

Supplementary Materials

Higher Biochar Rate Can Be Efficient in Reducing Nitrogen Mineralization and Nitrification in The Excessive Compost-Fertilized Soils

Chen-Chi Tsai*, Yu-Fang Chang

Department of Forestry and Natural Resources, National Ilan University, Ilan

26047, TAIWAN, ROC

Corresponding author, E-mail: cctsai@niu.edu.tw

Figure Captions

Figure S1. The temporal change of (a) ammonium ($\text{NH}_4^+\text{-N}$) release, (b) nitrate ($\text{NO}_3^-\text{-N}$) release, (c) Total inorganic nitrogen (TIN) ($\text{NH}_4^+\text{-N} + \text{NO}_3^-\text{-N}$) release, and (d) pH for all treatments from SAO, MAI, and SAI soil during the incubation period.

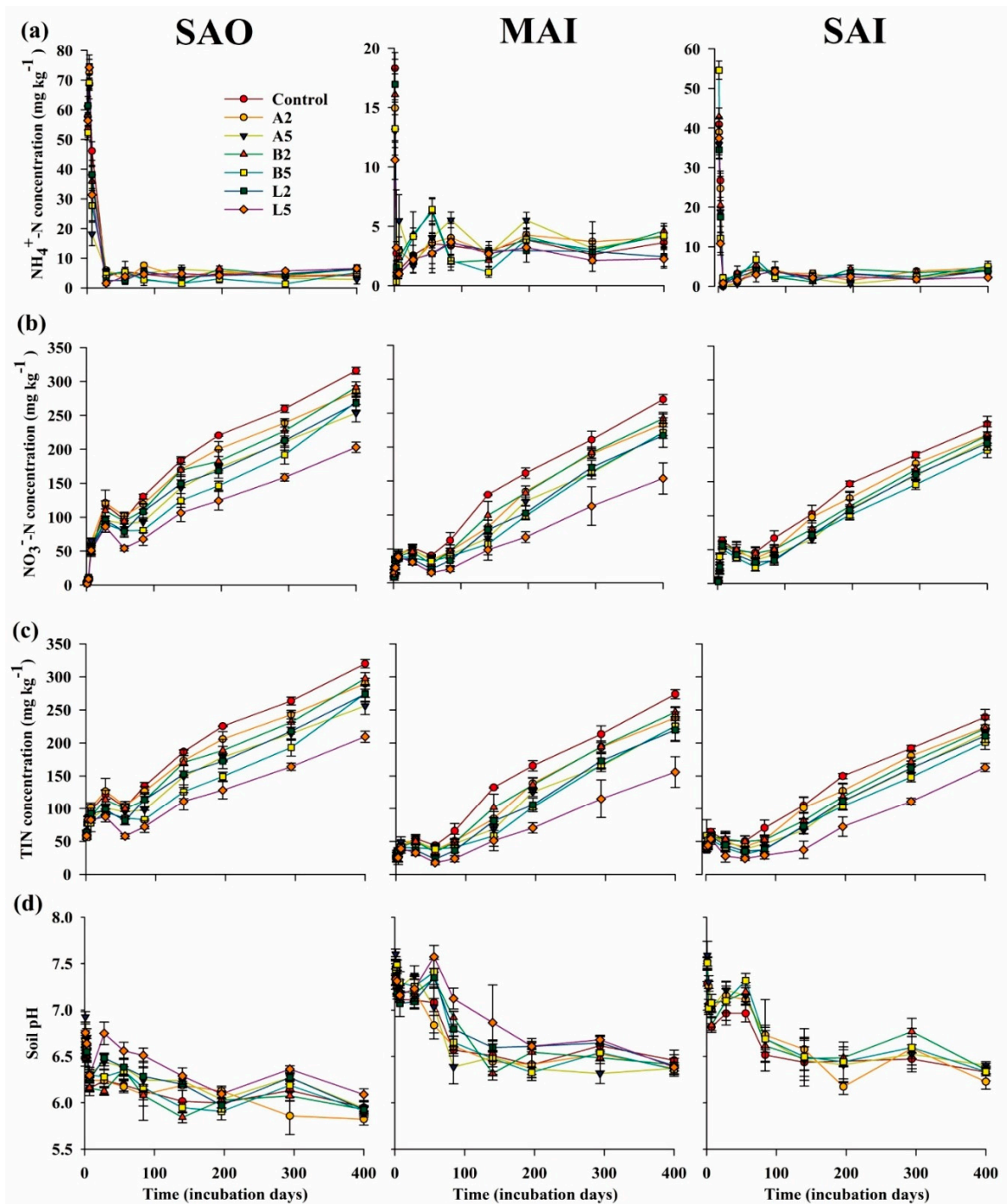


Figure S1. The temporal change of (a) ammonium ($\text{NH}_4^+\text{-N}$) release, (b) nitrate ($\text{NO}_3^-\text{-N}$) release, (c) Total inorganic nitrogen (TIN) ($\text{NH}_4^+\text{-N} + \text{NO}_3^-\text{-N}$) release, and (d) pH for all treatments from SAO, MAI, and SAI soil during the incubation period. A2 (2% ash biochar), A5 (5% ash biochar), B2 (2% bamboo biochar), B5 (5% bamboo biochar), L2 (2% lead tree biochar), L5 (5% lead tree biochar). Values represent means ($n = 5$) \pm standard deviation (error bars).

