Supplementary Information

Assessment of heavy metal remediation (mussel shell, pine bark and EDTA-washing) in soil using bacterial community tolerance as indicator

Claudia Campillo-Cora[a], Soto-Gómez, Diego[b], Manuel Arias-Estévez[a], David Fernández-Calviño[a]

a Departamento de Bioloxía Vexetal e Ciencia do Solo, Facultade de Ciencias, Universidade de Vigo, As Lagoas s/n, 32004 Ourense, Spain

b Department of Agricultural Engineering, Technical University of Cartagena, Paseo Alfonso XIII, 48, Cartagena, 30203, Spain

c Department of Biology, Microbial Ecology – MEMEG, Lund University, Ecology Building, Lund, SE-223 62, Sweden

Tables

Table S1. Bio-sorbent properties (crushed mussel shell and pine bark). Average values (n=3) with coefficients of variation <5%. Data from Romar-Gasalla et al. (2018)

	Crushed mussel shell	Pine bark
C (%)	11.43	46.95
N (%)	0.21	0.32
pH_W	9.39	3.99
Surface area (g m^{-2})	1.1	0.4
Ca_e ($cmol_c$ kg^{-1})	24.75	5.38
Mg_e ($cmol_c$ kg^{-1})	0.72	2.70
Na_e ($cmol_c$ kg^{-1})	4.37	0.46
K_e ($cmol_c$ kg^{-1})	0.38	4.60
Al_e ($cmol_c$ kg^{-1})	0.03	1.78
eCEC ($cmol_c$ kg^{-1})	30.25	14.92
Ca_T (mg kg^{-1})	280168	2319
Mg_T (mg kg^{-1})	980.6	473.6
Al_T (mg kg^{-1})	433.2	561.1
Fe_T (mg kg^{-1})	1855	169.8
Al_o (mg kg^{-1})	178.3	315.0
Fe_o (mg kg^{-1})	171.0	74.02

C is total carbon; N is total nitrogen; pHW is pH measured in water; X_e is exchangeable concentration of the element (cmol(+) kg^{-1}); eCEC is the effective cation exchange capacity ($cmol_c$ kg^{-1}); X_T is total concentration of cation (mg kg^{-1}); Al_o, Fe_o: extracted with ammonium oxalate (mg kg^{-1}).

Table S2. Percentage of decreased bacterial community tolerance to Cu, Ni and Zn in a polluted soil (1000 $mg \cdot kg^{-1}$) after three remediation techniques: mussel shell application (CMS), pine bark application (PB) or soil washing with EDTA (EDTA).

Metal (1000 $mg \cdot kg^{-1}$)	CMS	PB	EDTA
Cu	-91%	-82%	-42%
Ni	-81%	-84%	-97%
Zn	-140%	-92%	-87%

References

Romar-Gasalla, A., Santás-Miguel, V., Nóvoa-Muñoz, J.C., Arias-Estévez, M., Álvarez-Rodríguez, E., Núñez-Delgado, A., Fernández-Sanjurjo, M.J., 2018. Chromium and fluoride sorption/desorption on un-amended and waste-amended forest and vineyard soils and pyritic material. Journal of Environmental Management 222, 3–11. doi:10.1016/J.JENVMAN.2018.05.050