

Supplementary Table S1. Physical and chemical parameters with and without biochar addition. Numbers in bracket represent standard error of the means ($n = 6$). TC: total carbon; TN: total nitrogen; POXC: active carbon; MWD: mean weight diameter. Inc: incorporated; Sur: surface. The letter indicates statistical significance differences based on the Fisher's LSD test with a p -value < 0.05 . Based on Frene et al., [33].

Year	Treatments	TC (g kg ⁻¹ soil)	TN (g kg ⁻¹ soil)	POXC (mg kg ⁻¹)	pH	MWD (μ m)	C:N ratio	Soil moisture (g water g ⁻¹ soil)
0-15 cm								
2018	Control	12.34 (0.9)bc	0.81 (0.1)	516.74 (24.2)a	6.18 (0.1)	647.39 (20.6)c	15.36 (0.7)c	4.36 (1.3)
	5%-Sur	12.45 (1.2)bc	0.80 (0.1)	483.43 (39.0)b	6.22 (0.1)	683.50 (22.0)abc	15.48 (0.7)c	5.75 (5.1)
	5%-Inc	13.53 (1.1)abc	0.80 (0.1)	476.26 (49.5)b	6.24 (0.1)	672.08 (16.8)bc	17.68 (0.7)b	5.00 (2.4)
	10%-Inc	15.15 (1.4)a	0.72 (0.1)	475.10 (26.5)b	6.30 (0.1)	675.88 (14.3)ab	21.00 (0.7)a	5.31 (4.4)
2019	Control	12.64 (1.3)abc	0.77 (0.03)	499.51 (33.4)b	6.33 (0.1)	665.80 (31.4)abc	16.32 (0.7)bc	4.43 (2.4)
	5%-Sur	11.53 (1.0)c	0.70 (0.1)	486.04 (17.8)b	6.27 (0.1)	666.18 (48.9)a	16.78 (0.7)bc	4.92 (1.9)
	5%-Inc	13.18 (1.9)abc	0.72 (0.03)	494.93 (21.0)b	6.33 (0.1)	655.49 (58.2)bc	17.98 (0.7)b	4.11 (2.1)
	10%-Inc	14.47 (1.3)ab	0.82 (0.03)	485.69 (7.5)b	6.30 (0.1)	694.49 (45.2)abc	17.75 (0.7)b	4.50 (2.3)
ANOVA	Treat.	0.0116	n.s.	0.0209	n.s.	0.0413	0.00726	n.s.
	Year	n.s.	n.s.	n.s.	0.0317	n.s.	n.s.	n.s.
	TxY	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
15-30 cm								
2018	Control	6.32 (0.4)c	0.34 (0.01)	430.72 (46.3)	6.32 (0.1)	635.20 (71.1)d	18.80 (1.11)	4.59 (1.08)
	5%-Sur	5.93 (0.3)bc	0.30 (0.03)	438.91 (26.5)	6.39 (0.1)	683.87 (65.5)a	18.81 (1.06)	4.46 (3.37)
	5%-Inc	7.25 (0.5)ab	0.32 (0.03)	456.05 (52.0)	6.28 (0.1)	677.72 (50.8)ab	23.72 (1.06)	4.53 (2.71)
	10%-Inc	5.32 (0.7)d	0.28 (0.03)	418.50 (48.3)	6.33 (0.1)	682.42 (50.1)a	20.28 (1.06)	4.65 (3.61)
2019	Control	8.17 (0.6)a	0.45 (0.1)	438.14 (34.4)	6.29 (0.1)	670.70 (22.7)abc	18.51 (1.02)	4.65 (3.28)
	5%-Sur	7.73 (0.6)a	0.40 (0.1)	436.94 (16.1)	6.18 (0.1)	678.19 (71.0)bcd	20.81 (1.06)	5.22 (1.69)
	5%-Inc	6.55 (0.4)ab	0.35 (0.03)	440.75 (5.21)	6.23 (0.1)	652.77 (50.0)cd	19.03 (1.02)	4.64 (2.58)
	10%-Inc	7.57 (0.4)a	0.40 (0.03)	428.33 (14.1)	6.12 (0.1)	653.85 (49.4)ab	19.04 (1.06)	4.80 (1.59)
ANOVA	Treat.	n.s.	n.s.	n.s.	n.s.	0.0228	n.s.	n.s.
	Year	0.0003	0.0005	n.s.	0.0005	n.s.	n.s.	n.s.
	TxY	0.0114	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.