

Supplemental materials of Figures and Tables

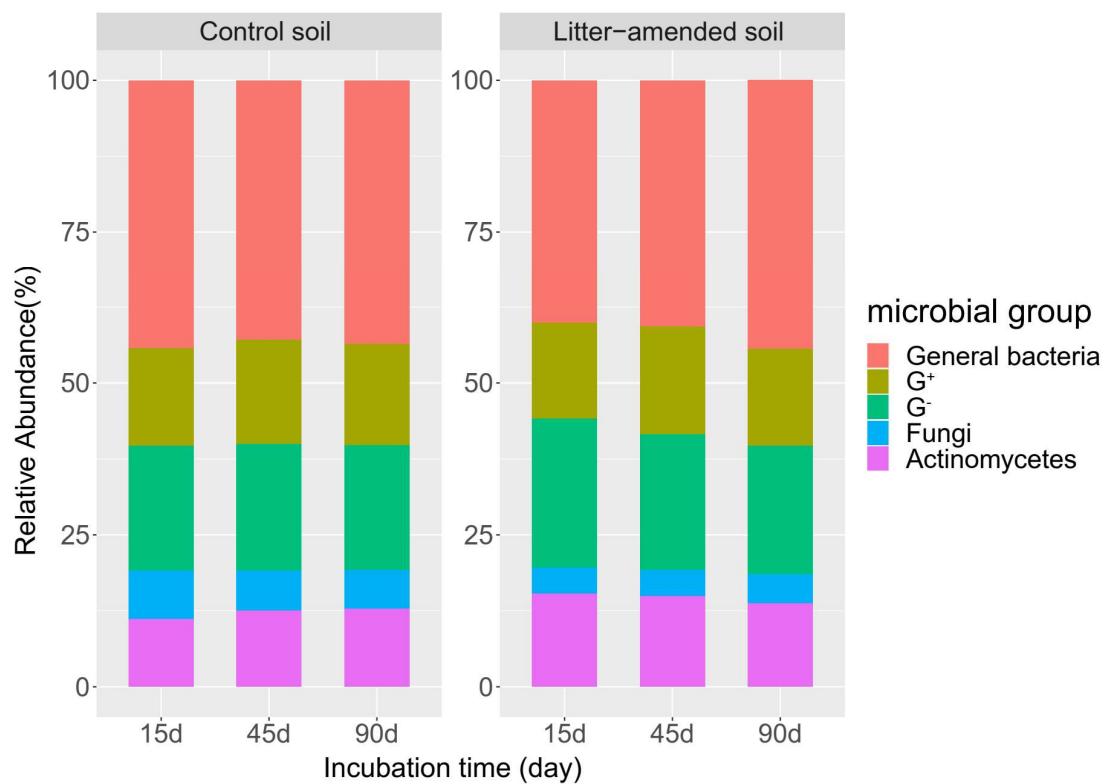


Figure S1 The relative abundance of each microbial group (general bacteria, G⁺, G⁻, fungi and actinomycetes) in soil amended with (+litter) and without (Control) litter.

