

Supplemental Tables

**Table S1.** A two-way ANOVA examined the interaction of solid phase and enzyme on the sorption on soil, pine and grass biochars at pH 7.

Sorption (%)			
Treatment	df	F-stat	p-value
Enzyme	1	3.396	0.0678
Solid Phase	2	11.256	<0.0001
Enzyme*Solid Phase	2	0.168	0.8452

**Table S2.** A three way ANOVA examined the interactive effects of solid phase, enzyme, and pH level for sorption and activity on the soil and pine biochar. interaction at pH 7 for the sorption to soil and pine biochar.

Sorption (%)			
Treatment	df	F-stat	p-value
Enzyme	1	1.151	0.287
Solid Phase	1	24.098	<0.0001
pH	2	3.840	0.027
Enzyme*Solid Phase	1	0.523	0.472
Enzyme*pH	2	15.865	<0.0001
Solid Phase*pH	2	1.910	0.157
Enzyme*Solid Phase*pH	2	1.779	0.177

**Table S3.** The amount of substrate degraded (nmols) by two enzymes ( $\beta$ -Glucosidase (BG) and Acid Phosphatase (PHOS)) sorbed to the three solid phases (Soil, Pine Biochar (BC Pine), and Grass Biochar (BC Grass)) compared to the free enzyme in solution. Results are presented as means and 1 SE (n=5). Lower case letters represent significant differences (p-values < 0.05) from the from Dunn multiple comparison tests. Two Dunn tests were used to separate the enzymes, accounting for the different amount of enzyme included in each well (BG = 2 mg/mL , PHOS = 4mg/mL).

		Substrate degraded (nmols)							
		Soil		BC Pine		BC Grass		Free Enzyme	
Enzyme	pH	Mean	SE	Mean	SE	Mean	SE	Mean	SE
BG	6	8.59 a	0.06	-1.17 b	0.22	nd	nd	40.59	1.1
BG	7	8.62 a	0.91	-0.56 b <sup>†</sup>	0.40	-0.60 b <sup>†</sup>	4.11	40.2	0.34
BG	8	2.29 ab	0.25	0.79 b	0.08	nd	nd	37.1	0.41
PHOS	6	13.4 a	1.62	-0.71 b <sup>†</sup>	1.07	nd	nd	33.05	2.24
PHOS	7	20.75 a	0.71	-2.78 b <sup>†</sup>	0.88	29.42 a	5.32	33.87	2.73
PHOS	8	26.46 a	2.73	1.18	0.38	nd	nd	40.03	1.1

<sup>†</sup> Negative values occurred when the standard curve overestimated the slope or intercept; thus, activity was set to zero before calculation of rates per mg of enzyme. No data (nd) was collected for pH 6 and 8 for the grass biochar.