

Supplement material

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

Experimental details	Bacteria	Fungi	Archaea
Primers	Eub 338 [*] , Eub 518 [†]	nu-SSU-1196F [‡] , nu-SSU-1536R [§]	915F [¶] , 1059R [£]
Reaction conditions			
Denaturation	95 °C, 30sec	95 °C, 30sec	95 °C, 30sec
Annealing	53 °C, 30 sec	56 °C, 30 sec	61 °C, 30sec
Elongation	72 °C, 1min	72 °C, 1min	72 °C, 30 sec
Cycle length	39	39	44
Reaction mixture			
Sample	1 µL	1 µL	1 µL
Super mix	10 µL	10 µL	10.6 µL
Water	5 µL	5 µL	7.7 µL
Primers	2 µL per primer	2 µL per primer	0.7 µL per primer
Pure cultures for standard curves	<i>Escherichia coli</i>	<i>Saccharomyces cerevisiae</i>	<i>Methanococcus maripaludis</i>

^{*}5'-ACTCCTACGGGAGGCAGCAG-3' (Lane, 1991)

[†]5'-ATTACCGCGGCTGCTGG-3' (Muyzer *et al.*, 1993)

[‡]5'-GGAAACTCACCAGGTCCAGA-3' (Borneman & Hartin, 2000)

[§]5'-ATTGCAATGCYCTATCCCA-3' (Borneman & Hartin, 2000)

[¶]5'-AGGAATTGGCGGGGAGCA-3' (Blank *et al.*, 2002)

[£]5'-GCCATGCACWCCTCT-3' (Stahl & Amann, 1991)

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

Soils	Substrates	SOC respiration	
		mg C g ⁻¹ soil	% of initial C lost
Mollisol	Unamended	4.1±0.21	13.9
	Glucose	4.0±0.07	13.3
	Starch	3.9±0.15	13.1
	Cinnamic acid	4.0±0.18	13.6
	Stearic acid	4.3±0.12	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.

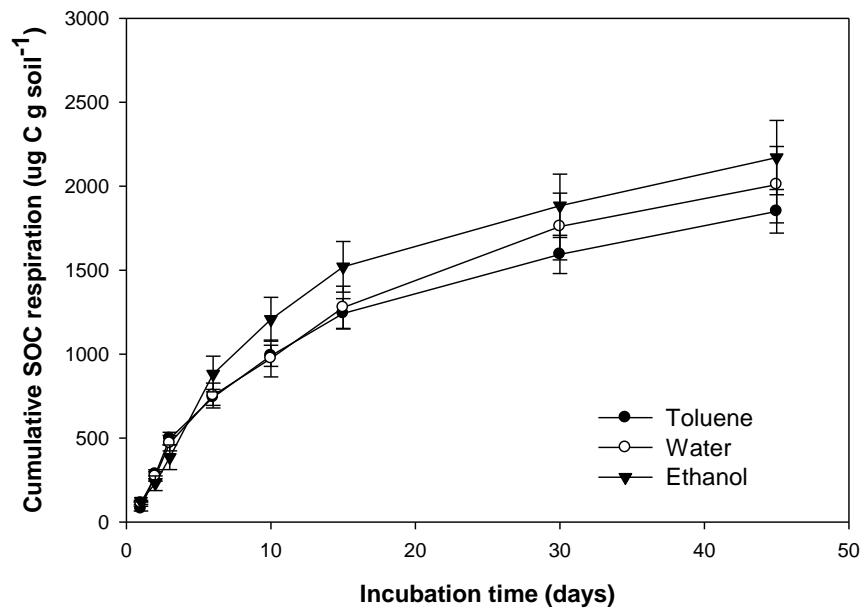


Fig. S1. Comparison of the effect of three solvents (water, ethanol and toluene) on soil organic carbon respiration from Andisol. Symbols represent cumulative soil organic carbon respiration in each sampling time along with standard error bar (n=3). This preliminary experiment demonstrated that the organic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

