

Supplementary Materials

Chitosan-modified biochar immobilised arsenic in root medium and enhanced the growth of zucchini (cv. Courgette d'Italie) seedlings

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Supplementary Table

Table S1. Basic attributes of biochar and chitosan modified biochar

Basic Attributes	Unit	BR*	BR-C**
pH		7.9	8.5
EC	mS cm ⁻¹	5.8	6.3
CEC	Cmol kg ⁻¹	45	53
Surface area	m ² g ⁻¹	468	167.2
N	%	0.11	1.78
C	%	75.76	61.64
H	%	2.11	4.09
P	%	0.8	0.4
K	%	2.29	2.52
Ca	%	0.69	0.71
Mg	%	0.23	0.28

*BR= biochar

**BR-C= chitosan modified biochar

Supplementary Figures

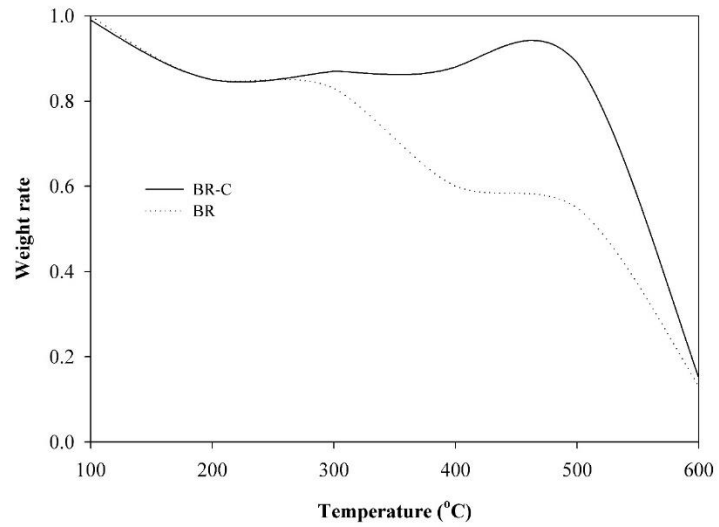


Fig. S1. Thermogravimetric curves for chitosan modified biochar (BR-C) and unmodified biochar (BR).

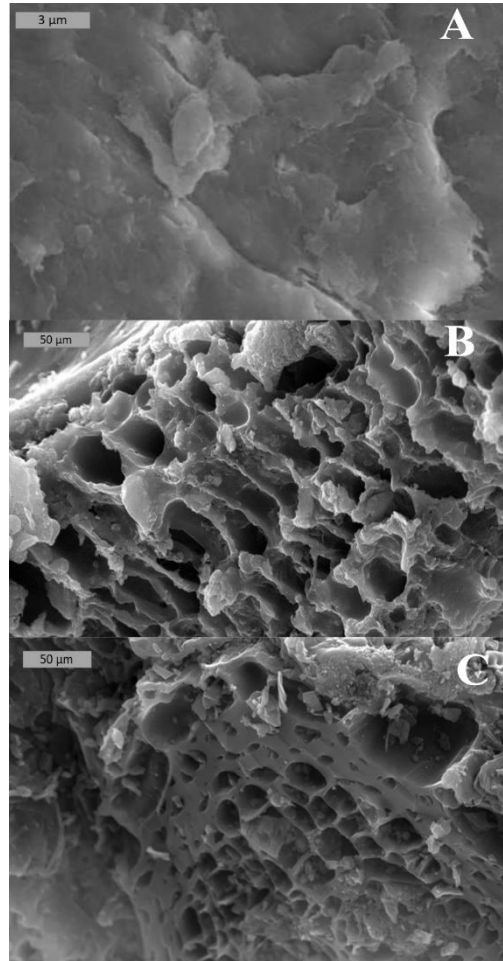


Fig. S2. SEM images of A) chitosan, B) unmodified biochar, and C) chitosan modified biochar.

