Response of Ectomycorrhizal Fungi Associated with Loblolly Pine to Cogongrass Exudate Constituents Update

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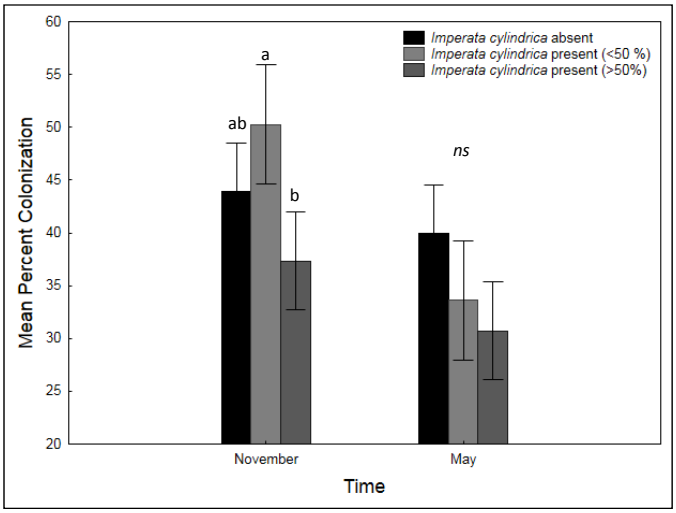
Review: Percent Colonization of Mycorrhizal Fungi



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Purpose

1. To determine if cogongrass exudate is responsible for the treatment by time interaction.
2. Determine if all isolates from the same species respond the same.
3. Determine what compound or compounds is responsible for the "potentially allelopathic effect."

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Materials and Methods

- 9 mycorrhizal fungi representing 7 unique species in 5 genera
- 6 treatments and a control
- 25 replicates
- 1600 plates

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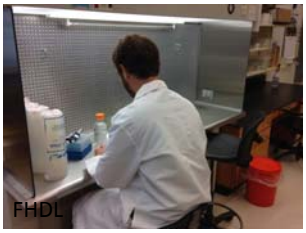
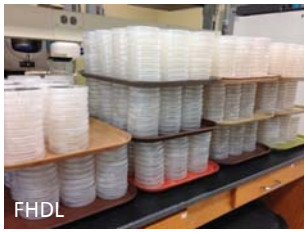
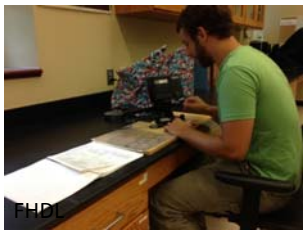
Materials and Methods: Inoculation

- Plates were inoculated from pure culture.
- All treatment plates were inoculated within 3 days.
- All control plates were inoculated within 3 days a week later.
- Plates were incubated in complete darkness at 25 °C.
- Measurements were taken every other week.







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What Effect Did the Exudates Have?

	Growth rate (cm^2) of mycorrhizal fungi in culture (MMN) with cogongrass exudate components						
	Gallic acid	Caffeic acid	Salicylic acid	Sinapinic acid	Cinnamic acid	Emodin	Control
Amanita muscaria	0.3959	0.3789	0.3897	0.5048	0.4389	0.3514	0.4277
Laccaria laccata	0.4217	0.2675	0.2798	0.1951	0.2610	0.2542	0.2771
Lactarius paradoxus	0.1200	0.0664	0.0699	0.0825	0.0894	0.0709	0.1131
Rhizopogon roseolus	0.1505	0.1167	0.1015	0.1857	0.1697	0.1969	0.1426
Suillus brevipes	0.5950	0.5955	0.6752	0.5750	0.6109	0.5835	0.7197
Suillus hirtellus A	0.4531	0.4791	0.4719	0.4670	0.4842	0.4829	0.4438
Suillus hirtellus B	0.4397	0.4591	0.5070	0.4805	0.4102	0.3907	0.3797
Suillus salmonicolor A	0.6195	0.5865	0.5662	0.6119	0.4075	0.5925	0.8519
Suillus salmonicolor B	0.5138	0.3013	0.2942	0.8059	0.3635	0.4609	0.7827

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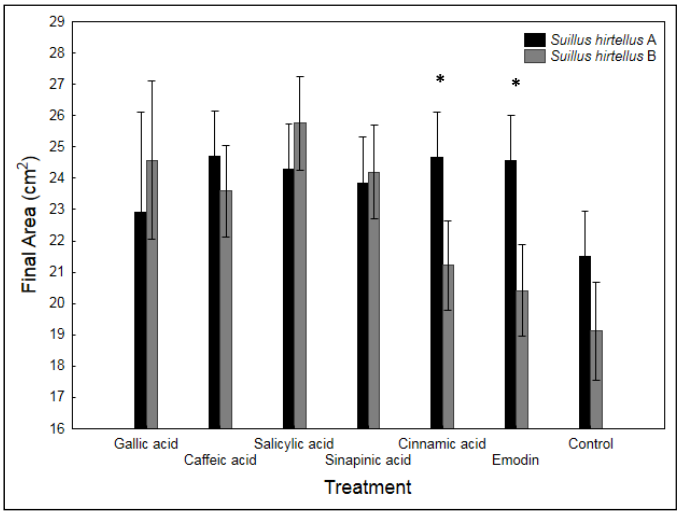
Pairwise Comparison of *Suillus hirtellus* A and B