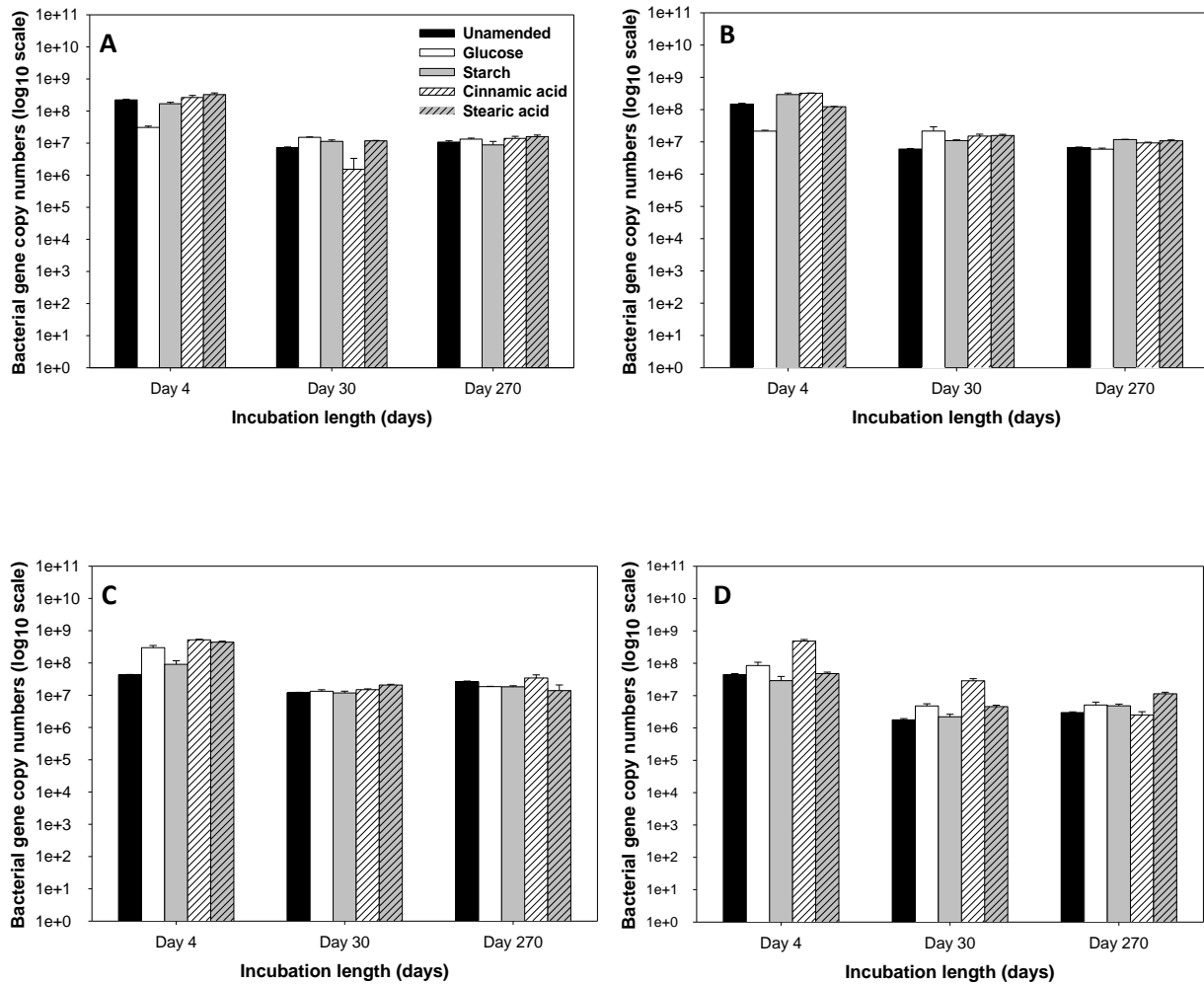


Fig. S2. Bacterial gene copy numbers in response to the addition of substrates in Mollisol (A), Ultisol (B), Andisol (C), and Gelisol (D) at three time periods during the incubation. Bars represent mean \pm standard error calculated from three analytical replications expressed in dry soil mass basis.

