Supplementary Tables

Title:

Coniferous-broadleaf mixture increases soil microbial biomass and functions accompanied by improved stand biomass and litter production in subtropical China

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Table S1 Effects of stand type, season and their interactions on stand biomass

Effect	Index	TBB	TAB	SAB	SBB	HAB	HBB
Stand type	*df*	2	2	2	2	2	2
	F	177.81	43.08	53.48	37.13	69.73	5.74
	p	**＜0.001**	**＜0.001**	**＜0.001**	**＜0.001**	**＜0.001**	**0.009**
Season	*df*	1	1	1	1	1	1
	F	2.50	0.15	4.17	0.29	27.42	3.51
	p	0.127	0.697	0.052	0.594	**＜0.001**	0.073
Stand type×Season	*df*	2	2	2	2	2	2
	F	0.21	0.35	0.50	0.10	22.37	22.19
	p	0.814	0.705	0.611	0.905	**＜0.001**	**＜0.001**

TBB, tree belowground biomass; TAB, tree aboveground biomass; SAB, shrubs aboveground biomass; SBB, shrubs belowground biomass; HAB, herb aboveground biomass; HBB, herb belowground biomass.

Table S2 Effects of stand type, season and their interactions on soil microbial structure

Effect	Index	MBC	MBN	MBC/SOC	MBN/TN
Stand type	*df*	2	2	2	2
	F	4.13	9.71	26.55	10.32
	p	**0.029**	**0.001**	**＜0.001**	**0.001**
Season	*df*	1	1	1	1
	F	1.88	4.84	0.22	0.66
	p	0.183	**0.038**	0.642	0.425
Stand type×Season	*df*	2	2	2	2
	F	0.89	4.12	1.94	1.69
	p	0.425	**0.029**	0.166	0.205

MBC, microbial biomass carbon; MBN, microbial biomass nitrogen; MBC/SOC, MBC-to-SOC (soil organic carbon) ratio; MBN/TN, MBN-to-TN (total nitrogen) ratio.

Table S3 Effects of stand type, season and their interactions on relative abundance of the soil microbial community PLFAs

Effect	Index	B	GP	GN	F	Acti	AMF
Stand type	*df*	2	2	2	2	2	2
	F	11.48	9.10	2.89	13.52	4.23	20.31
	p	**＜0.001**	**0.001**	0.075	**＜0.001**	**0.027**	**＜0.001**
Season	*df*	1	1	1	1	1	1
	F	0.45	2.40	33.05	30.28	2.50	74.64
	p	0.507	0.134	**＜0.001**	**＜0.001**	0.127	**＜0.001**
Stand type×Season	*df*	2	2	2	2	2	2
	F	6.26	10.41	7.18	3.99	0.08	2.89
	p	**0.006**	**0.001**	**0.004**	**0.032**	0.924	0.075

B, bacteria; GP, gram-positive bacteria; GN, Gram-negative bacteria; F, fungi; Acti, actinobacteria; AMF, arbuscular mycorrhizal fungi.

Table S4 Effects of stand type, season and their interactions on soil enzyme activity

Effect	Index	AG	BG	CB	APH	NAG	Urease	PHO	PO
Stand type	*df*	2	2	2	2	2	2	2	2
	F	36.38	18.63	4.15	28.48	42.94	15.76	10.82	7.92
	p	**＜0.001**	**＜0.001**	**0.028**	**＜0.001**	**＜0.001**	**＜0.001**	**＜0.001**	**0.002**
Season	*df*	1	1	1	1	1	1	1	1
	F	0.02	60.53	24.14	20.33	68.63	21.62	26.11	20.41
	p	0.881	**＜0.001**	**＜0.001**	**＜0.001**	**＜0.001**	**＜0.001**	**＜0.001**	**＜0.001**
Stand type×Season	*df*	2	2	2	2	2	2	2	2
	F	1.05	5.00	3.93	58.67	23.38	11.48	2.54	5.52
	p	0.364	**0.015**	**0.033**	**＜0.001**	**＜0.001**	**＜0.001**	**0.100**	**0.011**

AG, α−Glucosidase; BG, β−1,4−glucosidase; CB, β−Cellobiosidase; APH, acid phosphatase; NAG, β−1,4−N−acetylglucosaminidase; PHO, phenol oxidase; PO, peroxidase.

