

Soil C:N:P stoichiometry succession and land use effect after intensive reclamation: a case study on Yangtze River flood plain

Appendix. Supplementary data

**Table S1 Species of plant/crop and number of collected samples (subsamples) at each land use over different
reclamation duration.**

Reclamation duration	Land uses*	Plant/crop species	Number of collected samples (subsamples)
0-year	Fresh sediment	No plant	10
	Grassland	Eleusine indica	10
	Woodland	Poplar	10
60-year	Woodland	Poplar	5
	Dryland	Wheat	5
160-year	Woodland	Poplar	5
	Dryland	Wheat/Rape	5
	Paddy-dryland rotation	Wheat/Rice	5
280-year	Woodland	Poplar	5
	Dryland	Wheat/Rape	5
	Paddy-dryland rotation	Wheat/Rice	5
2000-year	Dryland	Wheat/Rape	5

3000-year	Paddy-dryland	Wheat/Rice	5
	rotation		
3000-year	Dryland	Wheat/Rape	5
	Paddy-dryland	Wheat/Rice	5
	rotation		

Note: “*”, Only the primary land uses in each reclamation stage were selected for sampling.

Table S2 Basic descriptive statistics for soil physical and chemical properties in the study area.

Variables	Mean	Min	Max	S.D.	C.V. (%)	Skewness	Kurtosis	K-S
OC (g kg ⁻¹)	16.1	8.9	28.8	4.1	25.6	0.52	-0.004	N
TN (g kg ⁻¹)	1.45	0.55	2.36	0.38	26.1	-0.13	-0.19	N
TP (g kg ⁻¹)	0.85	0.62	1.39	0.16	19.2	0.92	0.51	N*
C/N	11.4	5.92	19.6	2.22	19.5	0.97	2.21	N*
C/P	19.5	8.8	34.6	5.8	29.8	0.39	-0.28	N
N/P	1.74	0.83	2.92	0.5	28.9	0.05	-0.56	N
pH	7.47	5.42	8.41	0.67	9.01	-1.51	1.88	-
EC (μs cm ⁻¹)	126	29.3	331	64.9	51.4	1.08	1.03	N*
Moisture (%)	23.1	10.1	37.1	6.17	26.8	0.38	-0.74	N*
Clay (%)	24.3	7.92	44.2	7.83	32.3	-0.12	-0.66	N
Silt (%)	40	8.6	55.4	8.97	22.4	-1.14	1.39	-
Sand (%)	35.7	13.9	83.5	15.2	42.7	1.1	0.58	N*
Chemoheterotrophy (%)	29.6	18.6	38.6	6.3	21.3	-0.81	-0.02	N*
Nitrogen fixation (%)	6.25	3.5	10.1	2.13	34.1	0.32	-0.9	N
Cellulolysis (%)	1.51	0.2	2.87	0.91	60.3	-0.16	-1.41	N*
Fe ₂ O ₃ (g kg ⁻¹)	58.8	38.5	81.4	9.43	16	0.06	-0.15	N*
CaO (g kg ⁻¹)	17.5	9.19	30	5.69	32.5	0.44	-0.97	N
Al ₂ O ₃ (g kg ⁻¹)	142	102	183	16.9	11.9	-0.16	-0.23	N*

Note: OC, organic carbon; TN, total nitrogen; TP, total phosphorus; EC, electrical conductivity; S.D., standard deviation; C.V., coefficient of variation; K-S, the Kolmogorov-Smirnov normal distribution test; “N” represents normal distribution; the superscript “*” represents log-normal distribution; “-” represents non-normal distribution.

Table S3 Two-way ANOVA for effects of reclamation duration and land use on soil properties.

Index	RD		LU		RD*LU	
	F	P	F	P	F	P
OC	7.90	0.000	11.2	0.000	3.60	0.006
TN	3.88	0.004	17.3	0.000	2.60	0.033
TP	3.08	0.014	3.99	0.006	0.92	0.470
C/N	0.79	0.558	2.38	0.059	0.97	0.440
C/P	8.12	0.000	6.48	0.000	3.28	0.010
N/P	7.29	0.000	16.1	0.000	4.52	0.001
pH	19.7	0.000	4.21	0.004	2.57	0.034
EC	8.79	0.000	29.1	0.000	1.42	0.226
Moisture	3.30	0.010	32.0	0.000	4.45	0.001
Clay	21.9	0.000	8.63	0.000	2.59	0.033
Silt	25.0	0.000	4.39	0.003	0.86	0.515
Sand	26.1	0.000	5.78	0.000	1.69	0.148
Chemoheterotrophy	7.10	0.000	2.24	0.074	0.96	0.448
Nitrogen fixation	0.41	0.841	0.50	0.74	0.06	0.990
Cellulolysis	5.35	0.000	13.1	0.000	0.10	0.990
CaO	8.38	0.000	3.43	0.013	1.37	0.246
Al ₂ O ₃	2.89	0.020	2.62	0.042	0.75	0.590
Fe ₂ O ₃	1.78	0.129	3.81	0.007	0.49	0.784

Note: EC, electrical conductivity; RD, reclamation duration; LU, land use; “×” represents the interaction between the former and later factors.

Table S4 Examination results by Variance Inflation Factor (VIF).

