

**Table S1** Effect of biochar and inorganic P amendment on soil pH on different incubation intervals.

Soil Type	Incubation days/Treatments	HC15	HB15	HP15	HC25	HB25	HP25
Paddy soil	10	5.29±0.01b	7.08±0.00a	7.12±0.00a	5.29±0.02b	7.13±0.01a	7.16±0.01a
	20	5.30±0.01c	7.10±0.00b	7.14±0.00b	5.31±0.02c	7.18±0.01b	7.22±0.02a
	30	5.36±0.01c	7.28±0.02b	7.34±0.03a	5.36±0.02c	7.29±0.04b	7.30±0.00b
	40	5.37±0.02c	7.32±0.02b	7.36±0.04b	5.34±0.01c	7.38±0.02a	7.40±0.33a
	50	5.39±0.35c	7.33±0.02b	7.31±0.38b	5.36±0.38c	7.39±0.04a	7.41±0.02a
	60	5.42±0.04c	7.29±0.07b	7.39±0.00a	5.40±0.01c	7.41±0.04a	7.44±0.03a
Red soil		LC15	LB15	LP15	LC25	LB25	LP25
	10	5.16±0.01b	7.18±0.01a	7.19±0.01a	5.15±0.03b	7.15±0.02a	7.19±0.01a
	20	5.17±0.01b	7.16±0.02a	7.22±0.01a	5.20±0.01b	7.19±0.02a	7.19±0.02a
	30	5.20±0.03b	7.19±0.01a	7.22±0.01a	5.24±0.03b	7.22±0.07a	7.35±0.01a
	40	5.22±0.03b	7.25±0.07a	7.38±0.01a	5.31±0.02b	7.26±0.03a	7.35±0.03a
	50	5.30±0.12c	7.27±0.07b	7.40±0.01a	6.03±0.03c	7.28±0.03b	7.37±0.03a
	60	5.27±0.02c	7.29±0.07b	7.39±0.01b	5.95±0.04c	7.44±0.02a	7.47±0.03a

(H) Paddy soil – (L) Red soil – (15) 15°C incubation temp. (25) 25°C incubation temp. (C) Control – (B) addition of biochar – (P) inorganic P amendment

**Table S2** Effect of biochar and inorganic P amendment on soil available P on different incubation intervals.

Soil Type	Incubation days/Treatments	HC15 (mgkg <sup>-1</sup> )	HB15(mgkg <sup>-1</sup> )	HP15(mgkg <sup>-1</sup> )	HC25 (mgkg <sup>-1</sup> )	HB25(mgkg <sup>-1</sup> )	HP25(mgkg <sup>-1</sup> )
Paddy soil	10	13.41± 0.14 b	44.37± 0.93a	44.63 ±1.03a	13.33± 0.21b	46.37 ±0.93a	46.62 ±1.04a
	20	13.34 ±0.14d	55.37 ±0.93 c	61.33 ±1.77b	13.42 ±0.22d	61.33 ±1.45b	66.73± 0.93a
	30	14.78 ±0.11 c	75.43 ±1.11a	77.17 ±1.28a	14.84 ±0.07c	71.00 ±1.15b	75.33 ±0.82a
	40	14.80± 0.11 c	79.33 ±0.93b	81.87 ±0.41a	14.33 ±0.10c	77.40 ±1.15b	81.73± 0.82a
	50	13.61 ±0.14c	85.46 ±1.30b	88.23±2.06b	13.57± 0.05c	88.40±1.15b	99.07 ±1.21a
	60	13.42±0.14 d	92.67 ±2.49c	111.47 ±2.57a	13.37±0.05d	93.78 ±1.92c	100.17± 3.03b
Red soil		<b>LC15</b>	<b>LB15</b>	<b>LP15</b>	<b>LC25</b>	<b>LB25</b>	<b>LP25</b>
	10	5.41 ±0.03c	35.38 ±0.93b	35.60 ±1.03 b	5.33 ±0.02 c	38.37 ±0.93 a	38.63 ±1.03 a
	20	5.42 ±0.14 d	47.37± 0.93c	53.33±1.7b	5.34± 0.02d	53.67± 1.4b	58.73 ±0.93 a
	30	6.78 ±0.11d	67.43 ±1.10 c	69.17 ±1.28b	6.84 ±0.07d	63.00 ±1.15 b	67.33± 0.82a
	40	6.80 ± 0.10c	71.33 ±0.92 b	73.87 ±0.41 a	6.30 ±0.10c	69.40± 1.15b	73.73 ±0.82a
	50	5.61 ± 0.15c	77.47±1.29b	80.23 ±2.06b	5.57 ± 0.05c	80.40±1.15b	84.73 ±0.82 a
	60	5.42 ±0.02c	84.67±2.49b	103.47±2.57a	5.37 ±0.04c	85.78 ±1.93b	92.17 ±3.03b

(H) Paddy soil – (L) Red soil – (15) 15°C incubation temp. (25) 25°C incubation temp. (C) Control – (B) addition of biochar – (P) inorganic P amendment

**Table S3** Effect of biochar and inorganic P amendment on soil acid phosphatase activity on different incubation intervals.