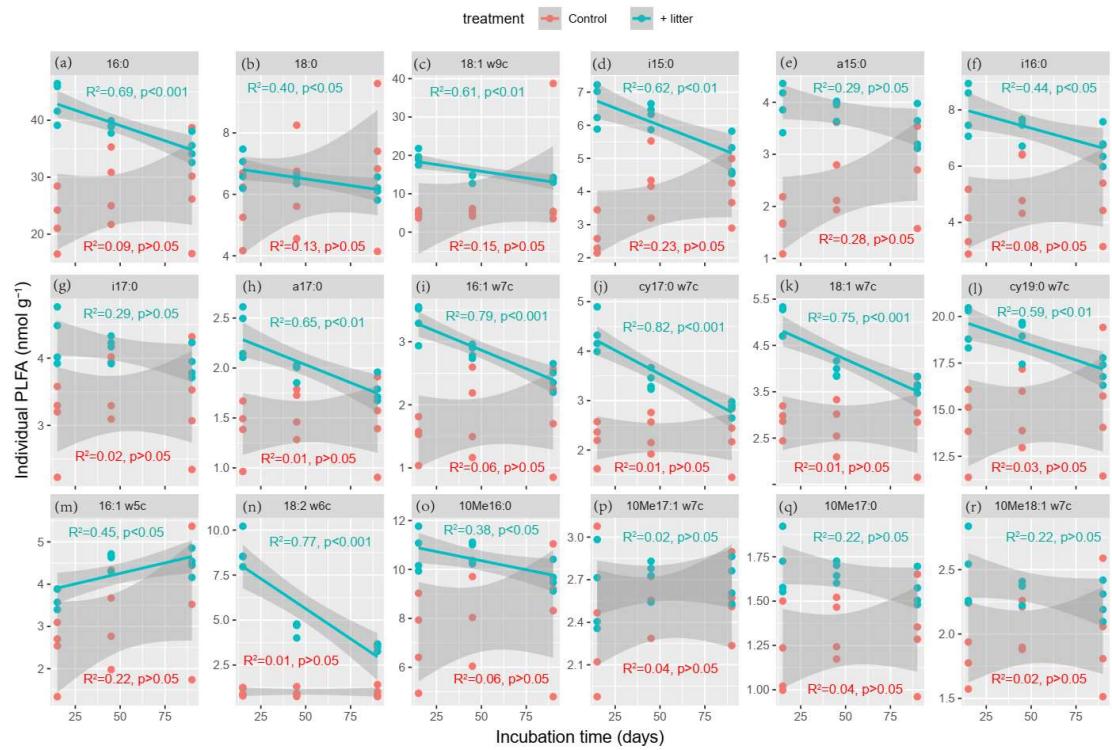


Figure S2 The relationship between individual PLFA and incubation time (15, 45, and 90 days) in soil amended with (+litter) and without (Control) litter.

General bacteria: a-c; G⁺: d-h; G⁻: i-l; fungi: m-n; actinomycetes: o-r.

