

Straw mulching has an enduring positive effect on soil CO₂ emissions in a humid plantation

Quan LI^{1,*}, Jiarui FU^{1,*}, Jiahui ZENG¹, Chao ZHANG¹, Changhui PENG^{2,3}, Lei DENG⁴, Tingting CAO¹, Man SHI¹, Zhikang WANG¹, Junbo ZHANG¹, Weifeng ZHANG⁵, Yi ZHANG⁵, Xinzhang SONG¹ (✉)

1 State Key Laboratory of Subtropical Silviculture, Zhejiang A&F University, Hangzhou 311300, China.

2 Institute of Environment Sciences, Department of Biology Sciences, University of Quebec at Montreal, Montreal H3C3P8, Canada.

3 School of Geographic Sciences, Hunan Normal University, Changsha 410000, China.

4 State Key Laboratory of Soil Erosion and Dryland Farming on the Loess Plateau, Northwest A&F University, Yangling 712100, China.

5 China Forestry JiaRun Materials Industry Co., Ltd., Hangzhou 310016, China.

*These authors contributed equally to the work.

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Correspondence: songxinzhang@gmail.com

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SUPPLEMENTARY MATERIALS

Table S1 Details of primers and thermal cycling conditions for qPCR

Target group	Primer name	Sequence (5'–3')	Thermal profile for real-time PCR
16S	515F	5'-GTGYCAGCMGCCGCGGTAA-3'	95 °C for 30 s × 1 cycle; 95 °C for 5 s,
	806R	5'-GGACTACNVGGGTWTCTAAT-3'	54 °C for 30 s, 72 °C for 30 s × 40 cycles
ITS	ITS3-2024F	5'-GCATCGATGAAGAACGCAGC-3'	95 °C for 30 s × 1 cycle; 95 °C for 5 s,
	ITS4-2409R	5'-TCCTCCGCTTATTGATATGC-3'	55 °C for 30 s, 72 °C for 30 s × 40 cycles

Table S2 Repeated two-way ANOVA indicating the effects of mulching practices, mulching duration, and their combined interactions on soil respiration, soil physicochemical and microbial properties

Factor	Mulchling		Duration		Interaction	
	<i>F</i>	<i>P</i>	<i>F</i>	<i>P</i>	<i>F</i>	<i>P</i>
Rs	501.324	< 0.001	509.8	<0.001	134.33	<0.001
ST	896.408	< 0.001	106.09	<0.001	106.894	<0.001
SWC	9.783	< 0.01	7.272	<0.01	11.185	<0.01
SOC	261.165	< 0.001	423.344	<0.001	76.484	<0.001
TN	239.67	< 0.001	204.044	<0.001	62.433	<0.001
TP	1.422	0.256	609.867	<0.001	39.022	<0.001
C/N	0.006	0.94	35.379	<0.001	0.197	0.824
DOC	55.647	< 0.001	238.87	<0.001	21.725	<0.001
AN	195.044	< 0.001	232.747	<0.001	6.769	<0.05
AP	1.428	0.255	1926.764	<0.001	91.45	<0.001
MBC	202.1	< 0.001	30.528	<0.001	34.541	<0.001
MBN	24.44	0.591	66.385	<0.001	1.657	0.231
MBC/MBN	24.42	< 0.05	74.868	0.235	3.862	0.051
FU	397.3	< 0.001	3.746	<0.001	1.676	0.228
BA	47864	< 0.05	4.159	<0.05	13.948	<0.01
F/B	17.28	< 0.01	19.000	<0.001	9.571	<0.01

Note: Rs, soil respiration; SOC, soil organic carbon; TN, total nitrogen; TP, total phosphorus; C/N, SOC to TN ratio; DOC, dissolved organic carbon; AN, available nitrogen; AP, available phosphorus; MBC, microbial biomass carbon; MBN, microbial biomass nitrogen; MBC/MBN, MBC to MBN ratio; FU, fungal gene abundance; BA, bacterial gene abundance; and F/B, fungal gene abundance to bacterial gene abundance ratio.