Factors*	VIF	Factors**	VIF
Year	2.59	Year	2.39
pH	2.80	pH	2.61
EC	2.71	EC	2.51
clay	4013852	clay	2.86
silt	4747572	silt	2.46
sand	14449497	Nitrogen fixation	2.23
Chemoheterotrophy	75.95	Cellulolysis	3.15
Nitrogen fixation	18.74	Fe ₂ O ₃	1.80
Cellulolysis	20.34	CaO	5.25
Al ₂ O ₃	141.55	-	
Fe ₂ O ₃	2.19	-	
CaO	6.29	-	

Superscript * represent environmental factors before screening, while ** represent the factors screened by VIF examination; Year, reclamation year; EC, electrical conductivity.

Table S5 CaCO₃ contents (g/kg) along the reclamation chronosequence, in different land uses.

	Fresh sediment	Grassland	Woodland	Dryland	Paddy-dryland rotation
0-year	6.22	4.36	5.89		
60-year			1.98	2.40	
160-year			2.91	1.55	1.39
280-year			0.61	1.15	2.31
2000-year				0.01	0.13
3000-year				0.02	0.03

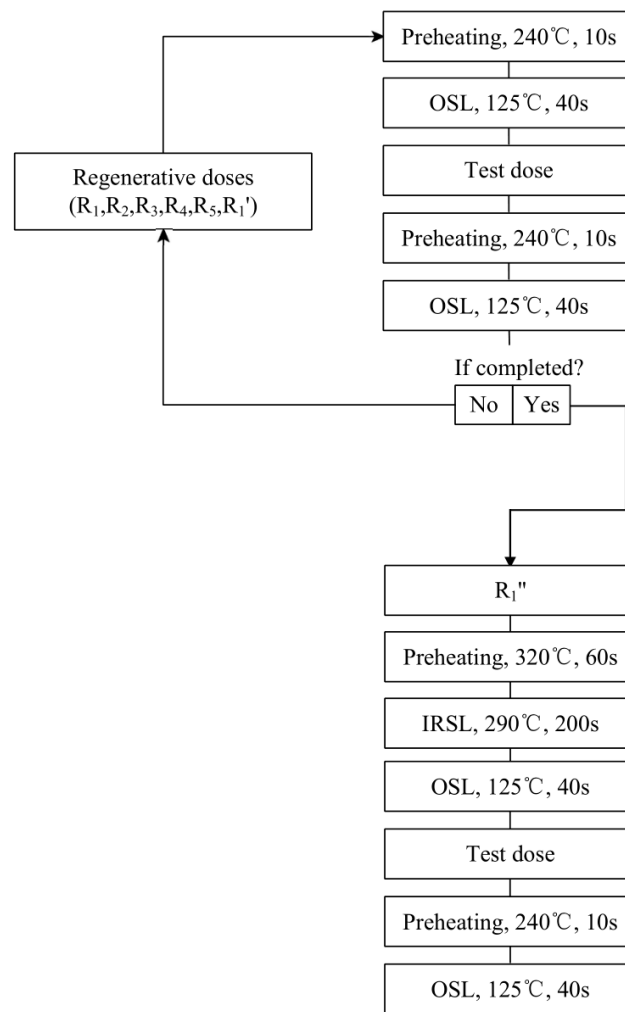


Figure S1 the Optically Stimulated Luminescence (OSL) dating procedure. OSL, Optically Stimulated Luminescence; IRSL, Infrared Stimulated Luminescence.

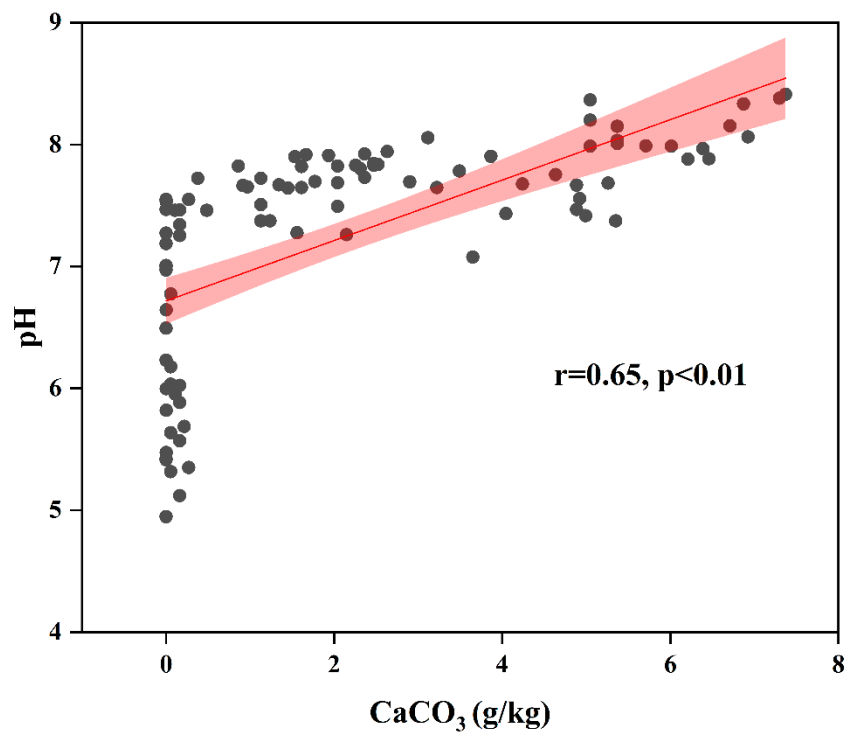


Figure S2 the linear correlation between soil CaCO_3 and pH.