Table S5 Marginal and conditional effects of biotic and abiotic factors on soil microbial composition obtained from the summary of forward selection in Redundancy analysis (RDA)

Season	Factors	Marginal effects			Conditional effects		
		Explains %	*F*	*p*	Explains %	*F*	*p*
Dry-cool season	SOC	44.7	10.5	**0.002**	44.7	10.5	**0.002**
	TBB	26.3	4.6	**0.016**	9.3	2.4	**0.038**
	TP	39.1	8.3	**0.002**	6.3	1.8	0.116
	TN	36.3	7.4	**0.004**	3.3	0.9	0.490
	CEC	37.1	7.7	**0.002**	5.0	1.4	0.206
	pH	33.5	6.5	**0.002**	4.0	1.2	0.310
	TK	31.1	5.9	**0.004**	2.5	0.7	0.582
	TK_{litter}	20.0	3.3	**0.024**	1.8	0.5	0.742
	LP	27.1	4.8	**0.008**	1.5	0.4	0.790
Wet-warm season	NO_3^-–N	29.2	5.4	**0.002**	29.2	5.4	**0.002**
	TBB	18.9	3.0	**0.020**	19.2	4.5	**0.002**
	pH	19.3	3.1	**0.012**	9.2	2.4	**0.034**
	TK_{litter}	14.9	2.3	**0.036**	8.2	2.4	**0.048**
	HBB	20.9	3.4	**0.014**	6.9	2.3	0.086
	AP	22.3	3.7	**0.006**	3.0	1.0	0.440
	LP	19.1	3.1	**0.020**	3.8	1.3	0.256
	WC	24.2	4.2	**0.010**	2.6	0.9	0.448
	AK	21.4	3.5	**0.010**	2.3	0.7	0.56
	TP	20.1	3.3	**0.020**	2.7	0.8	0.496
	SAB	19.0	3.0	**0.016**	2.0	0.6	0.646

SOC, soil organic carbon; TBB, tree belowground biomass; TP, soil total phosphorus; TN, soil total nitrogen; CEC, soil cation exchange capacity; TK, soil total potassium; NO_3^-–N, soil nitrate nitrogen; HBB, herbaceous belowground biomass; AP, soil available phosphorus; AK, soil available potassium; SAB, shrubs aboveground biomass; SWC, soil water content; LP, litter production; TK_{litter}, litter total potassium.

Table S6 Marginal and conditional effects of soil microbial functional groups on soil enzyme activity and soil microbial carbon source utilization ability obtained from the summary of forward selection in Redundancy analysis (RDA)

Season	Factors	Marginal effects			Conditional effects		
		Explains %	*F*	*p*	Explains %	*F*	*p*
Dry-cool season	AMF	21.8	3.6	**0.004**	21.8	3.6	**0.008**
	GP	17.0	2.7	**0.030**	21.3	4.5	**0.006**
	Actinobacteria	20.1	3.3	**0.014**	6.3	1.4	0.202
	Bacteria	17.6	2.8	**0.042**	5.8	1.3	0.232
	Fungus	18.9	3.0	**0.022**	1.9	0.4	0.870
Wet-warm season	GP	44.7	10.5	**0.002**	44.7	10.5	**0.004**
	Bacteria	43.2	9.9	**0.006**	15.8	4.8	**0.004**
	GN	24.4	4.2	**0.024**	8.8	3.2	**0.016**
	Actinobacteria	24.9	4.3	**0.028**	2.6	0.9	0.460

AMF, arbuscular mycorrhizal fungi; GP, gram-positive bacteria; GN, gram negative bacteria.