

The supplementary material for the article entitled as
“Changes in the soil C and N contents, C decomposition and
N mineralization potentials in a rice paddy after long-term
application of inorganic fertilizers and organic matter”
(doi.org/10.1080/00380768.2016.1155169, Cheng et al.,
2016)

Table S1. The best parameters obtained from the anaerobic incubation experiment at 30 °C 8 weeks for measuring the C decomposition potential (Co) and N mineralization potential (No) for the soil samples from different long-term inorganic fertilizer and organic matter treatments at 5 cm soil depth increments. The curves were modeled by first-order model as [C (or N) = Co (or No) × (1-exp(- k × t)].

0-5 cm			C decomposition			N mineralization				
Treatments	Co (g C kg ⁻¹)	$k_c^†$ (wk ⁻¹)	R^2	No (g N kg ⁻¹)	$k_n^†$ (wk ⁻¹)	R^2	Co/No	k_c/k_n		
PK	0.649	0.434	0.996	0.137	0.397	0.988	4.74	1.09		
NPK	0.663	0.390	0.979	0.126	0.488	0.974	5.26	0.80		
RS	0.813	0.452	0.970	0.162	0.665	0.987	5.02	0.68		
CM1	0.819	0.485	0.986	0.162	0.723	0.968	5.05	0.67		
CM3	0.815	0.520	0.987	0.184	0.569	0.963	4.43	0.91		
5-10 cm			C decomposition			N mineralization				
Treatments	Co (g C kg ⁻¹)	$k_c^†$ (wk ⁻¹)	R^2	No (g N kg ⁻¹)	$k_n^†$ (wk ⁻¹)	R^2	Co/No	k_c/k_n		
PK	0.426	0.543	0.990	0.118	0.283	0.975	3.61	1.92		
NPK	0.543	0.437	0.985	0.113	0.404	0.991	4.80	1.08		
RS	0.648	0.572	0.984	0.139	0.601	0.988	4.66	0.95		
CM1	0.540	0.693	0.966	0.129	0.795	0.965	4.19	0.87		
CM3	0.636	0.503	0.984	0.162	0.645	0.974	3.92	0.78		
10-15 cm			C decomposition			N mineralization				
Treatments	Co (g C kg ⁻¹)	$k_c^†$ (wk ⁻¹)	R^2	No (g N kg ⁻¹)	$k_n^†$ (wk ⁻¹)	R^2	Co/No	k_c/k_n		
PK	0.401	0.514	0.993	0.11	0.318	0.989	3.65	1.62		
NPK	0.456	0.513	0.980	0.102	0.437	0.987	4.47	1.17		
RS	0.602	0.596	0.980	0.143	0.611	0.985	4.21	0.98		
CM1	0.484	0.861	0.971	0.126	0.840	0.972	3.84	1.02		
CM3	0.668	0.429	0.986	0.162	0.604	0.960	4.12	0.71		
15-20 cm			C decomposition			N mineralization				
Treatments	Co (g C kg ⁻¹)	$k_c^†$ (wk ⁻¹)	R^2	No (g N kg ⁻¹)	$k_n^†$ (wk ⁻¹)	R^2	Co/No	k_c/k_n		
PK	0.341	0.637	0.995	0.082	0.357	0.976	4.16	1.78		
NPK	0.297	0.531	0.988	0.084	0.387	0.977	3.54	1.37		
RS	0.556	0.331	0.997	0.118	0.620	0.980	4.71	0.53		
CM1	0.385	0.448	1.000	0.101	0.680	0.983	3.81	0.66		
CM3	0.637	0.295	0.988	0.139	0.718	0.981	4.58	0.41		
20-25 cm			C decomposition			N mineralization				
Treatments	Co (g C kg ⁻¹)	$k_c^†$ (wk ⁻¹)	R^2	No (g N kg ⁻¹)	$k_n^†$ (wk ⁻¹)	R^2	Co/No	k_c/k_n		
PK	0.311	0.658	0.981	0.067	0.340	0.961	4.64	1.93		
NPK	0.264	0.376	0.977	0.059	0.399	0.951	4.47	0.94		
RS	0.384	1.434	0.980	0.086	0.919	0.955	4.46	1.56		
CM1	0.314	0.764	0.997	0.071	0.770	0.960	4.42	0.99		
CM3	0.437	0.951	0.987	0.107	0.545	0.961	4.09	1.75		

[†] k_c and k_n are the rate constants for the first-order reaction models for C decomposition and N mineralization.