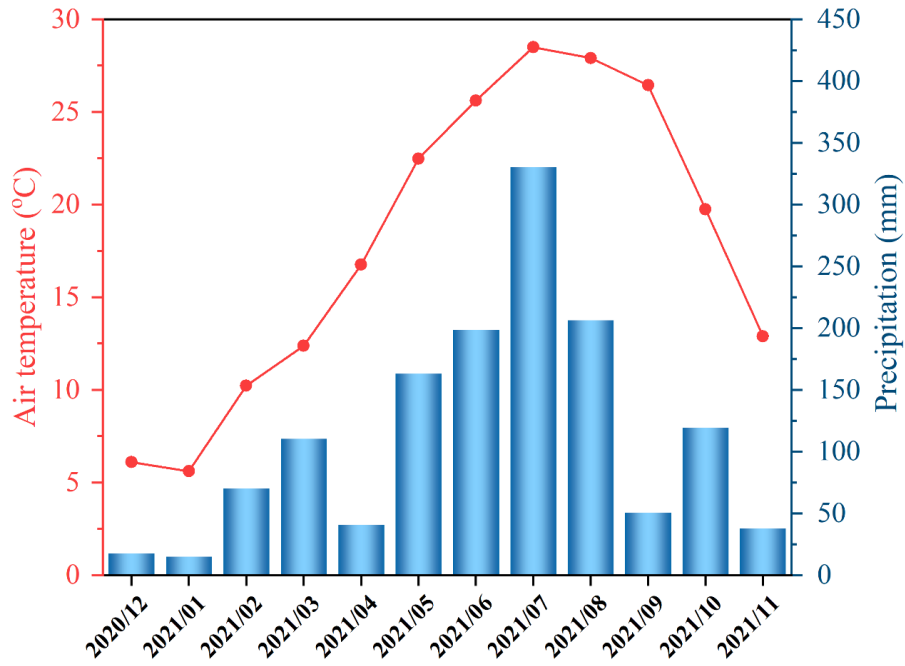


Fig. S1 The average monthly air temperature and monthly precipitation of the research site from December 2020 to November 2021.

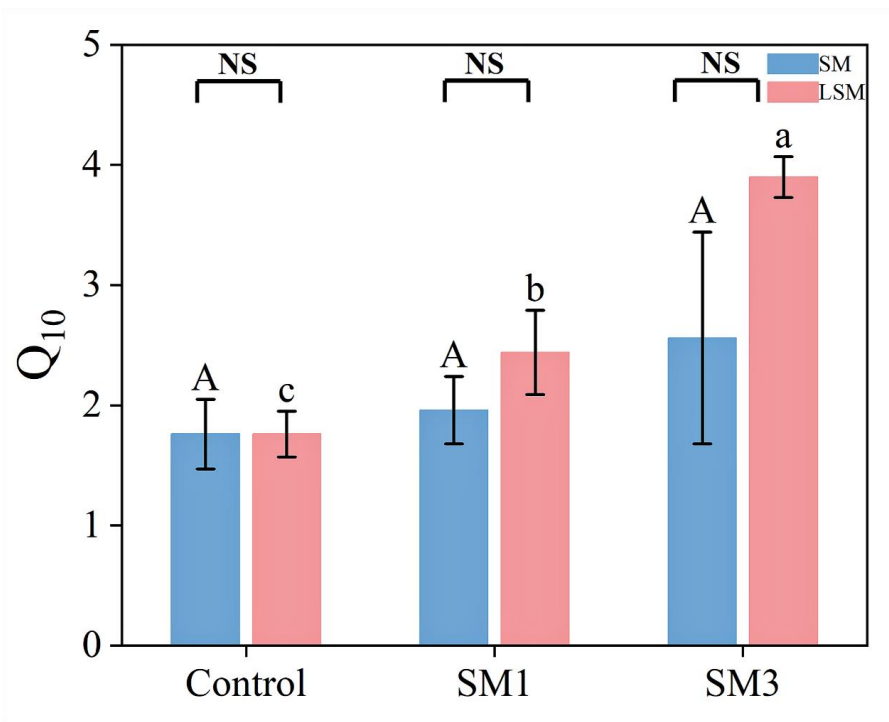


Fig. S2 Effect of straw mulching on the Q_{10} value during the initial mulching and legacy periods in the Moso bamboo plantation. Capital letters represent significant differences between various straw mulching treatments during the initial straw mulching period ($P < 0.05$). Lowercase letters represent significant differences between various straw mulching treatments during the straw mulching legacy period. Asterisks represent significant differences between the initial straw mulching period and the legacy period under the same straw mulching treatment (NS, not significant; *, $P < 0.05$; **, $P < 0.01$; ***, $P < 0.001$).