



Data provided by

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**Expel Test No. 5:
In Vitro Activity of Expel against Spore Germination of Various Fungal Crop Diseases in Comparison to DioxChlor NZ.**

Application: 20.05.2003

Test Method: In Vitro - Microscopy:

A dilution series of Expel (neat: 160 ppm) was prepared using a low concentrated sterile aqueous solution of Potato Dextrose Broth (10% of normal strength). Each of the dilutions was then divided into 6 x 1ml aliquots, to prepare 6 separate sets of the whole dilution series. Similarly, a test solution was prepared with DioxChlor NZ at 10 ppm. Each set of the dilution series was then inoculated with 0.1 ml of highly concentrated spore suspension of one of 6 fungal test organisms. Subsequently, the test vials were closed and were incubated at ~ 25 degree Celsius for 48 hours. The 10% PDB is strong enough to support spore germination.

Test A: For assessment, the percent of germinated fungal spores was investigated under the microscope.

Test B: Following 24 hours of exposure to the test solutions above, now 0.1 ml of each test solution

Test A: Spore germination in test solution.

Tr. No.	Treatments	Conc. (all less 10% due to adding spore suspensions)	% Spore Germination, 6 Fungal Test Organisms:					
			Botrytis cinerea	Geotrichum candida Kiwifruit	Fusarium gramine- arum	Geotrichum candida Potato	Phytoph- thora cinnamoni	Pythium spec.
1	Expel	150 ppm	0	0	0	0		
2	Expel	80 ppm	0	0	0	0	Sporangia	No
3	Expel	40 ppm	0	0.10%	0	0	Not	spores.
4	Expel	20 ppm	0	30%	15%	0	germinated.	Not
5	Expel	10 ppm	0	60%	30%	0	Not	assess.
6	DioxChlor NZ	150 ppm	0	0	0	0	assessable	here.
7	DioxChlor NZ	80 ppm	0	5%	0	0	here.	
8	DioxChlor NZ	40 ppm	0	5%	0	0		
9	DioxChlor NZ	20 ppm	5%	30%	30%	0.10%		
10	DioxChlor NZ	10 ppm	10%	90%	30%	30%		
11	Untreated	10 ppm	10%	90%	30%	30%		

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Expel Test No. 5: In Vitro Activity of Expel against Spore Germination of Various

Test B: Spore germination on agar plates, after being exposed to test solutions for 24 hours.

Tr. No.	Treatments	Conc. (all less 10% due to adding spore suspensions)	Mycelial Growth on a Scale from 0 - 5					Growth Scale 1 - 10 Pythium spec.
			Botrytis cinerea	Geotrichum candida Kiwifruit	Fusarium graminearum	Geotrichum candida Potato	Phytophthora cinnamoni	
1	Expel	150 ppm	0	0	0	0	0	0
2	Expel	80 ppm	0	0	0	0	0	0
3	Expel	40 ppm	0	0	0	0	0	0
4	Expel	20 ppm	0	0.5	1	0	0	0.1
5	Expel	10 ppm	0	1	1	1	1	0.5
6	DioxChlor NZ	150 ppm	0	0	0	0	0	0
7	DioxChlor NZ	80 ppm	0	0	0	0	0	0
8	DioxChlor NZ	40 ppm	0	1	0.5	0	0	0
9	DioxChlor NZ	20 ppm	1	1	2	1	1	0
10	DioxChlor NZ	10 ppm	1	1	3	4	2	1
11	Untreated	10 ppm	2	1	3	4	3	4

Results:

Test A: Spore germination in test solution:

1. Botrytis cinerea: Expel is clearly more active than DioxChlor NZ. Expel provided full germination inhibition
2. Geotrichum candida (off Kiwifruit): Again, Expel is more active than DioxChlor NZ. Expel provided full
3. Fusarium graminearum: Activity against spore germination of this pathogen is about equal between the
4. Geotrichum candida (off Potato): Here, Expel is clearly more active than DioxChlor NZ. Expel provided

Test B: Spore germination recovery on agar plates: (Note: This is a very early assessment)

1. For the first four pathogens, the plate data fully reflect the germination results from test A. The only
2. Phytophthora cinnamoni: Expel gives full inhibition at 20 ppm and is superior to DioxChlor NZ, which
3. Pythium spec.: Against this pathogen both test candidates are performing equal at this point in time.

Conclusions:

1. **Expel is clearly the better compound than Dioxchlor NZ, comparing them on a rate by rate base.**
2. Test B has been assessed very early here. A second assessment will follow.

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