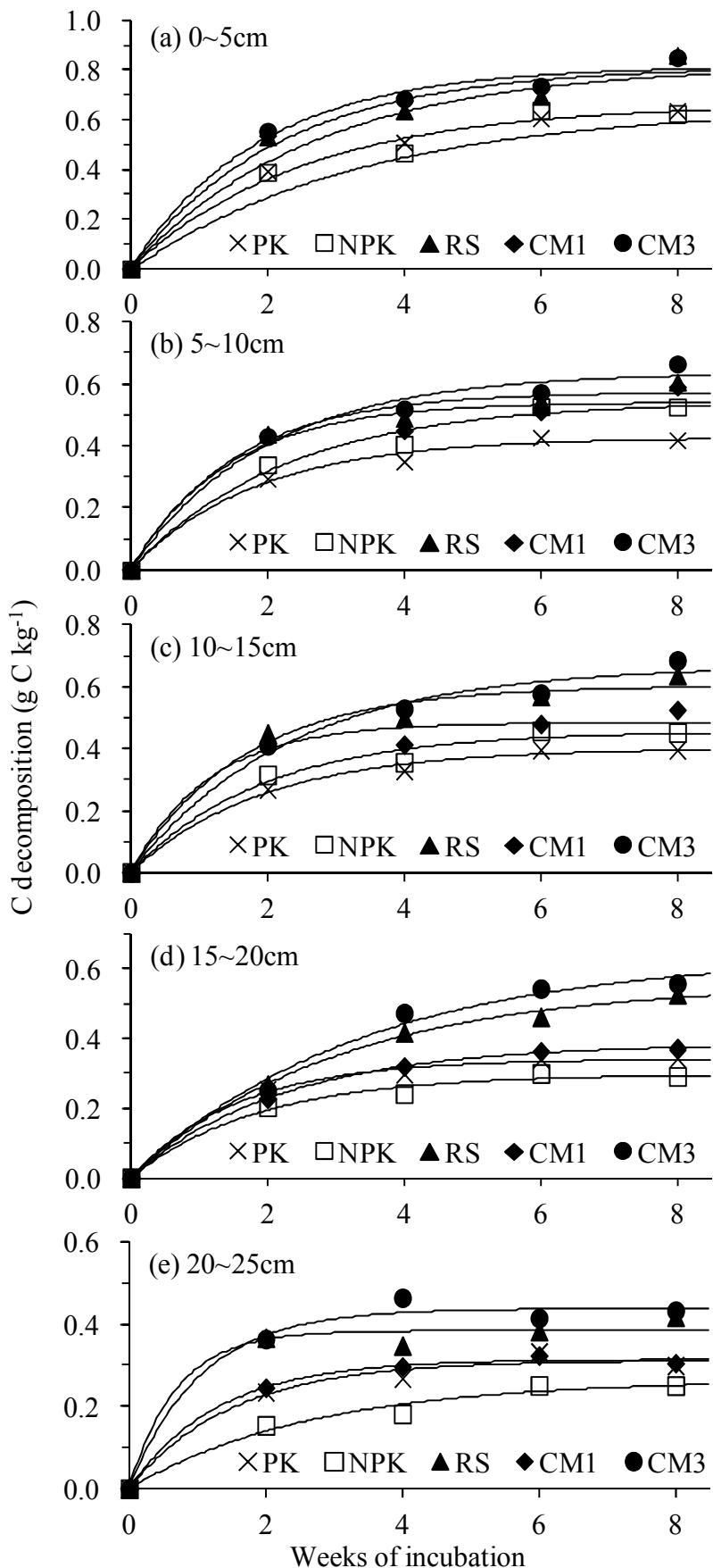


Figure S1. The changes in the soil C decompositions from different long-term inorganic fertilizer and organic matter treatments at 5 cm soil depth increments, under anaerobic incubation at 30 °C for 8 weeks. The curves were modeled by $[C = Co \times (1 - \exp(-k \times t))]$.

