

Supplementary Table S2 The results of publication bias for each group: biochar properties (BC) and composting conditions (CP)

Indica tors	Funnel plot statistics								Indica tors	Funnel plot statistics							
	Variables ^β	N ^γ	Kendall's Tau	Spearman Rank-order correlation	Fail-safe numbers ^α	5n+ 10	Existence of bias	Does bias affect the trend?		Variables ^β	N ^γ	Kendall's Tau	Spearman Rank-order correlation	Fail-safe numbers ^α	5n+10	Existence of bias	Does bias affect the trend?
CO ₂	TC _{BC}	101	0.384259	0.312353	15118	506	No	No	CH ₄	TC _{BC}	74	0.028979	0.025416	332945	371	Yes	No
	TN _{BC}	110	0.330560	0.267356	11121	551	No	No		TN _{BC}	84	0.021444	0.018491	361563	421	Yes	No
	C/N _{BC}	91	0.087864	0.066727	18199	456	No	No		C/N _{BC}	70	0.002875	0.001755	269220	351	Yes	No
	MC _{BC}	68	0.911964	0.988312	27971	341	No	No		MC _{BC}	76	0.178416	0.156830	301354	381	No	No
	pH _{BC}	95	0.289309	0.244590	19207	476	No	No		pH _{BC}	77	0.198387	0.192279	304856	386	No	No
	EC _{BC}	52	0.640732	0.670198	46470	261	No	No		EC _{BC}	47	0.913639	0.864588	94282	236	No	No
	SSA _{BC}	59	0.107522	0.124533	60185	296	No	No		SSA _{BC}	42	0.135579	0.275047	66892	211	No	No
	PS _{BC}	60	0.052724	0.053377	84173	301	No	No		PS _{BC}	42	0.008854	0.003413	154115	211	Yes	No
	FT _{BC}	136	0.532254	0.608821	39489	681	No	No		FT _{BC}	106	0.033517	0.040158	565448	531	Yes	No
	AR _{BC}	124	0.933115	0.846458	6685	621	No	No		AR _{BC}	98	0.118374	0.131348	432606	491	No	No
	C/N _{CP}	114	0.532494	0.581463	64860	571	No	No		C/N _{CP}	87	0.047681	0.053645	456525	436	Yes	No
	MC _{CP}	98	0.595517	0.667817	18343	491	No	No		MC _{CP}	84	0.081091	0.091220	324738	421	No	No
	pH _{CP}	100	0.434793	0.369430	16196	501	No	No		pH _{CP}	89	0.009030	0.010851	363966	446	Yes	No
	EC _{CP}	55	0.381695	0.335222	181	276	No	No		EC _{CP}	59	0.000225	0.000067	164171	296	Yes	No
N ₂ O	RV _{CP}	128	0.260694	0.283699	71155	641	No	No	NH ₃	RV _{CP}	98	0.030669	0.029527	531330	491	Yes	No
	VI _{CP}	135	0.440606	0.489866	55760	676	No	No		VI _{CP}	110	0.019896	0.023860	589494	551	Yes	No
	FT _{CP}	143	0.482406	0.548240	44950	716	No	No		FT _{CP}	112	0.032980	0.038116	614947	561	Yes	No
	TC _{BC}	95	0.093249	0.071152	239665	476	No	No		TC _{BC}	130	0.139925	0.113766	284600	651	No	No
	TN _{BC}	108	0.029730	0.022279	303866	541	Yes	No		TN _{BC}	140	0.042572	0.029967	640403	701	Yes	No
	C/N _{BC}	87	0.139999	0.115783	166612	436	No	No		C/N _{BC}	121	0.079628	0.059940	543892	606	No	No
	MC _{BC}	82	0.300983	0.292909	222014	411	No	No		MC _{BC}	107	0.035053	0.025770	424535	536	Yes	No
	pH _{BC}	96	0.041883	0.024340	200806	481	Yes	No		pH _{BC}	131	0.140581	0.125294	643868	656	No	No
	EC _{BC}	51	0.936453	0.962622	69817	256	No	No		EC _{BC}	76	0.020320	0.013961	86647	381	Yes	No
	SSA _{BC}	61	0.655927	0.757569	240772	306	No	No		SSA _{BC}	91	0.509698	0.523499	446379	456	No	No

PS _{BC}	55	0.423612	0.552961	324696	276	No	No	PS _{BC}	67	0.417532	0.493240	271831	336	No	No
FT _{BC}	136	0.382842	0.371074	993100	681	No	No	FT _{BC}	169	0.084511	0.064675	1257894	846	No	No
AR _{BC}	134	0.325844	0.307975	951451	671	No	No	AR _{BC}	159	0.166468	0.127879	1040428	796	No	No
C/N _{CP}	114	0.645365	0.648568	882702	571	No	No	C/N _{CP}	159	0.097558	0.077364	1289109	796	No	No
MC _{CP}	109	0.384087	0.407782	782973	546	No	No	MC _{CP}	134	0.247307	0.222245	789141	671	No	No
pH _{CP}	110	0.275347	0.244137	338704	551	No	No	pH _{CP}	138	0.037418	0.029181	728063	691	Yes	No
EC _{CP}	65	0.185749	0.180378	103465	326	No	No	EC _{CP}	86	0.811099	0.819832	50544	431	No	No
RV _{CP}	131	0.211754	0.215421	1003664	656	No	No	RV _{CP}	164	0.129566	0.108638	1075365	821	No	No
VI _{CP}	141	0.333525	0.324265	1037975	706	No	No	VI _{CP}	174	0.066967	0.051798	1260446	871	No	No
FT _{CP}	142	0.264515	0.256506	1062795	711	No	No	FT _{CP}	181	0.076136	0.058843	1321502	906	No	No

^α The fail-safe N was calculated and compared against the Rosenthal criterion ($5n + 10$, where n = number of cases) only when significant publication bias was detected ($P < 0.05$ for either Kendall's Tau or Spearman Rank-Order correlation) (). The results were considered robust to publication bias when the fail-safe N exceeded this threshold value ($5n + 10$).

^β total carbon (TC), total nitrogen (TN), carbon-nitrogen ratio (C/N), moisture content (MC), electric conductivity (EC), specific surface area (SSA), particle size (PS), feedstock type (FT), application rate (AR), reactor volume (RV), ventilation instrument (VI).

^γ Number of study.