Supplementary Materials

Table S1 The Pearson correlations (r) of initial litter chemical properties, soil physicochemical properties, and soil microbial biomass with litter mass remaining (LMR, %) of leaf and fine roots.

Litter type		LMR at different periods of decomposition (days)								
		15	**30**	**60**	**90**	**120**	**180**	**270**	**360**	**450**
Leaf	**LC**	0.89**	0.84**	0.86**	0.88**	0.85**	0.75*	0.23	-0.37	-0.28
	LN	-0.88**	-0.90**	-0.79*	-0.87**	-0.87**	-0.75*	-0.36	0.51	0.41
	LP	-0.91**	-0.91**	-0.81*	-0.87**	-0.87**	-0.75*	-0.39	0.61	0.4
	LC:N	0.93**	0.92**	0.84**	0.92**	0.91**	0.78*	0.32	-0.49	-0.35
	LN:P	0.89**	0.89**	0.81*	0.85**	0.83*	0.73*	0.41	-0.65	-0.34
	SOC	0.82*	0.87**	0.92**	0.86**	0.86**	0.90**	0.35	-0.46	-0.14
	TN	0.63	0.69	0.82*	0.72*	0.72*	0.84**	0.25	-0.13	-0.16
	TP	0.30	0.43	0.48	0.42	0.51	0.59	0.14	-0.12	0.48
	B	0.68	0.69	0.79*	0.69	0.71*	0.73*	0.00	-0.31	0.05
	F	0.52	0.47	0.61	0.51	0.53	0.52	-0.32	-0.13	0.20
	AMF	0.62	0.62	0.72*	0.60	0.65	0.67	-0.09	-0.32	0.10
	Act	0.62	0.59	0.70	0.62	0.64	0.62	-0.15	-0.21	0.17
	TMB	0.67	0.67	0.77**	0.67	0.69	0.71*	-0.03	-0.30	0.08
	F:B	-0.50	-0.53	-0.48	-0.55	-0.49	-0.50	-0.70	0.31	0.32
Root	**LC**	-0.45	-0.67	-0.26	0.36	0.48	0.15	0.75*	0.28	-0.35
	LN	-0.72*	-0.63	-0.26	0.43	0.44	0.57	0.76*	0.46	-0.41
	LP	-0.68	-0.77*	-0.1	0.16	0.34	0.26	0.73*	0.40	-0.32
	LC:N	0.80*	0.77*	0.33	-0.41	-0.44	-0.36	-0.70	-0.31	0.41
	LN:P	-0.62	-0.43	-0.4	0.59	0.47	0.64	0.61	0.38	-0.38
	SOC	-0.52	-0.79*	-0.24	0.35	0.52	0.02	0.49	0.24	-0.27
	TN	-0.45	-0.68	-0.16	0.26	0.37	-0.05	0.24	0.08	-0.23
	TP	-0.35	-0.29	-0.16	0.34	0.04	-0.06	0.43	-0.34	-0.77
	B	-0.46	-0.53	-0.02	0.22	0.29	0.28	0.49	0.28	-0.37
	F	-0.34	-0.29	0.11	0.15	0.10	0.50	0.39	0.23	-0.44
	AMF	-0.43	-0.43	0.11	0.08	0.13	0.33	0.58	0.29	-0.45
	Act	-0.49	-0.42	-0.08	0.32	0.32	0.37	0.45	0.33	-0.36
	TMB	-0.44	-0.51	-0.01	0.22	0.27	0.30	0.49	0.27	-0.39
	F:B	0.35	0.67	0.66	-0.58	-0.85**	0.45	0.01	-0.24	-0.39

Note: LMR, LC, LN, LP, LC:N, LN:P, SOC, TN, TP, B, F, AMF, Act, TMB, and F:B represent litter mass remaining (%), initial litter carbon, nitrogen, and phosphorus, the ratios of initial litter carbon to nitrogen and nitrogen to phosphorus, soil organic carbon, soil total nitrogen, soil total phosphorus, the biomasses of bacteria, fungi, arbuscular mycorrhizal fungi, actinomycetes, total microbial biomass, and the ratio of fungal to bacterial biomass, respectively. * indicates significant correlations ($p < 0.05$), ** indicates extremely significant correlations ($p < 0.01$).

Table S2 The Pearson correlations (r) of initial litter chemical properties, soil physicochemical properties, and soil microbial biomass with decomposition constants (k) of leaf litter and fine roots.

