

**Table S1** Soil properties of different soil profiles for different land use types.

Item	Depth <sup>a</sup>	SU <sup>b</sup>	SP <sup>b</sup>	RF <sup>b</sup>	FL <sup>b</sup>
Bulk density (g cm <sup>-3</sup> )	0–20	1.34 (0.03)	1.34 (0.04)	1.43 (0.04)	1.44 (0.04)
	20–40	1.46 (0.10)	1.63 (0.03)	1.42 (0.03)	1.55 (0.02)
	40–60	1.64 (0.07)	1.61 (0.06)	1.44 (0.06)	1.45 (0.01)
Clay content (< 0.002mm)	0–20	0.21 (0.01)	0.20 (0.02)	0.17 (0.02)	0.23 (0.02)
	20–40	0.24 (0.02)	0.18 (0.02)	0.18 (0.02)	0.15 (0.01)
	40–60	0.17 (0.01)	0.14 (0.01)	0.20 (0.01)	0.24 (0.02)
Field capacity (cm <sup>3</sup> cm <sup>-3</sup> )	0–20	0.31 (0.02)	0.29 (0.01)	0.30 (0.01)	0.32 (0.03)
	20–40	0.33 (0.02)	0.26 (0.01)	0.31 (0.01)	0.26 (0.01)
	40–60	0.32 (0.02)	0.25 (0.01)	0.30 (0.01)	0.34 (0.02)
Wilting point (cm <sup>3</sup> cm <sup>-3</sup> )	0–20	0.13 (0.01)	0.13 (0.01)	0.12 (0.01)	0.15 (0.02)
	20–40	0.15 (0.02)	0.11 (0.003)	0.12 (0.004)	0.10 (0.01)
	40–60	0.11 (0.08)	0.09 (0.004)	0.11 (0.01)	0.15 (0.01)
Saturated hydraulic conductivity (mm h <sup>-1</sup> )	0–20	16.8	9.6	9.6	19.9
	20–40	16.8	7.2	7.2	8.8
	40–60	16.8	1.5	1.5	8.8
pH	0–20	8.1 (0.2)	8.2 (0.2)	8.2 (0.2)	8.1 (0.1)
	20–40	8.1 (0.1)	8.1 (0.2)	8.1 (0.2)	8.2 (0.1)
	40–60	8.2 (0.2)	8.3 (0.2)	8.3 (0.2)	8.3 (0.1)
SOC <sup>c</sup> (g C kg <sup>-1</sup> )	0–20	8.5 (1.2)	8.1 (1.3)	11.6 (1.9)	11.3 (0.7)
	20–40	5.2 (0.2)	2.3 (0.5)	11.6 (2.5)	4.1 (0.6)
	40–60	2.3 (0.04)	2.9 (1.3)	11.0 (2.2)	5.8 (0.5)
STN <sup>c</sup> (g N kg <sup>-1</sup> )	0–20	0.46	0.81	1.16	1.14
	20–40	0.52	0.23	1.16	1.14
	40–60	0.23	0.29	1.1	0.58
STP <sup>c</sup> (g P kg <sup>-1</sup> )	0–20	0.12	0.2	0.29	0.28
	20–40	0.13	0.58	0.29	0.1
	40–60	0.06	0.07	0.28	0.14

<sup>a</sup> Depth represents the depth of the soil profile (cm).

<sup>b</sup> The land use types are the sloping cultivated upland (SU) with the summer maize–winter wheat rotation, seasonally waterlogged paddy (SP) with the paddy rice–winter wheat rotation or paddy rice–rape rotation, the winter-flooding paddy with the paddy rice flooding–fallow regime (RF) and forest land (FL). The values in parentheses indicate the standard error of three replicates.

<sup>c</sup> SOC, STN and STP are the abbreviations of soil organic carbon content and soil total nitrogen and phosphorus contents, respectively.