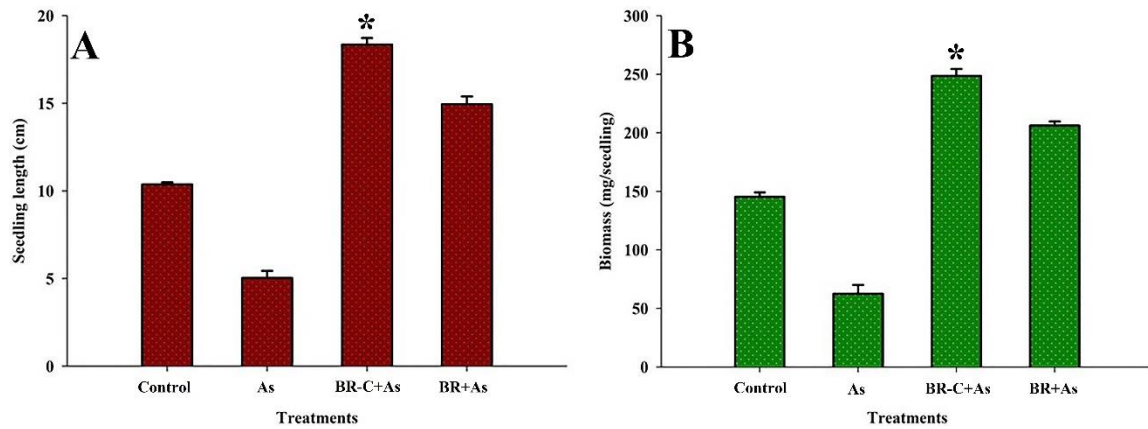


Fig. S3. Amendments (Control, Arsenic(V) (As), chitosan modified biochar with arsenic (BR-C+As), and unmodified biochar with arsenic (BR+As)) effects on A) seedling length and B) biomass of zucchini seedlings exposed to Arsenic stress. Asterisks (*) in the plots indicate a significant difference from the As-treatments (Duncan's multiple comparison test of one-way ANOVA, $P \leq 0.05$). Data are shown as the mean \pm standard deviation ($n=3$).

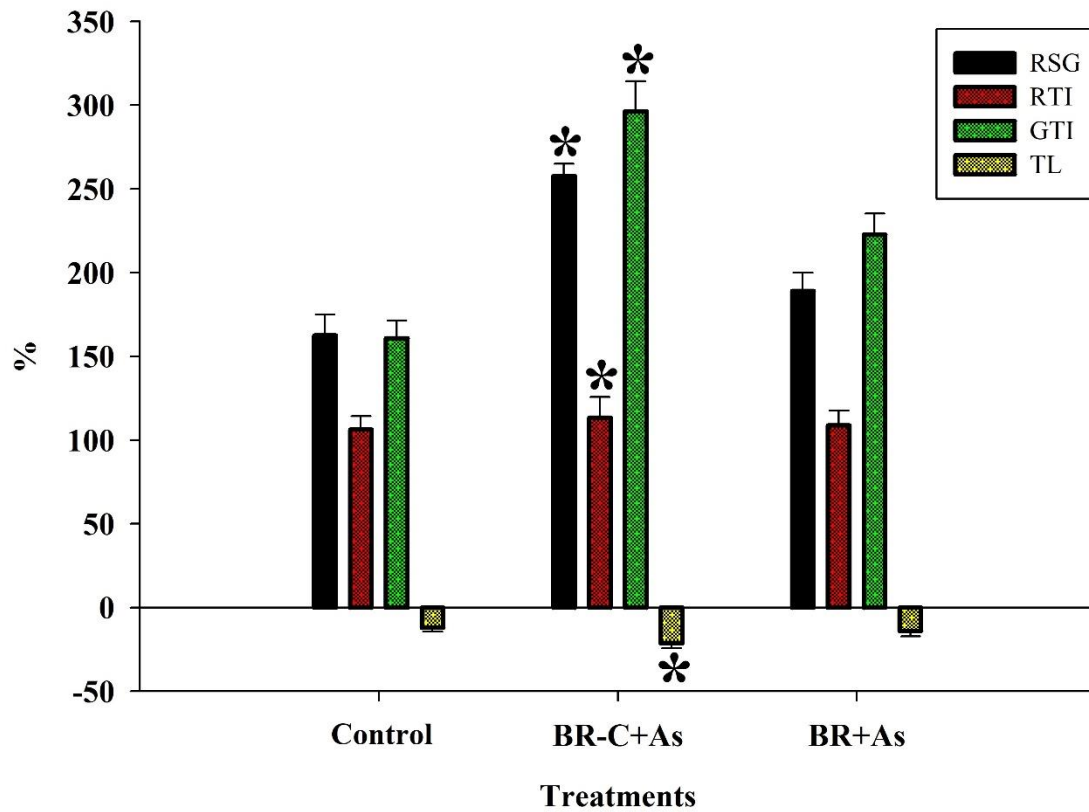


Fig. S4. Amendments (Control, chitosan modified biochar with arsenic (BR-C+As), and unmodified biochar with arsenic (BR+As)) effects on relative seed germination (RSG), root tolerance index (RTI), germination tolerance index (GTI), and toxicity level (TL). Asterisks (*) in the plots indicate a significant difference from the control (Duncan's multiple comparison test of one-way ANOVA, $P \leq 0.05$). Data are shown as the mean \pm standard deviation ($n=3$).



Fig. S5. Biological effects of dissolved arsenic(V) (As), arsenic-laden chitosan modified biochar (BR-C), and arsenic-laden unmodified biochar (BR) on seedlings on day 12.