Table S1. Pearson correlation coefficients between measured parameters at 1 week and 57 weeks for all treatments.

	pH	NO ₃ -N	NH ₄ ⁺ -N	TIN ¹	CO ₂ -C	P	K	Ca	Mg	Fe	Mn	Cu	Pb	Zn	TC	TN	TP	C/N
	1 week																	
pH	1.00	0.47²	-0.77	-0.73	-0.66	0.04	0.40	0.47	0.70	0.44	0.75	-0.34	-0.31	-0.77	0.02	-0.36	-0.01	0.21
NO ₃ -N		1.00	-0.48	-0.27	-0.52	-0.11	0.38	0.15	0.56	0.42	0.46	-0.38	-0.40	-0.55	0.01	-0.44	-0.17	0.21
NH ₄ ⁺ -N			1.00	0.97	0.84	-0.34	-0.41	-0.78	-0.82	-0.42	-0.97	0.18	0.14	0.87	0.13	0.23	0.00	-0.06
TIN				1.00	0.79	-0.41	-0.35	-0.81	-0.76	-0.36	-0.94	0.10	0.05	0.81	0.14	0.13	-0.05	-0.01
CO ₂ -C					1.00	-0.15	-0.36	-0.56	-0.79	-0.45	-0.84	0.32	0.29	0.83	0.17	0.36	0.06	-0.07
P						1.00	0.09	0.81	-0.06	-0.38	0.25	0.81	0.83	0.12	0.05	0.64	0.09	-0.09
K							1.00	0.17	0.31	0.21	0.33	-0.14	-0.12	-0.34	0.58	-0.20	0.01	0.68
Ca								1.00	0.39	-0.06	0.71	0.44	0.48	-0.41	-0.10	0.29	0.04	-0.09
Mg									1.00	0.77	0.90	-0.60	-0.56	-0.93	-0.32	-0.58	-0.08	-0.07
Fe										1.00	0.57	-0.76	-0.73	-0.68	-0.21	-0.63	-0.13	0.00
Mn											1.00	-0.30	-0.25	-0.91	-0.23	-0.32	-0.05	-0.03
Cu												1.00	0.99	0.61	0.17	0.84	0.11	-0.08
Pb													1.00	0.58	0.18	0.85	0.12	-0.07
Zn														1.00	0.23	0.59	0.06	-0.05
TC															1.00	0.23	0.04	0.92
TN																1.00	0.12	-0.04
TP																	1.00	-0.02
C/N																		1.00
	57 weeks																	
pH	1.00	-0.78	-0.95	-0.85	0.05	0.33	0.42	0.53	0.96	0.60	0.95	-0.47	-0.38	-0.94	-0.28	-0.78	-0.42	-0.05
NO ₃ -N		1.00	0.79	0.99	-0.24	-0.15	-0.63	-0.34	-0.71	-0.50	-0.72	0.42	0.34	0.77	-0.29	0.53	0.42	-0.44
NH ₄ ⁺ -N			1.00	0.86	-0.18	-0.54	-0.49	-0.71	-0.85	-0.39	-0.98	0.23	0.13	0.82	0.15	0.67	0.39	-0.01
TIN				1.00	-0.24	-0.24	-0.62	-0.44	-0.77	-0.50	-0.80	0.40	0.31	0.81	-0.20	0.58	0.43	-0.36
CO ₂ -C					1.00	0.29	0.42	0.25	-0.08	-0.23	0.13	0.26	0.26	0.04	0.44	-0.01	-0.15	0.44
P						1.00	0.23	0.94	0.14	-0.46	0.60	0.65	0.72	0.00	-0.06	-0.04	-0.11	-0.17
K							1.00	0.21	0.32	0.17	0.41	-0.12	-0.09	-0.38	0.58	-0.36	-0.18	0.73
Ca								1.00	0.34	-0.30	0.76	0.48	0.57	-0.23	-0.13	-0.18	-0.23	-0.20
Mg									1.00	0.77	0.85	-0.64	-0.56	-0.96	-0.37	-0.79	-0.39	-0.13
Fe										1.00	0.36	-0.94	-0.92	-0.81	-0.26	-0.65	-0.24	0.02
Mn											1.00	-0.18	-0.07	-0.79	-0.25	-0.65	-0.40	-0.10
Cu												1.00	0.99	0.73	0.21	0.59	0.20	-0.08
Pb													1.00	0.66	0.19	0.55	0.16	-0.10
Zn														1.00	0.26	0.83	0.41	-0.02
TC															1.00	0.28	-0.01	0.90
TN																1.00	0.34	0.00
TP																	1.00	-0.07
C/N																		1.00

¹ TIN = total inorganic N (nitrate + ammonium); TC = total carbon; TN = total nitrogen; TP = total phosphorus; ² The bold number indicated the significant correlations analyzed by SAS (P < 0.0001).