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Control of *Xylotrechus arvicola* (Coleoptera: Cerambycidae) larvae population by inoculating *Trichoderma* spp. in vine wood

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Xylotrechus arvicola (Coleoptera: Cerambycidae) is a grapevine (*Vitis vinifera*) pest in the Iberian Peninsula causing the spread of wood diseases. *Trichoderma* (Teleomorph: *Hypocrea*) is a fast growing opportunistic fungus, which produces antimicrobial compounds¹. Moreover, it can be used as biological control of pests². This study's aim is to evaluate *Trichoderma* spp. efficacy on controlling *X. arvicola* larvae, simulating field conditions. One millilitre of spore suspension (1×10^7 esp/ml) of *Trichoderma* spp. was applied directly to vine with a manual diffuser. One hour after, four *X. arvicola* larvae were placed on the vine. Vines were opened 135 days later to count larvae and extract wood samples. Four samples per treatment from rhytidome and galleries per vine in four replicates were incubated on Petri dishes with Rose Bengal-Chloramphenicol Agar medium at controlled conditions during 7 days.

[Tab. 1: *X. arvicola* dead larvae with *Trichoderma* spp., number of isolations and percentage of isolates showing growth of *Trichoderma* spp. from vine wood \(rhytidome and galleries\)](#)

Tab. 1: *X. arvicola* dead larvae with *Trichoderma* spp., number of isolations and percentage of isolates showing growth of *Trichoderma* spp. from vine wood (rhytidome and galleries)

Trichoderma treatment (Isolated number)	Mortality (%) of <i>X. arvicola</i> larvae	Rhytidome isolations	Rhytidome (%) with <i>Trichoderma</i>	Galleries isolations	Galleries (%) with <i>Trichoderma</i>
<i>T. harzianum</i> (T-019)	81.25 ± 6.25A	21	76.19	16	75.00
<i>T. gamsii</i> (T-066)	68.75 ± 23.66A	17	29.41	8	100.00
<i>T. gamsii</i> (T-067)	31.25 ± 11.96B	16	37.50	12	33.33
<i>T. gamsii</i> (T-070)	75.00 ± 10.21A	11	54.54	4	100.00

T. gamsii (T-071)	81.25 ± 11.97A	12	33.33	11	45.45
Control	6.25 ± 6.25B	9	0.00	6	0.00

Different capital letters indicate significant differences among fungal isolates of dead larvae with *Trichoderma* spp. (Fisher's LSD. $p < 0.05$).

100% of *T. gamsii* (T-066) and *T. gamsii* (T-070) galleries isolates showed *Trichoderma* growth, confirming the ability of this fungus to move through the vine wood by the galleries created by *X. arvicola* larvae. *T. gamsii* (T-071) and *T. harzianum* (T-019) treatments showed the highest control over insect larvae with a 81.25% mortality. These results indicate *Trichoderma* should be considered for further studies to evaluate its efficacy to control *X. arvicola* on field conditions.

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