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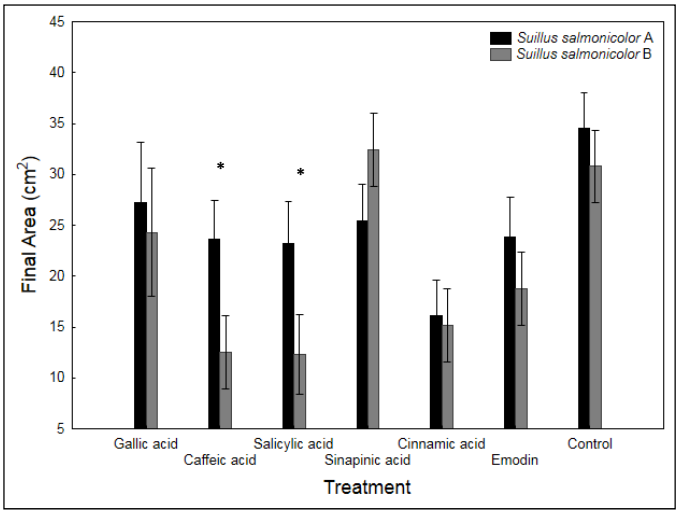
Pairwise Comparison of *Suillus salmonicolor* A and B



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Emodin

- Emodin is found across 17 families in a diversity of growth forms worldwide.
- Reduces growth of several plant species and soil bacteria, in some cases at minimal concentrations.
- Emodin has also been recorded to decrease availability of Mn^{2+} and increase the availability of Na^{+} and K^{+}.

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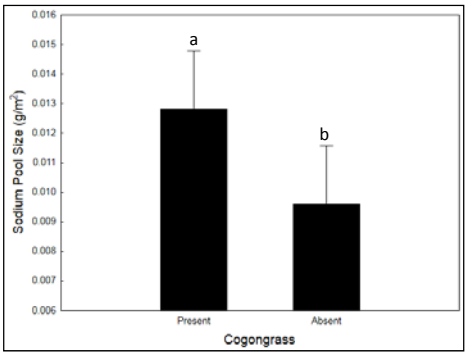
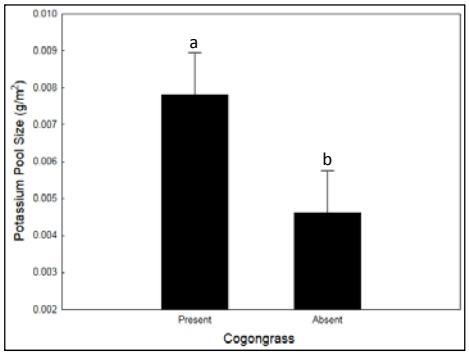
Does This Corroborate Earlier Data?



$F_{(1,18)}$=5.80
***p*=0.03**



$F_{(1,18)}$=17.23
***p*<0.001**

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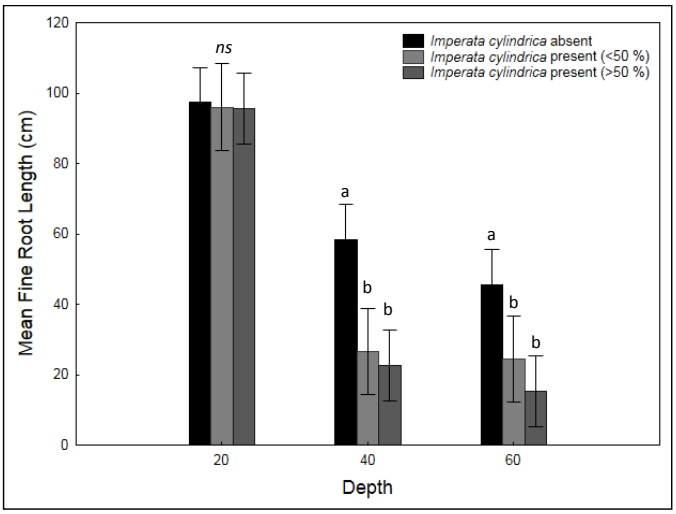

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Questions?

Source: http://www.deemy.de

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