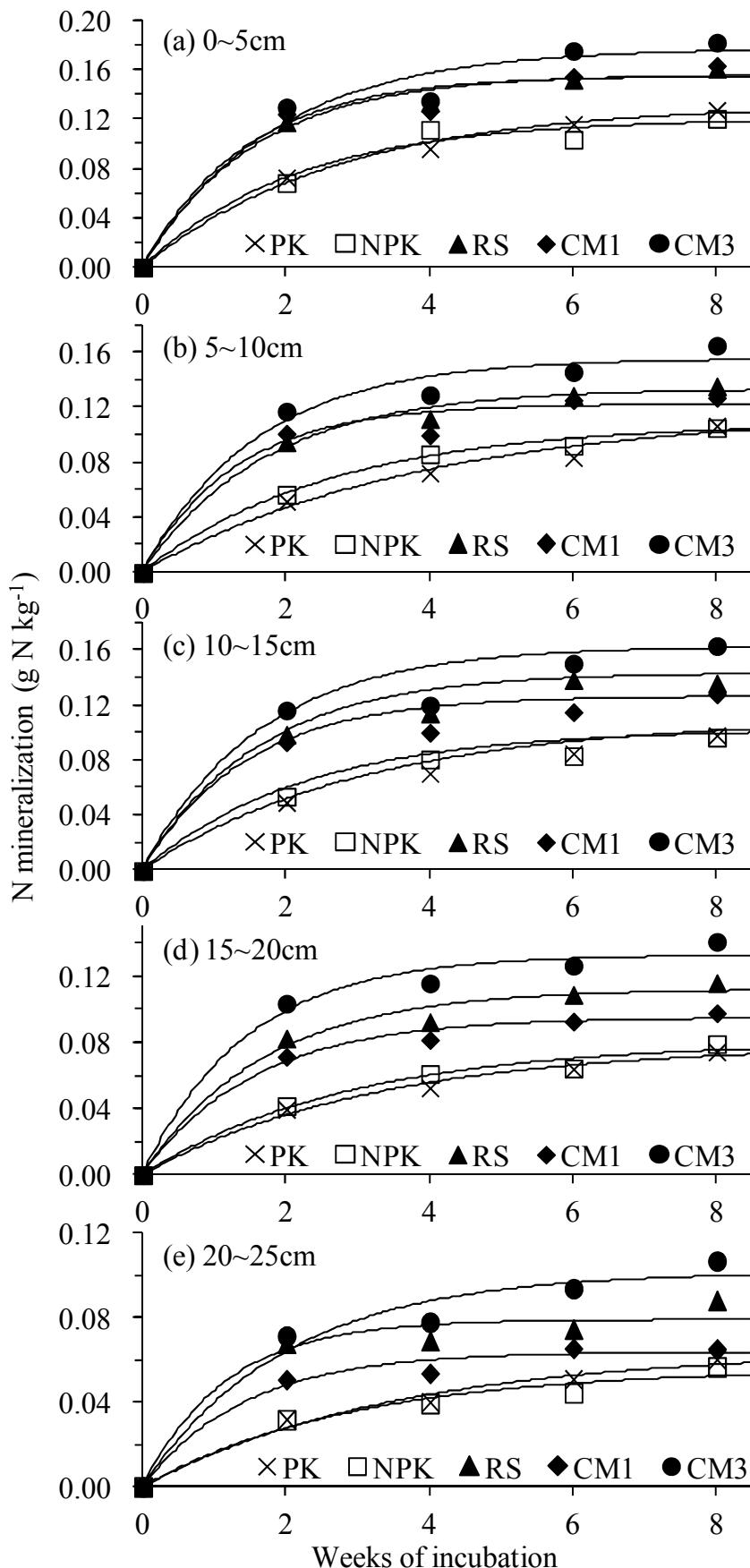


Figure S2. The changes in the soil N mineralization from different long-term inorganic fertilizer and organic matter treatments at 5 cm soil depth increments, under anaerobic incubation at 30 °C for 8 weeks. The curves were modeled by $[N = No \times (1 - \exp(-k \times t))]$.

