

**The pH and Available Phosphorus as Primary Drivers of Compost-Induced CO₂
Emissions from Malaysian Tropical Soil: Empirical Relationships**

Xingxing Cheng^a, Faridah Othman^a, Rosazlin Abdullah^b, Chiu Chuen Onn^{a*},

^aDepartment of Civil Engineering, Faculty of Engineering, Universiti Malaya, 50603 Kuala Lumpur, Malaysia

^bInstitute of Biological Sciences, Faculty of Science, Universiti Malaya, 50603 Kuala Lumpur, Malaysia

*Corresponding Author:

E-mail: onnchiuchuen@um.edu.my

Table S1: Model summary^b

Model	R	R ²	Adj-R ²	Standard error (S.E.)	Durbin-Watson
1	0.988 ^a	0.975	0.902	0.136	1.851

a. predictor variable: (constant), Moisture, AP, pH, EC, OM, AK

b. dependent variable: CO₂ Emission

Table S2: Analysis of Variance (ANOVA)^a.

Model	Sum of square	degree of freedom	Mean square	F	Sig.
Between groups	1.475	6	0.246	13.212	0.072 ^b
Within groups	0.037	2	0.019		
Total	1.512	8			

a. predictor variable: (constant), Moisture, AP, pH, EC, OM, AK

b. dependent variable: CO₂ Emission

Table S3: Coefficients.

Model	Unstandardized		Standardized		t	P.	Collinearity statistic	
	B	Std. Error	Beta				Tolerance	VIF ^a
1 (Constant)	-1.561	0.677			-2.304	0.148		
pH	0.727	0.116	1.331		6.278	0.024	0.274	3.653
EC	0.123	0.189	1.62		0.651	0.582	0.002	502.874
Moisture	-0.661	0.14	-1.261		-4.711	0.042	0.172	5.825
AP	5.815	3.927	1.399		1.481	0.277	0.014	72.539
AK	-1.584	2.257	-2.144		-0.702	0.556	0.001	758.997
OM	0.062	0.048	0.332		1.301	0.323	0.189	5.293

a. Variance Inflation Factor

Table S4: Compact letter display (CLD) of Tukey's HSD post hoc test for each soil physicochemical parameter under different treatments.

Treatment	Moisture	CEC	pH	EC	AP	AK	TOC	TC	OM	NH ₄ ⁺ -N	NO ₃ ⁻ -N	TN
ARC Soil	f	d	d	g	h	h	e	f	f	d	h	f
FWCS 10%	d	a	d	e	f	f	a	b	b	b	c	b
FWCS 2.5%	ef	c	c	f	g	g	d	e	e	d	e	c
GLCS 10%	c	a	e	d	c	d	a	a	a	a	a	a
GLCS 2.5%	ef	d	c	g	f	f	d	e	e	d	f	e
CDCS 10%	a	c	a	c	b	b	c	d	d	c	d	c
CDCS 2.5%	d	e	b	f	e	e	d	e	e	d	g	e
SLS 10%	b	b	c	a	a	a	b	c	c	b	b	b
SLS 2.5%	de	de	cd	b	d	c	d	e	e	d	e	d

Table footnote: Different lowercase letters within the same column indicate significant differences among treatments according to one-way ANOVA followed by Tukey's HSD post hoc test ($p < 0.05$). Treatments sharing the same letter are not significantly different.

Table S5: One-way ANOVA results for the effects of different treatments on soil physicochemical parameters.

Parameter	F-value	p-value	Significance
Moisture	228.64	<0.001	***
CEC	438.27	<0.001	***
pH	171.52	<0.001	***
EC	596.41	<0.001	***
AP	792.35	<0.001	***
AK	1246.88	<0.001	***
TOC	356.94	<0.001	***
TC	401.22	<0.001	***
OM	487.53	<0.001	***
NH ₄ ⁺ -N	132.76	<0.001	***
NO ₃ ⁻ -N	364.19	<0.001	***
TN	911.47	<0.001	***

Table footnote: *df (between groups) = 8, df (within groups) = 18 for all parameters. *** indicates $p < 0.001$. *