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Supplement of

Substrate quality alters the microbial mineralization of added substrate and soil organic carbon

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Supplement material

Table S1. Quantitative polymerase chain reaction (qPCR) conditions and primers.

Experimental details	Bacteria	Fungi
Primers	Eub 338[*], Eub 518[†]	nu-SSU-1196F[‡], nu-SSU-1536R[§]
Reaction conditions		
Denaturation	95 °C, 30sec	95 °C, 30sec
Annealing	53 °C, 30 sec	56 °C, 30 sec
Elongation	72 °C, 1min	72 °C, 1min
Cycle length	39	39
Reaction mixture		
Sample	1 µL	1 µL
Super mix	10 µL	10 µL
Water	5 µL	5 µL
Primers	2 µL per primer	2 µL per primer
Pure cultures for standard curves	*Escherichia coli*	*Saccharomyces cerevisiae*

[*]5′-ACTCCTACGGGAGGCAGCAG-3′ (Lane, 1991)
[†]5′-ATTACCGCGGCTGCTGG-3′ (Muyzer *et al.*, 1993)
[‡]5′-GGAAACTCACCAGGTCCAGA-3′ (Borneman & Hartin, 2000)
[§]5′-ATTGCAATGCYCTATCCCCA-3′ (Borneman & Hartin, 2000)

Table S2. Cumulative soil organic C (SOC) respiration after 270 days.

		SOC respiration	
Soils	Substrates	mg C g^{-1} soil	% of initial C lost
Mollisol	Unamended	4.1±0.21[a]	13.9
	Glucose	4.0±0.07[a]	13.3
	Starch	3.9±0.15[a]	13.1
	Cinnamic acid	4.0±0.18[a]	13.6
	Stearic acid	4.3±0.12[a]	14.4
Ultisol	Unamended	3.5±0.13[b]	15.3
	Glucose	3.6±0.15[b]	15.6
	Starch	4.0±0.10[ab]	17.4
	Cinnamic acid	4.4±0.23[a]	19.0
	Stearic acid	4.5±0.04[a]	19.6
Andisol	Unamended	3.4±0.15[b]	5.3
	Glucose	3.5±0.04[b]	5.5
	Starch	3.6±0.11[b]	5.5
	Cinnamic acid	4.6±0.21[a]	7.2
	Stearic acid	4.4±0.04[a]	6.8
Gelisol	Unamended	2.4±0.6[b]	11.8
	Glucose	2.7±0.17[b]	12.9
	Starch	2.6±0.0[b]	12.6
	Cinnamic acid	2.9±0.11[ab]	14.2
	Stearic acid	3.1±0.11[a]	15.3

Each value represents mean ± standard error (n=3). Different letters indicate significant mean differences among substrate addition treatments in each soil.

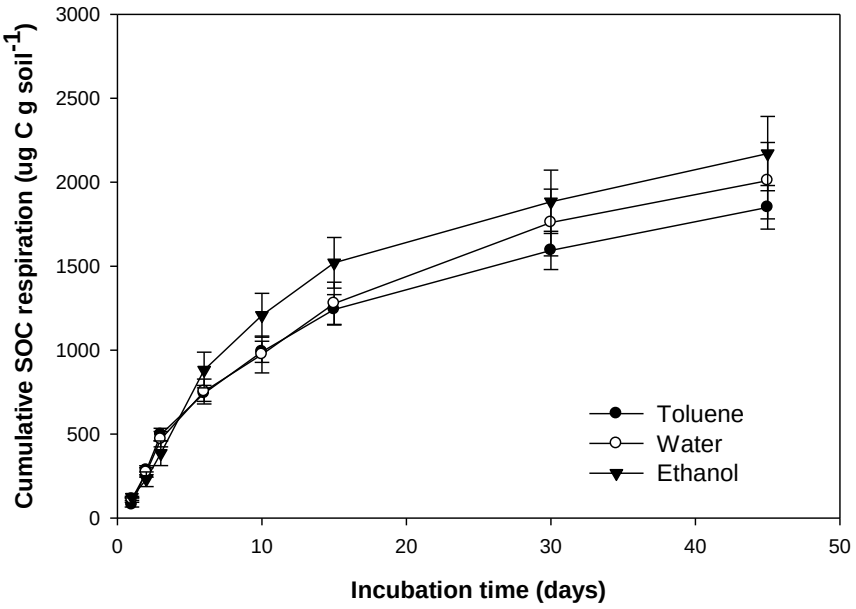

Fig. S1. Comparison of the effect of three solvents (water, ethanol and toluene) on soil organic carbon respiration from Andisol. Symbols represent cumulative soil organic carbon respiration in each sampling time along with standard error bar (n=3). This preliminary experiment demonstrated that the organic solvents ethanol and toluene did not alter the microbial respiration of soil organic carbon.