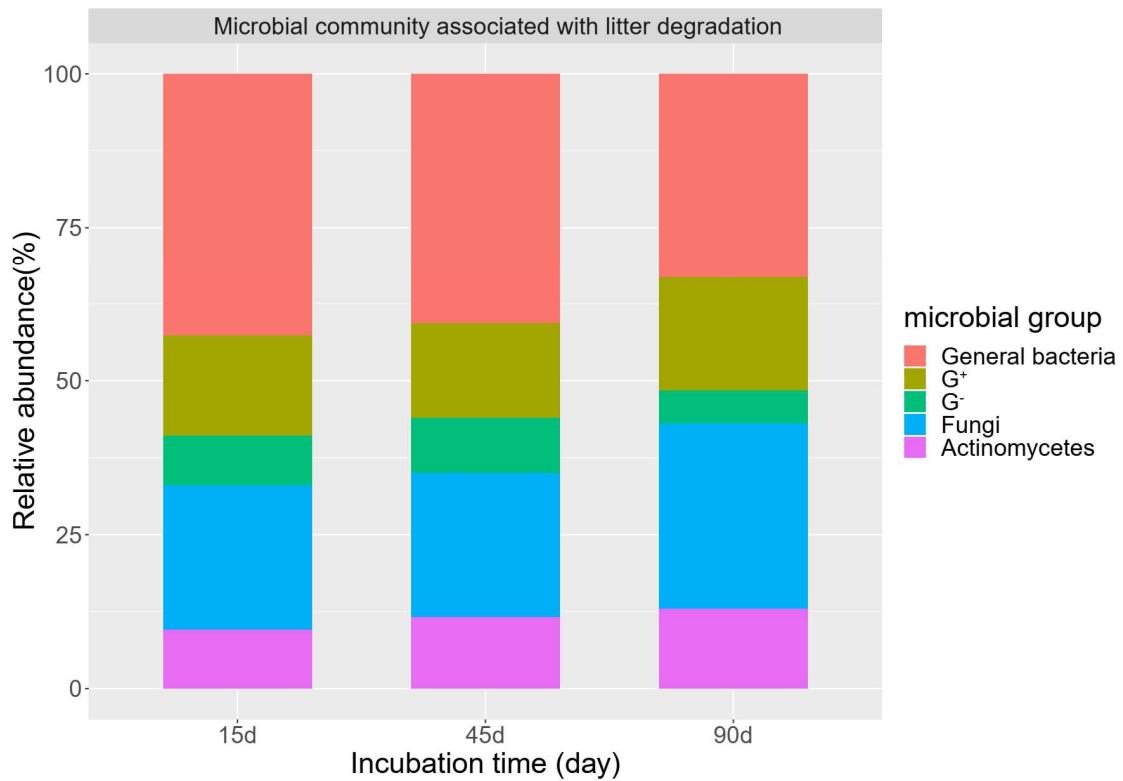


Figure S3 The relative abundance of each microbial group (general bacteria, G⁺, G⁻, fungi and actinomycetes) associated with litter degradation at three sampling points (15, 45 and 90 days)

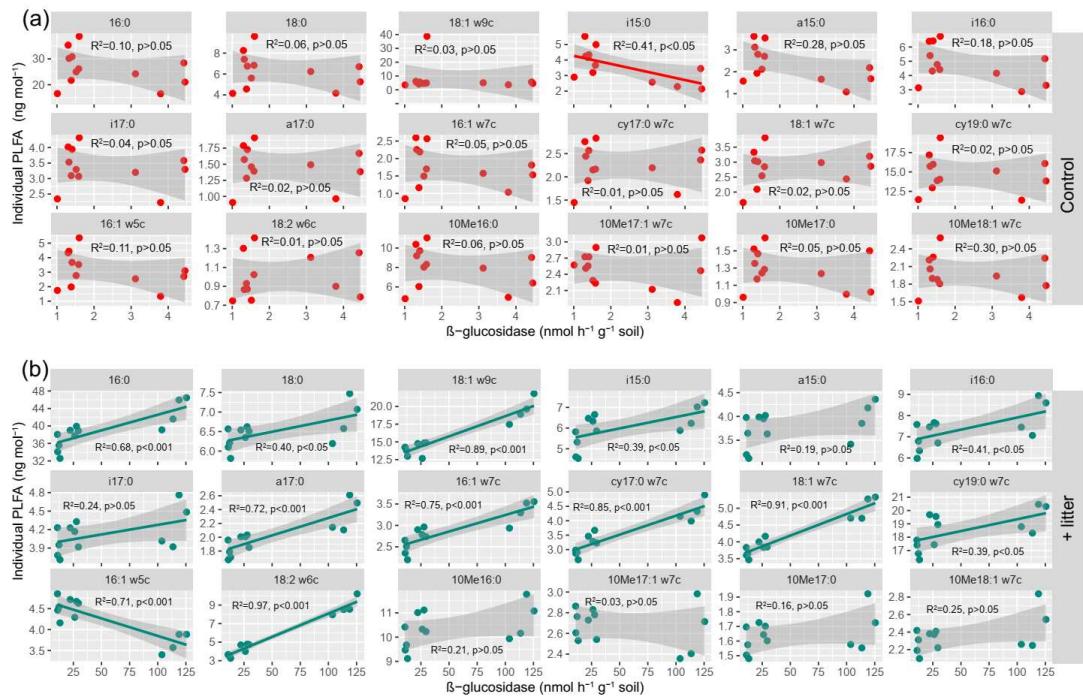


Figure S4 The relationship between the activities of β -glucosidase and individual PLFA characteristics in the control soil (a) and litter-amended soil (b).

