

Article

Effect of Soil Microbiome from Church Forest in the Northwest Ethiopian Highlands on the Growth of *Olea europaea* and *Albizia gummifera* Seedlings under Glasshouse Conditions

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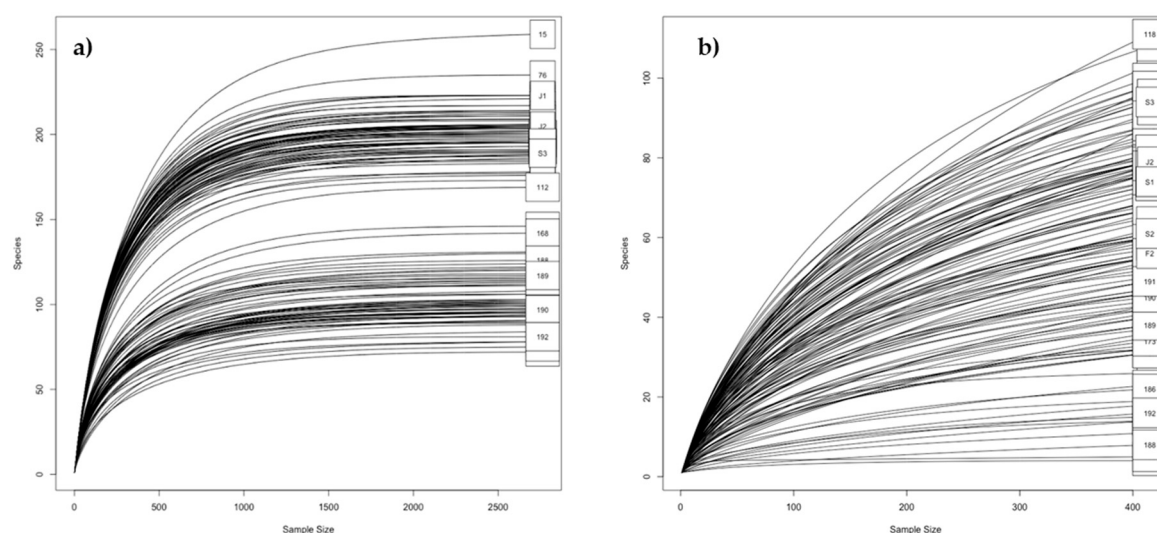


Figure S1. Rarefaction curve of soil bacteria (a) and fungi (b) communities.

Table S1. ANOVA of *Olea*, *Albizia* and both seedlings showing results for plant height (H), root collar diameter (RCD), survival rate (SR), shoot mass (SB), root mass (RB), root to shoot ratio (R/S), total mass (TB), soil pH (pH), soil organic carbon (SOC), total nitrogen (TN), carbon to nitrogen ratio (C/N), and available phosphorus (P).

