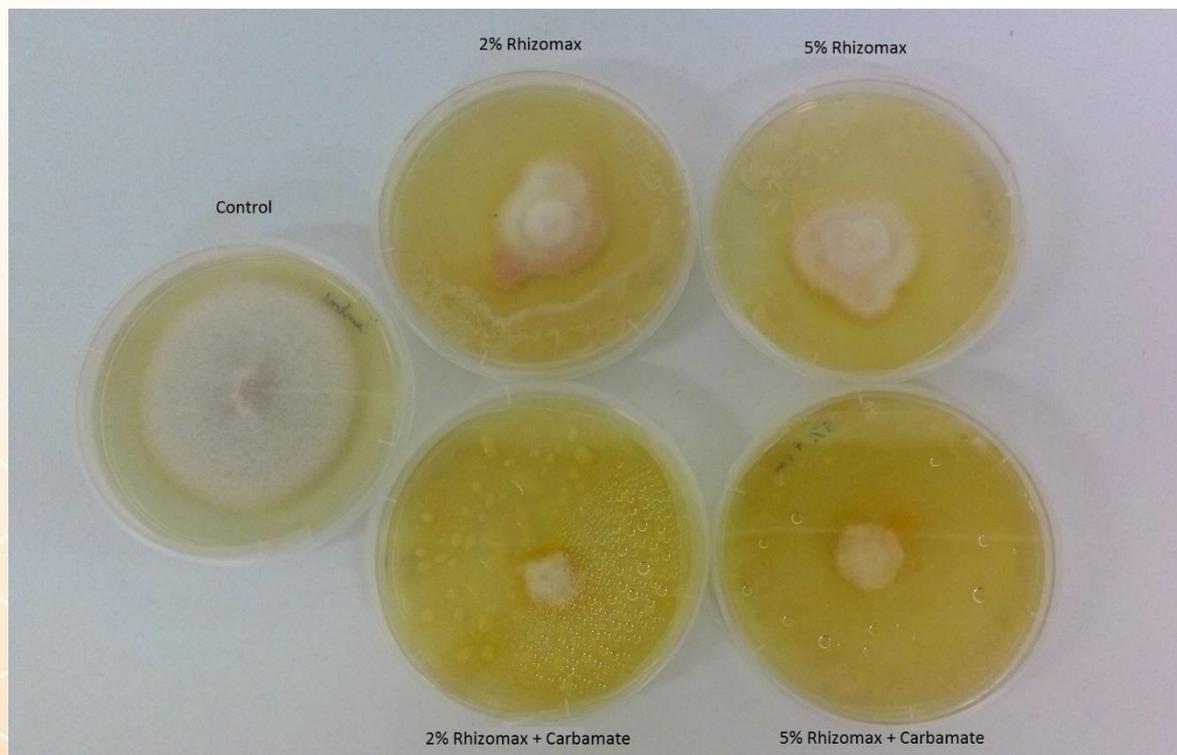
Results & Discussion

All concentrations of Rhizomax™ were shown to be effective at suppressing the mycelial growth of *Phytophthora sp.*. The best inhibition was achieved by Rhizomax™ 5% with Carbamate™. The effect of adding Carbamate to Rhizomax 2% and 5% was too small to be statistically significant (Table 1).

Table 1. Suppression of *Phytophthora sp.* mycelial growth on agar plates by Rhizomax™ and Carbamate™.

Treatment	7 days incubation	
	Mean ± Std Dev(mm)	% inhibition
Untreated control	32 ± 5	0%
2% Rhizomax™	14 ± 5	57%
5% Rhizomax™	7 ± 3	79%
2% Rhizomax™ + 2% Bicarb	12 ± 6	62%
5% Rhizomax™ + 2% Bicarb	6 ± 1	81%

Figure 1. *Phytophthora sp.* challenge plate tests



Conclusions

Rhizomax™ was shown to be highly effective at inhibiting the *In Vitro* growth of *Phytophthora sp.*