Soil Type	Incubation days /Treatments	HC15( $\mu\text{gPNP g}^{-1}\text{soil h}^{-1}$ )	HB15 ( $\mu\text{gPNP g}^{-1}\text{soil h}^{-1}$ )	HP15 ( $\mu\text{gPNP g}^{-1}\text{soil h}^{-1}$ )b	HC25 ( $\mu\text{gPNP g}^{-1}\text{soil h}^{-1}$ )	HB25 ( $\mu\text{gPNP g}^{-1}\text{soil h}^{-1}$ )	HP25 ( $\mu\text{gPNP g}^{-1}\text{soil h}^{-1}$ )
Paddy soil	10	6.86 $\pm$ 0.01a	2.65 $\pm$ 0.33d	1.26 $\pm$ 0.04d	7.15 $\pm$ 0.06b	2.3 $\pm$ 0.28c	1.38 $\pm$ 0.016d
	20	7.27 $\pm$ 0.11a	2.29 $\pm$ 0.28b	1.23 $\pm$ 0.04c	7.24 $\pm$ 0.11a	1.93 $\pm$ 0.05c	1.20 $\pm$ 0.04c
	30	7.24 $\pm$ 0.11a	2.03 $\pm$ 0.08b	1.17 $\pm$ 0.04c	7.25 $\pm$ 0.11a	2.24 $\pm$ 0.28b	1.18 $\pm$ 0.04c
	40	7.22 $\pm$ 0.11a	2.21 $\pm$ 0.28b	1.15 $\pm$ 0.04c	7.23 $\pm$ 0.11a	2.02 $\pm$ 0.08b	1.16 $\pm$ 0.04c
	50	7.19 $\pm$ 0.11a	1.98 $\pm$ 0.08c	1.12 $\pm$ 0.04d	7.20 $\pm$ 0.11a	2.12 $\pm$ 0.21b	1.13 $\pm$ 0.04d
	60	7.78 $\pm$ 0.11a	1.15 $\pm$ 0.12d	1.21 $\pm$ 0.80c	6.81 $\pm$ 0.04a	2.08 $\pm$ 0.13b	1.12 $\pm$ 0.06d
Red soil		<b>LC15</b>	<b>LB15</b>	<b>LP15</b>	<b>LC25</b>	<b>LB25</b>	<b>LP25</b>
	10	7.63 $\pm$ 0.22a	1.17 $\pm$ 0.02d	1.23 $\pm$ 0.07d	6.83 $\pm$ 0.44b	2.1 $\pm$ 0.13c	1.14 $\pm$ 1.31d
	20	6.87 $\pm$ 0.01a	2.67 $\pm$ 0.33b	1.28 $\pm$ 0.04c	7.3 $\pm$ 0.11a	2.32 $\pm$ 0.28b	1.18 $\pm$ 0.05c
	30	7.26 $\pm$ 0.01a	2.64 $\pm$ 0.33c	1.25 $\pm$ 0.04c	7.29 $\pm$ 0.02a	2.28 $\pm$ 0.28b	1.22 $\pm$ 0.08c
	40	7.26 $\pm$ 0.01a	2.25 $\pm$ 0.28b	1.19 $\pm$ 0.04c	7.27 $\pm$ 0.11a	2.26 $\pm$ 0.28b	1.2 $\pm$ 0.45c
	50	7.24 $\pm$ 0.01a	2.23 $\pm$ 0.28b	1.17 $\pm$ 0.04c	7.25 $\pm$ 0.17a	2.24 $\pm$ 0.28b	1.18 $\pm$ 0.28c
	60	7.21 $\pm$ 0.01a	2.2 $\pm$ 0.28b	1.14 $\pm$ 0.05c	7.22 $\pm$ 0.11a	2.21 $\pm$ 0.28b	1.15 $\pm$ 0.28c

(H) Paddy soil – (L) Red soil – (15) 15°C incubation temp. (25) 25°C incubation temp. (C) Control – (B) addition of biochar – (P) inorganic P amendment

**Table S4** Changes in the diversity and richness indices of the soil bacterial communities in different treatments.

Treatments	Simpson	Chao1	ACE	Shannon	Treatments	Simpson	Chao1	ACE	Shannon
<b>HC15</b>	0.98±0.00b	2399.95±271.78ab	2460.10±275.99ab	9.07±0.01a	<b>LC15</b>	0.99±0.00a	1767.57±66.47cd	1900.99±62.04c	8.30±0.08d
<b>HB15</b>	0.99±0.00a	2459.48±290.87ab	2674.67±207.20a	8.97±0.29a	<b>LB15</b>	0.99±0.00a	1952.94±40.59b	2096.65±43.20b	8.63±0.03b
<b>HP15</b>	0.99±0.00a	2575.12±249.50a	2736.67±266.57a	9.09±0.046a	<b>LP15</b>	0.98±0.00b	1729.89±23.32d	1838.21±27.51d	8.17±0.10d
<b>HC25</b>	0.98±0.00b	1671.12±67.38b	1711.25±106.40b	8.26±0.087b	<b>LC25</b>	0.99±0.00a	1614.60±32.97d	1706.20±31.21d	8.47±0.02c
<b>HB25</b>	0.99±0.00a	2155.26±241.29ab	2346.62±310.90ab	8.49±0.13b	<b>LB25</b>	0.99±0.00a	2367.09±7.20a	2505.78±49.55a	8.89±0.03a
<b>HP25</b>	0.96±0.01c	2046.07±281.01ab	2176.75±330.14ab	7.81±0.20c	<b>LP25</b>	0.98±0.00b	1915.30±78.13b	2082.99±92.51b	8.10±0.13d

(H) Paddy soil – (L) Red soil – (15) 15°C incubation temp. (25) 25°C incubation temp. (C) Control – (B) addition of biochar – (P) inorganic P amendment