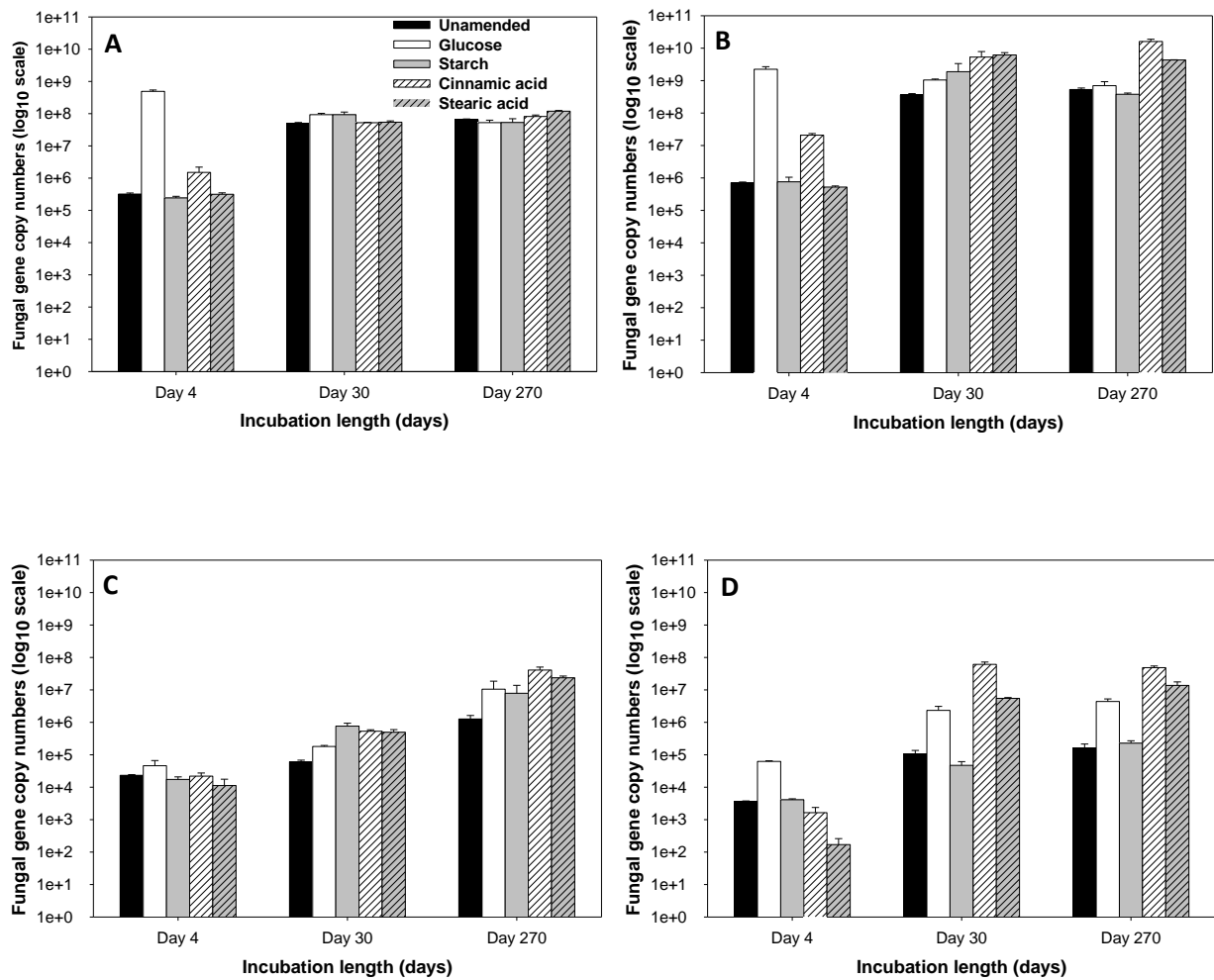


Fig. S3. Fungal gene copy numbers in response to the addition of substrates in Mollisol (A), Ultisol (B), Andisol (C), and Gelisol (D). at three time periods during the incubation. Bars represent mean \pm standard error calculated from three analytical replications expressed in dry soil mass basis.