

Supplementary Materials

Table S1. The results of Duncan's multiple comparison test and *t*-tests for SOC (g kg⁻¹) in homogeneous regions.

Zone	0–20 cm	20–40 cm	40–60 cm	60–80 cm	80–100 cm
Forest types	**	***	*	ns	ns
Broad-leaved	23.52 ± 12.67 a	16.06 ± 8.81 a	12.25 ± 7.57 ab	10.11 ± 6.72	9.29 ± 6.75
Coniferous	21.42 ± 10.99 b	13.16 ± 7.65 c	10.49 ± 6.70 b	9.23 ± 6.37	8.93 ± 6.48
Mixed forest	22.13 ± 11.79 a	14.43 ± 9.43 b	11.51 ± 9.18 a	9.57 ± 7.71	8.80 ± 7.40
Upper texture (0–40 cm)	***	***	-	-	-
Clay	22.01 ± 15.82	15.33 ± 11.24	-	-	-
Sandy loam	21.84 ± 11.40	14.81 ± 8.22	-	-	-
Deep texture (40–100 cm)	-	-	***	***	***
Clay	-	-	12.19 ± 9.41	9.94 ± 7.85	9.40 ± 7.55
Clay loam	-	-	11.54 ± 7.64	9.92 ± 6.84	9.18 ± 6.77

Note: Data are presented as means ± standard deviations. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, ns = not significant. Lowercase letters indicate significant differences between treatments ($p < 0.05$).

Table S2. The ensemble coefficients of each soil layer.

Soil Layer (cm)	Formula
0–20	$f_{final} = 1/2 f_f + 1/2 f_t$
20–40	$f_{final} = 1/2 f_f + 1/2 f_t$
40–60	$f_{final} = 1/2 f_f + 1/2 f_t$
60–80	$f_{final} = 1/2 f_f + 1/2 f_t$
80–100	$f_{final} = 1/3 f_f + 1/3 f_t + 1/3 f_g$

Note: See section 2.4. *Mapping Method* for definitions of f_t , f_i and f_g .