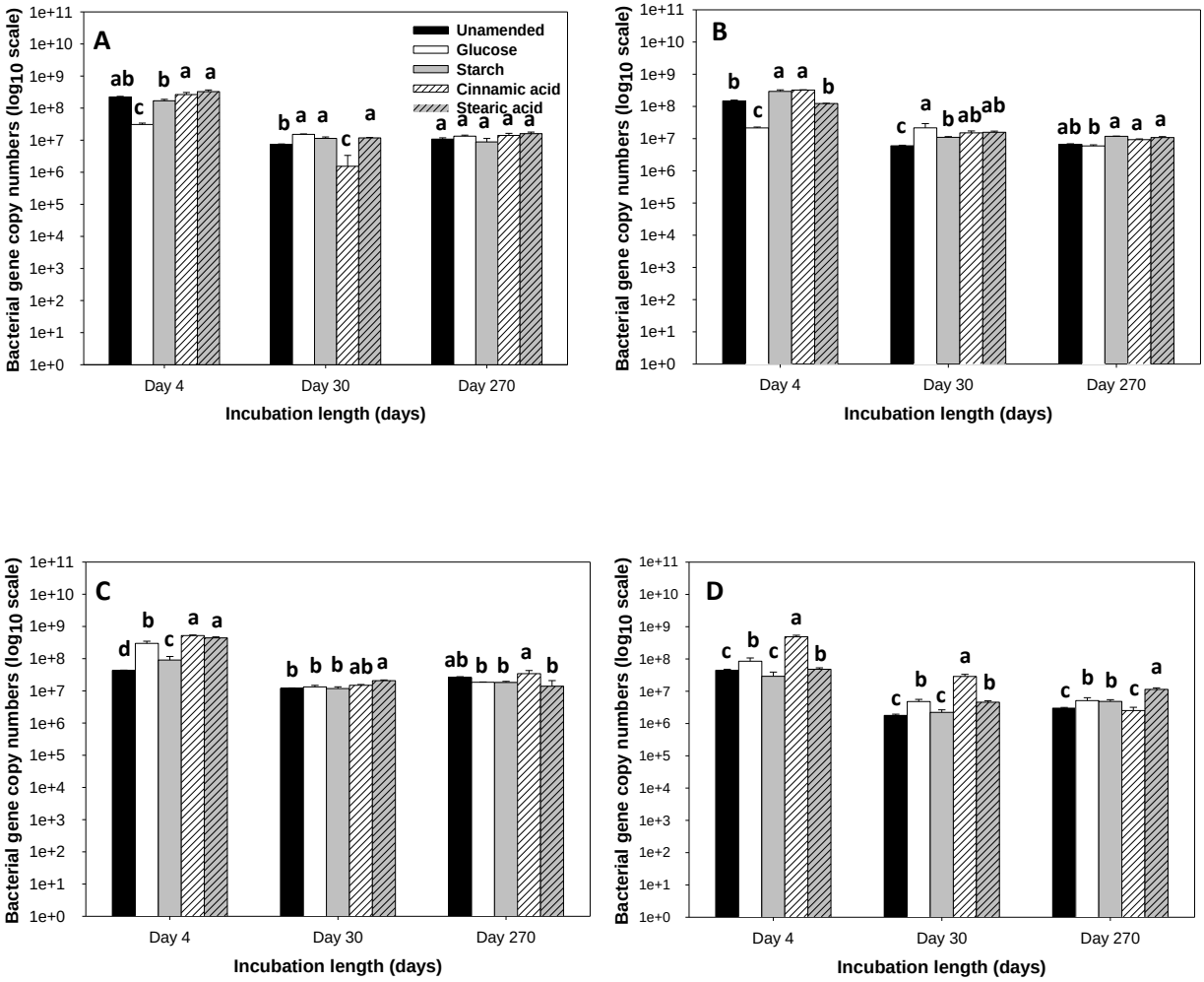

Fig. S2. Bacterial gene copy numbers in response to the addition of substrates in Mollisol (A), Ultisol (B), Andisol (C), and Gelisol (D).at three time periods during the incubation. Bars represent mean ± standard error calculated from three analytical replications expressed in dry soil mass basis.