Species	Source of variation	df	P-value											
			H	RCD	SR*	SB	RB	R/S	TB	pH	SOC	TN	C/N	P
<i>Olea</i>	Trt	1	< 0.0001	< 0.0001	0.061	< 0.0001	0.0001	< 0.0001	< 0.0001	0.2629	0.350	0.245	0.712	0.050
	IS	3	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.658	0.138	0.684	< 0.0001
	Trt × IS	3	< 0.0001	0.002	0.062	< 0.0001	0.0079	< 0.0001	0.0007	0.0006	0.600	0.174	0.166	0.610
	Error	55												
<i>Albizia</i>	Trt	1	< 0.0001	0.002	0.042	< 0.0001	0.990	< 0.0001	0.007	< 0.0001	0.5731	0.512	< 0.0001	< 0.0001
	IS	3	< 0.0001	< 0.0001	0.008	< 0.0001	< 0.0001	0.116	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
	Trt × IS	3	0.005	0.002	0.419	< 0.0001	< 0.0001	0.605	< 0.0001	0.013	0.069	0.317	< 0.0001	0.0005
	Error	55												
Overall	Sp	1	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.7897	< 0.0001	0.0176	0.0652	0.0484	0.0347	0.0591
	IS	3	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0437	< 0.0001	< 0.0001	0.1985	< 0.0001
	Trt	1	< 0.0001	0.0038	0.0056	< 0.0001	0.3051	< 0.0001	< 0.0001	0.1902	0.0900	0.0942	0.1394	0.0165
	Sp × IS	3	0.0023	0.0366	< 0.0001	0.0013	0.0013	0.5427	< 0.0001	0.2630	< 0.0001	< 0.0001	0.1596	0.7048
	Sp × Trt	1	0.1043	0.1705	< 0.0001	0.0219	0.0765	0.2866	0.0231	0.8691	0.3850	0.3070	0.9740	0.0331
	Trt × IS	3	< 0.0001	0.0015	< 0.0001	< 0.0001	< 0.0001	0.3592	< 0.0001	0.1545	0.0492	0.0578	0.0998	0.8996
	Sp × IS × Trt	3	0.0193	0.0101	< 0.0001	< 0.0001	< 0.0001	0.8371	< 0.0001	0.2368	0.0311	0.0232	0.4101	0.1402
	Error	112												

Species (Sp) are *Olea* and *Albizia* seedlings, soil treatments (Trt) are seedlings with (non-sterilized) and without (sterilized) soil and four different soil origins including degraded land (DL), or soil from beneath *Albizia gummifera* (AG), *Croton macrostachyus* (CM), and *Juniperus procera* (JP) as soil origin (IS). * Log-rank test statistics for main effects (Trt and IS) and cox-regression analysis for interaction effect (Trt × IS, Sp × IS, Sp × Trt and Sp × IS × Trt).

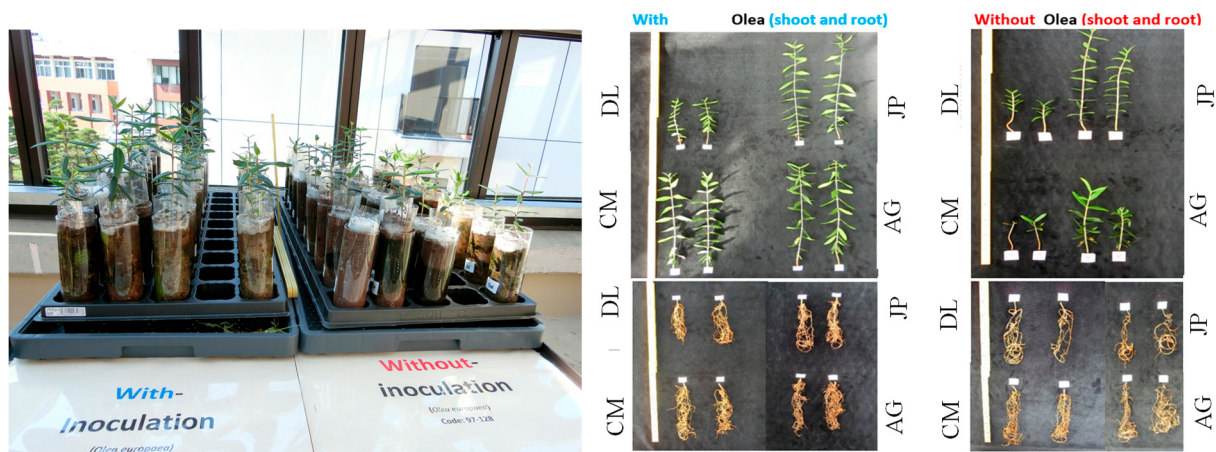


Figure S2. Effect of soil origin on shoot and root growth of *Olea* seedling at the end of GH experiment. With (non-sterilized soil) and without (sterilized soil) of DL: Degraded land, AG: *Albizia gummifera*, CM: *Croton macrostachyus* and JP: *Juniperus procera*.