Table S1 The t-test results (p values) of the significant differences ($p < 0.05$) in total CO₂ efflux between control and litter-amended soils at specific sampling points.

days	Day 1	Day 3	Day 5	Day 7	Day 10	Day 15	Day 20	Day 30	Day 45	Day 90
t-test (Control~+litter)	<0.001	0.288								

Significance at $p < 0.05$ is denoted in bold.

Table S2 The t-test results (p values) of the significant differences ($p < 0.05$) in soil microbial characteristics (total PLFA, general bacteria, G⁺, G⁻, fungi, actinomycetes, F/B, G⁺/G⁻ and β-glucosidase) between control and litter-amended soils at specific sampling points.

Parameters	Total PLFA	General bacteria	G ⁺	G ⁻	Fungi	Actinomycetes	F/B	G ⁺ /G ⁻	β-glucosidase
Day 15	<0.001	<0.001	<0.001	<0.001	<0.001	<0.05	<0.001	<0.05	<0.001
Day 45	<0.01	<0.01	<0.05	<0.01	<0.001	0.107	<0.001	0.536	<0.001
Day 90	0.709	0.969	0.261	0.588	<0.01	0.971	<0.001	0.167	<0.001

Significance at $p < 0.05$ is denoted in bold.

Table S3 The t-test results (p values) of the significant differences ($p < 0.05$) in individual PLFA characteristics between control and litter-amended soils at specific sampling points.

Individual PLFA	Day 15	Day 45	Day 90
	Control~+litter	Control~+litter	Control~+litter
16:0	0.528	0.771	0.773
18:0	0.304	0.06	0.111
18:1 w9c	0.338	0.123	0.308
i15:0	0.706	<0.01	<0.05
a15:0	0.547	<0.05	<0.05
i16:0	0.274	0.106	0.687
i17:0	0.672	<0.001	<0.01
a17:0	0.308	0.133	<0.05
16:1 w7c	0.545	0.515	0.46
cy17:0 w7c	<0.05	<0.01	<0.05
18:1 w7c	0.073	<0.05	0.110
cy19:0 w7c	0.076	<0.05	0.142
16:1 w5c	0.200	<0.05	<0.05
18:2 w6c	0.495	0.889	0.094
10Me 16:0	0.22	0.077	0.146
10Me 17:1 w7c	0.364	<0.05	<0.05
10Me 17:0	0.346	<0.01	<0.01
10Me 18:1 w7c	0.587	<0.001	<0.01

Significance at $p < 0.05$ is denoted in bold.

Table S4 The t-test results (p values) of the significant differences ($p < 0.05$) in individual PLFA characteristics between litter-derived and native SOC-derived source under litter incorporation at specific sampling points.

Individual PLFA	Day 15		Day 45	Day 90
	litter-derived~native SOC-derived		litter-derived~native SOC-derived	litter-derived~native SOC-derived
16:0	0.288		<0.001	0.123
18:0	0.057		<0.001	0.452
18:1 w9c	0.300		0.504	0.231
i15:0	0.359		<0.001	<0.01
a15:0	0.321		<0.001	<0.05
i16:0	0.762		<0.001	0.412
i17:0	0.801		<0.001	0.136
a17:0	0.516		<0.001	<0.05
16:1 w7c	0.349		<0.001	0.116
cy17:0 w7c	<0.05		<0.001	<0.05
18:1 w7c	<0.01		<0.001	0.694
cy19:0 w7c	0.231		<0.001	0.138
16:1 w5c	<0.01		<0.001	0.254
18:2 w6c	0.528		<0.001	<0.05
10Me 16:0	0.565		<0.001	0.419
10Me17:1 w7c	0.709		<0.001	0.121
10Me 17:0	0.699		<0.001	0.676
10Me 18:1 w7c	0.325		<0.001	0.596

Significance at $p < 0.05$ is denoted in bold.