Variations	K of leaf litter (g g⁻¹ yr⁻¹)				K of fine root (g g⁻¹ yr⁻¹)			
	0-450d	0-90d	90-180d	180-450d	0-450d	0-90d	90-180d	180-465d
LC	0.69	-0.84**	0.51	0.56	0.06	-0.42	-0.09	0.33
LN	-0.77*	0.81*	-0.54	-0.73*	0.16	-0.52	-0.49	0.46
LP	-0.76*	0.79*	-0.40	-0.73*	0.19	-0.26	-0.21	0.28
LC:N	0.77*	-0.87**	0.61	0.69	-0.33	0.50	0.22	-0.41
LN:P	0.70	-0.77*	0.35	0.65	0.12	-0.64	-0.54	0.47
SOC	0.59	-0.86**	0.31	0.59	0.20	-0.44	-0.07	0.17
TN	0.50	-0.77*	0.24	0.53	0.33	-0.34	0.00	0.11
TP	-0.04	-0.48	0.22	0.18	0.74*	-0.38	0.15	0.66
B	0.42	-0.72*	0.31	0.30	0.23	-0.33	-0.37	0.31
F	0.27	-0.56	0.38	0.03	0.30	-0.25	-0.58	0.43
AMF	0.36	-0.63	0.22	0.24	0.26	-0.19	-0.40	0.40
Act	0.32	-0.64	0.37	0.16	0.19	-0.41	-0.50	0.32
TMB	0.40	-0.70	0.31	0.27	0.24	-0.32	-0.39	0.33
F:B	-0.41	0.50	-0.12	-0.59	0.32	0.59	-0.60	0.48

Note: please see table S1 for abbreviations. * indicates significant correlations ($p < 0.05$), ** indicates extremely significant correlations ($p < 0.01$).

Table S3 The Pearson correlations (r) of initial litter chemical properties, soil physicochemical properties, and soil microbial biomass with litter carbon (C) remaining (%) of leaf and fine roots.

Litter type		Litter C remaining at different periods of decomposition (days)								
		15	30	60	90	120	180	270	360	450
Leaf	LC	0.91**	0.76*	0.82*	0.85**	0.72*	0.69	0.17	-0.49	-0.36
	LN	-0.86**	-0.91**	-0.80*	-0.86**	-0.77*	-0.79*	-0.32	0.54	0.43
	LP	-0.90**	-0.88**	-0.81*	-0.85**	-0.76*	-0.77*	-0.36	0.67	0.45
	LC:N	0.93**	0.90**	0.84**	0.90**	0.78*	0.79*	0.27	-0.55	-0.39
	LN:P	0.92**	0.83*	0.79*	0.83*	0.73*	0.73*	0.35	-0.73*	-0.40
	SOC	0.91**	0.74*	0.88**	0.85**	0.88**	0.83*	0.29	-0.54	-0.23
	TN	0.69	0.59	0.79*	0.73*	0.82*	0.75*	0.22	-0.20	-0.23
	TP	0.48	0.24	0.45	0.40	0.59	0.54	0.19	-0.09	0.45
	B	0.74*	0.53	0.75*	0.67	0.71	0.60	-0.05	-0.39	-0.07
	F	0.53	0.32	0.57	0.48	0.49	0.35	-0.37	-0.19	0.07
	AMF	0.65	0.47	0.70	0.58	0.65	0.53	-0.12	-0.37	-0.03
	Act	0.67	0.41	0.66	0.58	0.59	0.47	-0.18	-0.29	0.05
	TMB	0.72*	0.51	0.74*	0.65	0.69	0.57	-0.08	-0.38	-0.05
	F:B	-0.61	-0.50	-0.44	-0.56	-0.47	-0.55	-0.66	0.40	0.31
Root	LC	-0.60	-0.90**	-0.87**	-0.79*	-0.76*	-0.64	-0.44	0.13	-0.57
	LN	-0.54	-0.65	-0.65	-0.54	-0.51	-0.14	-0.52	0.37	-0.55
	LP	-0.40	-0.55	-0.67	-0.40	-0.42	-0.13	-0.62	0.36	-0.48
	LC:N	0.48	0.53	0.59	0.39	0.40	0.19	0.63	-0.22	0.55
	LN:P	-0.56	-0.60	-0.53	-0.54	-0.47	-0.19	-0.35	0.25	-0.48
	SOC	-0.61	-0.76*	-0.60	-0.33	-0.35	-0.31	-0.69	0.19	-0.46
	TN	-0.42	-0.45	-0.25	0.03	-0.03	-0.05	-0.67	0.11	-0.34
	TP	-0.21	-0.49	-0.08	-0.21	-0.34	-0.42	-0.14	-0.32	-0.78*
	B	-0.43	-0.61	-0.39	-0.24	-0.27	0.00	-0.53	0.34	-0.48
	F	-0.23	-0.44	-0.12	-0.13	-0.15	0.27	-0.42	0.34	-0.46
	AMF	-0.28	-0.53	-0.36	-0.27	-0.31	0.06	-0.41	0.37	-0.52
	Act	-0.47	-0.56	-0.32	-0.17	-0.19	0.07	-0.42	0.39	-0.43
	TMB	-0.41	-0.60	-0.36	-0.23	-0.26	0.02	-0.51	0.33	-0.49
	F:B	0.85**	0.53	0.59	0.09	0.05	0.57	0.45	-0.05	-0.16