Figure S3. Effect of soil origin on shoot and root growth of *Albizia* seedling at the end of GH experiment. With (non-sterilized soil) and without (sterilized soil) of DL: Degraded land, AG: *Albizia gummifera*, CM: *Croton macrostachyus* and JP: *Juniperus procera*.

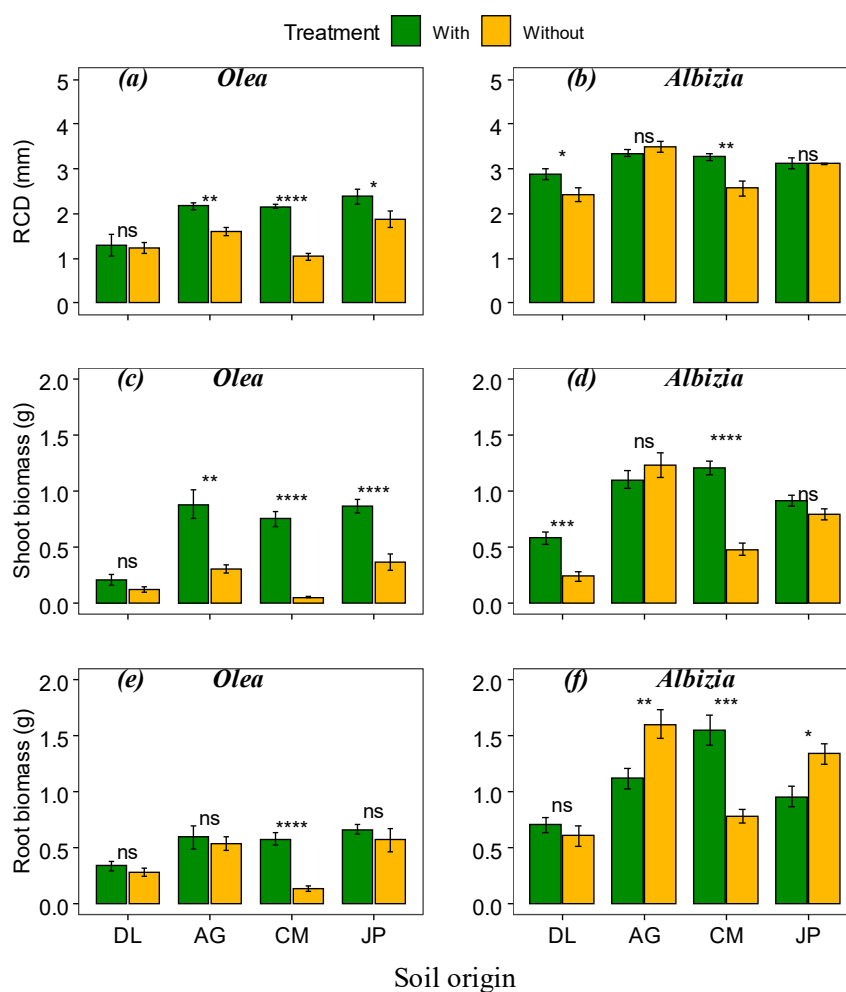


Figure S4. Effects of soil from different origins on root collar diameter (RCD) (a, b), shoot biomass (c, d), and root biomass (e, f), in *Olea* and *Albizia* seedlings, respectively, with treatment (non-sterilized soil) and without treatment (sterilized soil). DL, AG, CM, and JP stand for soil origins from degraded land, or from beneath *Albizia gummifera*, *Croton macrostachyus*, *Juniperus procera*, respectively. Asterisks indicate statistically significant differences between seedlings with treatment (in non-sterilized soil) and without treatment (in sterilized soil): * $p \leq 0.05$; ** $p \leq 0.01$; *** $p \leq 0.001$; **** $p \leq 0.0001$; and ns, not significant). Values are mean $\pm$ standard error ($n = 8$).