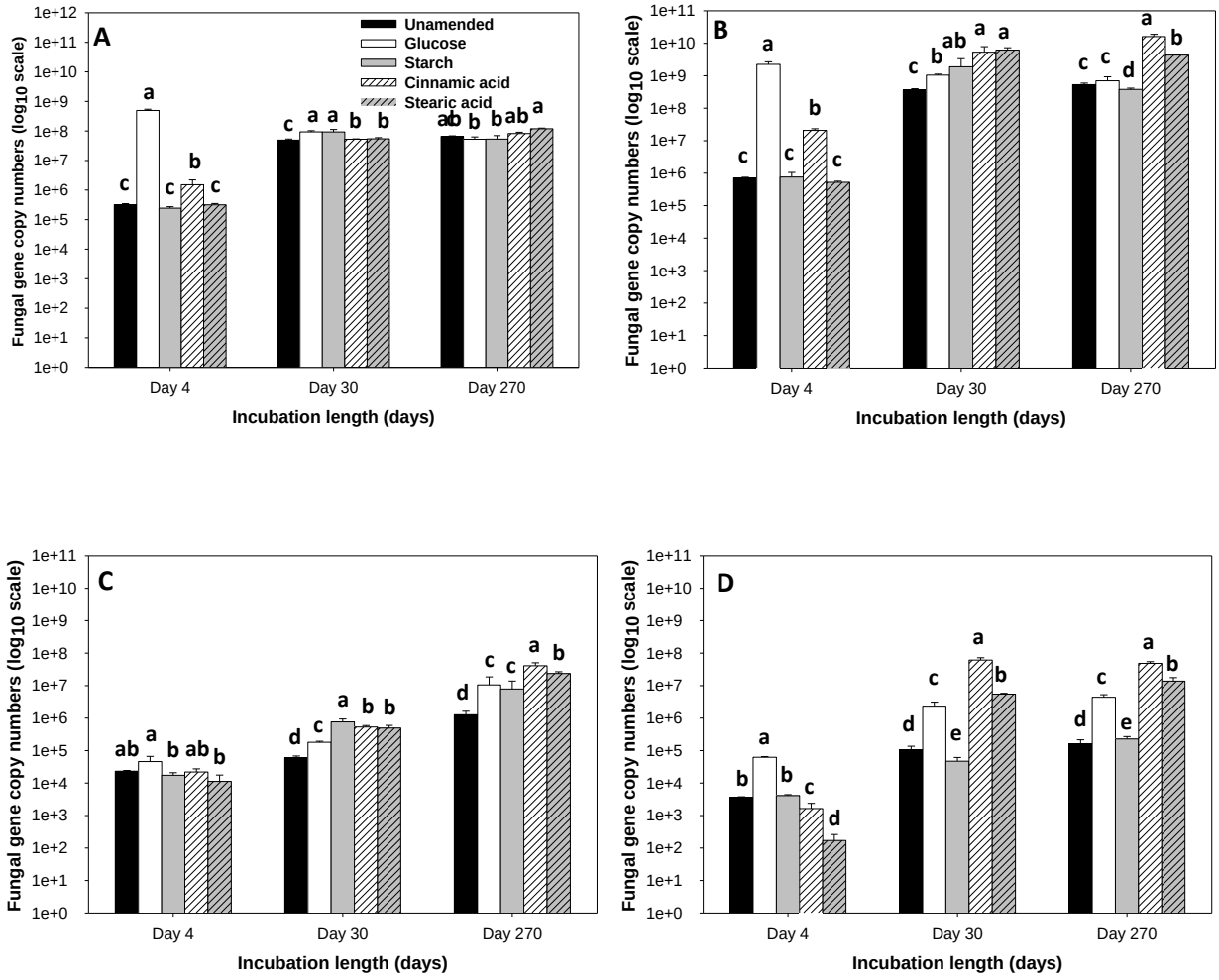

Fig. S3. Fungal gene copy numbers in response to the addition of substrates in Mollisol (A), Ultisol (B), Andisol (C), and Gelisol (D). at three time periods during the incubation. Bars represent mean ± standard error calculated from three analytical replications expressed in dry soil mass basis.

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