Note: please see table S1 for abbreviations. * indicates significant correlations ($p < 0.05$), ** indicates extremely significant correlations ($p < 0.01$).

Table S4 The Pearson correlations (r) of initial litter chemical properties, soil physicochemical properties, and soil microbial biomass with litter nitrogen (N) remaining (%) of leaf and fine roots.

Litter type		Litter N remaining at different periods of decomposition (days)								
		15	30	60	90	120	180	270	360	450
Leaf	**LC**	-0.14	-0.02	0.47	0.87*	0.73*	0.65	0.26	-0.33	-0.33
	LN	-0.58	-0.29	-0.79*	-0.86*	-0.93**	-0.84**	-0.40	0.39	0.36
	LP	-0.36	-0.06	-0.60	-0.84*	-0.86**	-0.79*	-0.43	0.51	0.38
	LC:N	0.42	0.22	0.77*	0.93**	0.93**	0.83*	0.36	-0.39	-0.32
	LN:P	0.20	-0.06	0.51	0.83*	0.79*	0.75*	0.43	-0.58	-0.35
	SOC	-0.20	0.24	0.58	0.86*	0.72*	0.74*	0.35	-0.46	-0.26
	TN	-0.42	0.41	0.61	0.66	0.57	0.60	0.25	-0.18	-0.31
	TP	0.02	0.68	0.32	0.54	0.44	0.47	0.15	-0.14	0.40
	B	-0.37	0.17	0.31	0.75*	0.54	0.44	-0.02	-0.37	-0.11
	F	-0.40	0.16	0.10	0.63	0.36	0.17	-0.34	-0.20	0.02
	AMF	-0.34	0.16	0.21	0.67	0.48	0.35	-0.11	-0.38	-0.08
	Act	-0.42	0.12	0.16	0.70	0.46	0.32	-0.15	-0.26	0.02
	TMB	-0.38	0.17	0.28	0.74*	0.52	0.42	-0.04	-0.36	-0.09
	F:B	0.11	0.08	-0.49	-0.46	-0.44	-0.64	-0.72*	0.24	0.28
Root	**LC**	-0.43	-0.16	-0.65	-0.60	-0.74*	-0.84**	-0.69	-0.45	-0.56
	LN	-0.74*	-0.53	-0.66	-0.80*	-0.89**	-0.88**	-0.95**	-0.55	-0.78*
	LP	-0.71*	-0.45	-0.69	-0.86**	-0.83*	-0.89**	-0.87**	-0.59	-0.77*
	LC:N	0.87**	0.48	0.70	0.84**	0.88***	0.93**	0.97**	0.69	0.88**
	LN:P	-0.62	-0.42	-0.51	-0.58	-0.74*	-0.70	-0.81*	-0.42	-0.62
	SOC	-0.55	-0.20	-0.42	-0.54	-0.59	-0.78*	-0.77*	-0.59	-0.63
	TN	-0.58	-0.24	-0.22	-0.41	-0.39	-0.57	-0.66	-0.62	-0.60
	TP	-0.80*	-0.54	-0.51	-0.39	-0.55	-0.60	-0.49	-0.85**	-0.80*
	B	-0.60	-0.49	-0.37	-0.55	-0.59	-0.65	-0.74*	-0.57	-0.65
	F	-0.59	-0.66	-0.23	-0.46	-0.50	-0.45	-0.67	-0.54	-0.62
	AMF	-0.63	-0.63	-0.47	-0.63	-0.65	-0.64	-0.70	-0.57	-0.68
	Act	-0.60	-0.53	-0.33	-0.51	-0.57	-0.60	-0.73*	-0.51	-0.61
	TMB	-0.60	-0.51	-0.36	-0.55	-0.59	-0.63	-0.74*	-0.58	-0.65
	F:B	-0.05	-0.64	0.02	0.00	0.03	0.40	0.27	-0.04	-0.07

Note: please see table S1 for abbreviations. * indicates significant correlations ($p < 0.05$), ** indicates extremely significant correlations ($p < 0.01$). *** indicates significant correlations ($p < 0.001$).