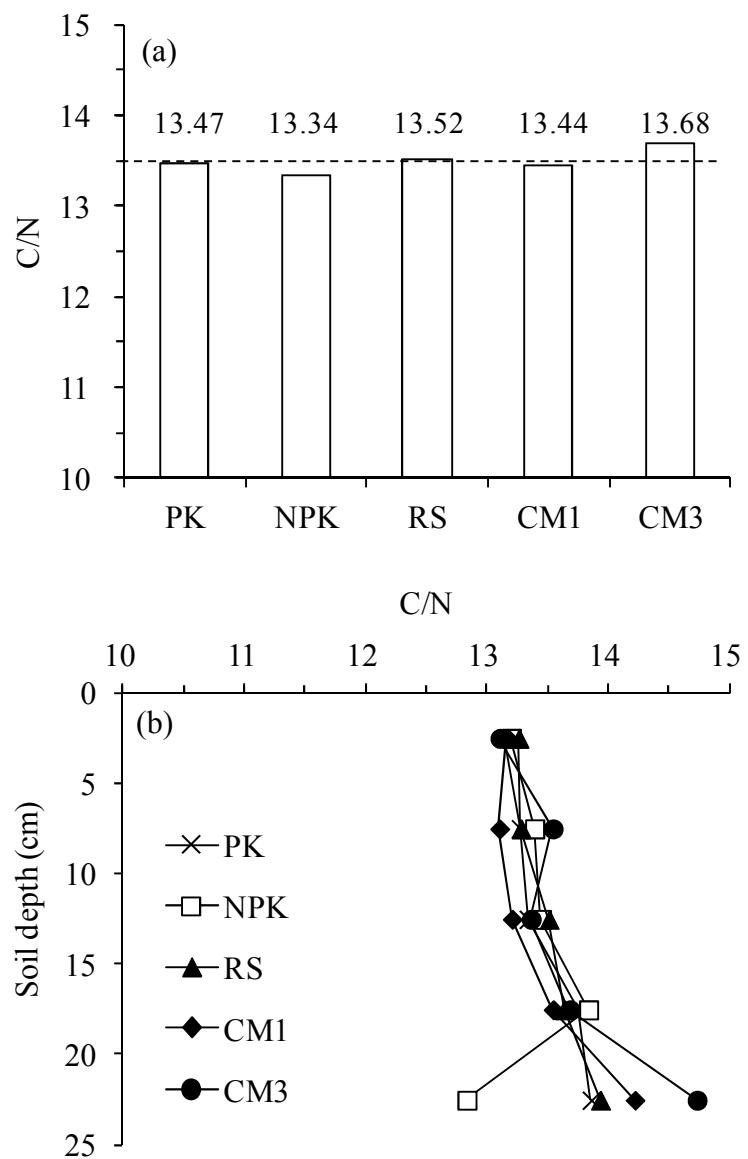


Figure S3. Long-term effects of inorganic fertilizer and organic matter treatments on C/N ratio at the 0-25 cm soil depth (a) and at 5 cm soil depth increments (b). The data were also shown in the top of bars for each treatments (a).