Table S1 Selected properties of the soils derived from different parents of the Hunan province, China.

Physicochemical properties	Parent material	Woodland	Paddy
pH (H_2O)	GR	4.82±0.29cdB	5.61±0.48eA
	PS	4.56±0.37dB	5.94±0.44deA
	QRC	4.82±0.17cdB	6.40±0.48cdA
	LS	5.36±0.25bcB	7.28±0.46abA
	PSS	5.75±1.22bA	6.77±0.76bcA
	FLD	7.51±0.45aA	7.66±0.51aA
	M±S	5.47±1.14B	6.61±0.87A
BD (g m^{-3})	GR	1.36±0.07aA	1.12±0.31aA
	PS	1.34±0.25aA	1.15±0.28aA
	QRC	1.43±0.14aA	1.05±0.28aA
	LS	1.44±0.27aA	1.02±0.23aB
	PSS	1.52±0.16aA	1.16±0.36aA
	FLD	1.39±0.11aA	1.15±0.25aA
	M±S	1.41±0.18A	1.11±0.27B
Sand (%)	GR	47.36±14.14aA	61.27±11.78aA
	PS	32.19±14.36abA	30.56±6.16bcA
	QRC	20.30±10.02bcA	26.66±12.18bcB
	LS	8.26±5.09cA	10.24±3.71dB
	PSS	28.59±16.82bA	35.59±20.46bA
	FLD	10.69±0.72cA	17.3±7.95cdA
	M±S	24.56±17.24A	30.27±19.60A
Silt (%)	GR	21.89±4.25cA	22.58±9.61dA
	PS	36.34±7.26bA	46.23±6.57bcA
	QRC	31.94±11.85bcA	45.49±12.95bcA
	LS	34.3±15.2bcB	63.34±3.26aA
	PSS	39.52±14.18bA	44.12±19.33cA
	FLD	64.39±0.79aA	59.54±3.87abA
	M±S	38.06±16.22B	46.88±16.57A
Clay (%)	GR	30.76±11.17bA	16.15±5.69cB
	PS	31.47±12.97bA	23.21±3.30abA
	QRC	45.76±4.03aA	27.85±4.21aB
	LS	57.44±16.53aA	26.43±3.53abB
	PSS	31.90±17.32bA	20.29±3.85aA
	FLD	24.92±1.39bA	23.16±7.19aA
	M±S	37.37±5.89A	22.85±15.99B
SOC (g kg^{-1})	GR	6.13±1.73abA	8.60±3.0bA
	PS	7.85±4.21abA	9.96±5.42abA

	QRC	5.36±2.44abB	8.64±2.01bA
	LS	5.07±1.21aB	14.03±4.69aA
	PSS	6.01±3.72abA	7.31±3.38bA
	FLD	8.56±0.27aA	9.23±3.02abA
	M±S	6.50±2.74B	9.63±4.05A

BD, bulk density, SOC, soil organic carbon, M±S, mean ± standard deviation, lowercase letters represent significant difference($p < 0.05$) between different parent materials, capital letters represent significant differences($p < 0.05$) between woodland and paddy soils. GR, Granite; PS, plate shale, QRC, quaternary red clays; LS, limestone; PSS, purple sandy shale; FLD, fluvial-lacustrine deposit.

Table S2 Estimated Fe/C loss from soil (0–100 cm) due to the conversion of woodland to paddy in subtropical China.

Land-use types	Area (kha)	Current average (g kg^{-1})				
		SOC	Fe_t	Fe_c	Fe_{Si}	Fe_o
Woodland	20,495	6.7	39.4	24.8	12.7	2.0
Paddy		9.9	29.7	14.1	11.9	3.7
Loss of Fe/C in the scenario of land-use conversion (Tg)		694.4	-2872.8	-2929.1	-335.1	389.0

[a] Current Fe/SOC content in paddy and woodland was calculated based on the average values.

[b] Data of area for each climatic zone were collected from the references of Mei et al. (1988).

[c] Loss of total SOC/Fe, Fe_c, Fe_{Si} and Fe_o from soil (0–100 cm) in subtropical area were calculated according to the equation:

$$T_{loss} = A_{paddy} \times BD_{paddy} - A_{woodland} \times BD_{woodland} \times 100 \times S / 10^4$$

Where T_{loss} represents the loss of total C/Fe, or Fe_c, Fe_{Si} and Fe_o from soil(0–100 cm) in the scenario of paddy converted to woodland (Tg; 1Tg = 10^{12}g); A_{paddy} and $A_{woodland\ (upland)}$ are average contents of total C/Fe, or Fe_c, Fe_{Si} and Fe_o in current paddy and woodland, respectively (g kg^{-1}); BD_{paddy} and $BD_{woodland}$ represent soil bulk density in paddy (1.20 g cm^{-3}) and woodland (1.26 g cm^{-3}), respectively, which are calculated based on the relationships between soil bulk density and SOC, that is, equation I from Wu et al. (2003); 100 is soil depth (cm); S is the area of paddy in subtropical area (kha); 10^4 is used for unit conversion. Positive data represent Fe/C loss, whereas negative data indicate Fe/C accumulation.