Table S5 The Pearson correlations (r) of initial litter chemical properties, soil physicochemical properties, and soil microbial biomass with litter phosphorus (P) remaining (%) of leaf and fine roots.

Litter type		Litter P remaining at different periods of decomposition (days)								
		15	30	60	90	120	180	270	360	450
Leaf	LC	0.66	0.42	0.79*	0.92**	0.79*	0.65	0.28	-0.01	0.43
	LN	-0.67	-0.55	-0.80*	-0.83*	-0.91*	-0.82*	-0.41	-0.07	-0.42
	LP	-0.71*	-0.59	-0.82*	-0.88*	-0.90**	-0.79*	-0.44	0.01	-0.44
	LC:N	0.75*	0.58	0.86*	0.90**	0.92**	0.81*	0.38	0.05	0.48
	LN:P	0.75*	0.61	0.84*	0.89**	0.88**	0.76*	0.44	-0.11	0.42
	SOC	0.35	0.08	0.90**	0.95**	0.84*	0.78*	0.37	-0.29	0.29
	TN	-0.05	-0.30	0.81*	0.75	0.65	0.63	0.27	-0.19	0.06
	TP	-0.03	-0.46	0.32	0.53	0.45	0.50	0.13	-0.19	0.52
	B	0.14	-0.16	0.75	0.82*	0.60	0.49	0.00	-0.30	0.37
	F	0.00	-0.29	0.53	0.65	0.35	0.21	-0.32	-0.26	0.38
	AMF	0.02	-0.26	0.69	0.74	0.52	0.40	-0.09	-0.31	0.38
	Act	0.17	-0.18	0.61	0.75	0.48	0.35	-0.14	-0.21	0.49
	TMB	0.13	-0.17	0.73	0.81*	0.57	0.46	-0.02	-0.30	0.38
	F:B	-0.65	-0.54	-0.48	-0.55	-0.60	-0.63	-0.73	-0.02	-0.07
Root	LC	-0.37	-0.42	-0.39	-0.43	-0.36	-0.35	-0.08	-0.23	-0.44
	LN	-0.50	-0.58	-0.69	-0.54	-0.47	-0.31	-0.41	-0.25	-0.59
	LP	-0.71*	-0.72*	-0.70	-0.83*	-0.74*	-0.74*	-0.72*	-0.30	-0.73*
	LC:N	0.70	0.59	0.82*	0.69	0.63	0.51	0.60	0.40	0.74*
	LN:P	-0.24	-0.29	-0.52	-0.19	-0.16	0.09	-0.05	-0.18	-0.35
	SOC	-0.52	-0.50	-0.43	-0.53	-0.49	-0.57	-0.70	-0.31	-0.53
	TN	-0.57	-0.46	-0.47	-0.51	-0.51	-0.57	-0.93**	-0.37	-0.55
	TP	-0.80*	-0.41	-0.57	-0.36	-0.38	-0.25	-0.51	-0.64	-0.78*
	B	-0.54	-0.62	-0.47	-0.51	-0.49	-0.46	-0.79*	-0.28	-0.57
	F	-0.45	-0.63	-0.53	-0.39	-0.43	-0.23	-0.77*	-0.31	-0.53
	AMF	-0.63	-0.73*	-0.52	-0.60	-0.57	-0.51	-0.79*	-0.29	-0.66
	Act	-0.47	-0.53	-0.41	-0.38	-0.34	-0.30	-0.73*	-0.19	-0.50
	TMB	-0.53	-0.63	-0.47	-0.50	-0.48	-0.44	-0.79*	-0.29	-0.58
	F:B	-0.13	-0.33	-0.30	-0.08	-0.21	0.21	0.03	-0.21	-0.22

Note: please see table S1 for abbreviations. * indicates significant correlations ($p < 0.05$), ** indicates extremely significant correlations ($p < 0.01$).