

In-vitro tests on the inhibitory effects of Bio-Film's Rhizomax™ and Carbamate against *Rhizoctonia solani* isolated from tomato seedlings.

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Summary

Applications of Bio-Film's Rhizomax™ at concentrations of 2% and 5%, were shown to be highly effective at suppressing the growth of *Rhizoctonia solani*. The addition of Biofilm's Carbamate™ increased on the efficacy of the Rhizomax™ 2%, but no effect was evident with addition of carbamate to Rhizomax 5%. *Rhizoctonia solani* is a common soil-borne plant pathogenic fungus. It causes significant economic impact on a wide range of seedlings by causing vascular rots.

Aims

To determine if Rhizomax™ with or without carbamate can suppress *in vitro* mycelial growth of *Rhizoctonia solani*. The *Rhizoctonia solani* was isolated from tomato seedlings in Bundaberg.

Materials & Methods

Inhibition of the pathogen *Rhizoctonia solani* by Rhizomax™ was determined by comparing the radial growth of the fungal pathogen on potato dextrose agar (PDA) 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 either 2% or 5% w/v. Then 0.1 ml of each Rhizomax™ with Carbamate solution was pipetted onto cooled PDA plates and then spread evenly onto the entire agar surface aseptically. A 9 mm diameter disc containing mycelium of the pathogen was then taken from a known culture grown on PDA. This was then placed upside down in the middle of the agar plate containing the Rhizomax™. After several 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 *Rhizoctonia solani*. The addition of Carbamate did improve the inhibition of the pathogen in Rhizomax™ 2%. The best inhibition was achieved by Rhizomax™ 5%. The effect of adding Carbamate to Rhizomax 5% was too small to be statistically significant (Table 1).

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

Treatment	7 days incubation	
	Mean ± Std Dev(mm)	% inhibition
Untreated control	37 ± 4.0	0%
2% Rhizomax™	15 ± 3.0	59%
5% Rhizomax™	8 ± 1.0	80%
2% Rhizomax™ + 2% Bicarb	10 ± 2.0	73%
5% Rhizomax™ + 2% Bicarb	8 ± 1.0	79%

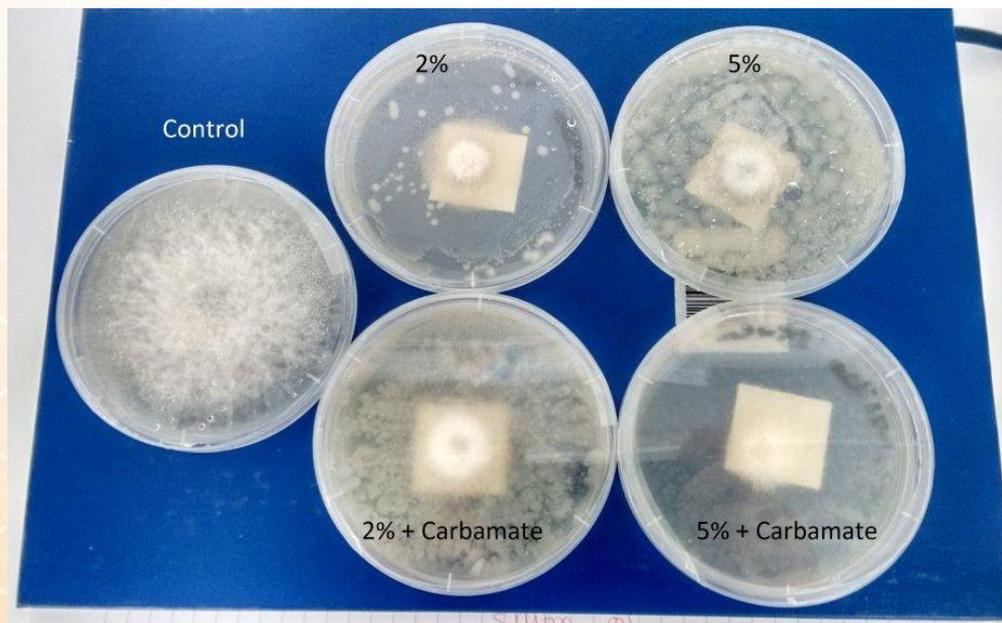


Figure 1. *Rhizoctonia solani* challenge plate tests

Conclusions

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