

# **Remediating Garden Soils: EDTA-Soil Washing and Safe Vegetable Production in Raised Bed Gardens**

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## Supplementary



Figure S1: Filling of the raised beds: gravel layer (left), sand layer (middle), soil layer (right).



Figure S2: Trommel sieve for mixing the soils (left) and addition of the organic amendments (right).

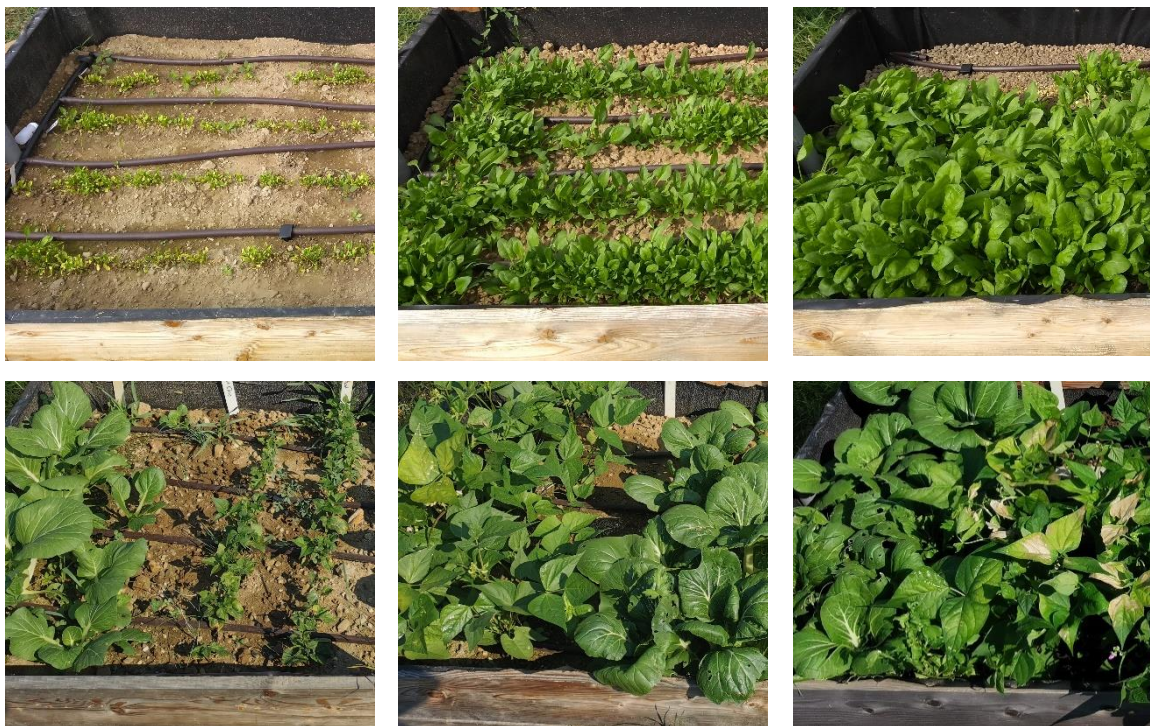


Figure S3: Spinach (upper row), bush beans and pak choi (lower row) before harvest. Plants in the contaminated soil (left column) showing toxicity symptoms and dwarfish growth, compared to the washed (middle row) and amended (right row) treatment.

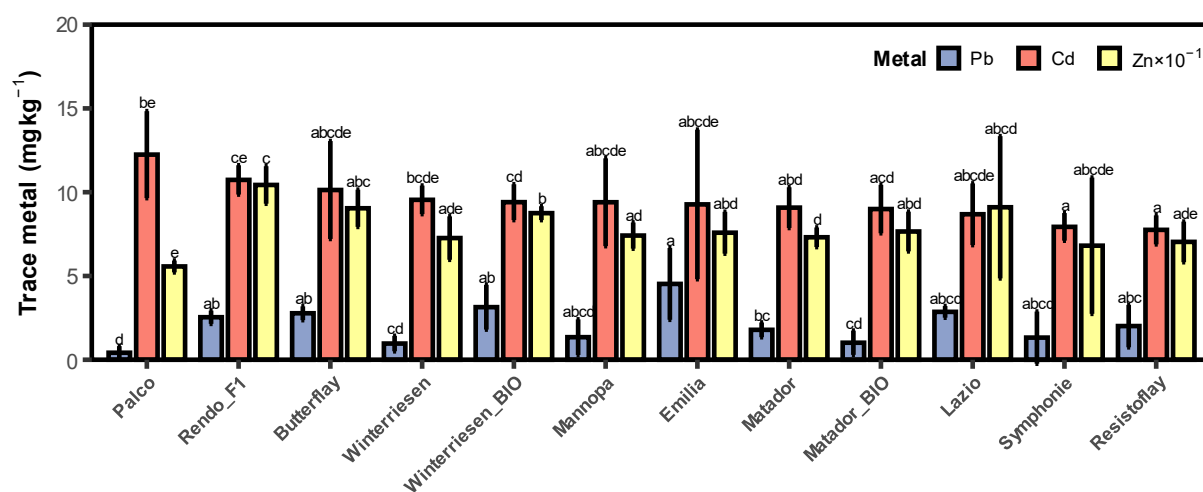


Figure S4: Uptake of heavy metals into spinach cultivars (mean  $\pm$  SD,  $n = 4$ ). Different lower-case letters indicate significant differences between cultivars.

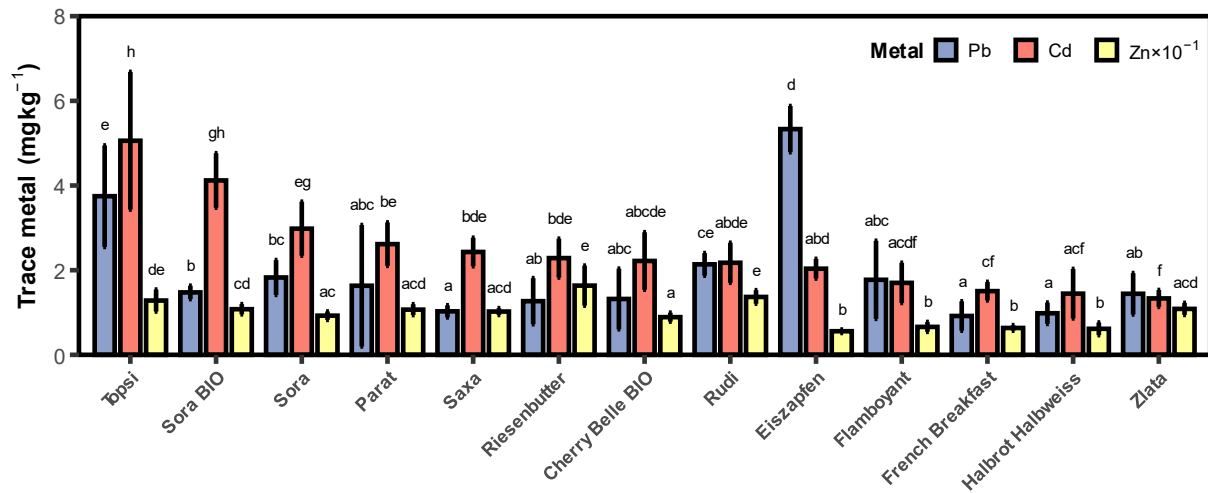


Figure S5: Uptake of heavy metals into radish cultivars (mean  $\pm$  SD,  $n = 4$ ). Different lower-case letters indicate significant differences between cultivars.

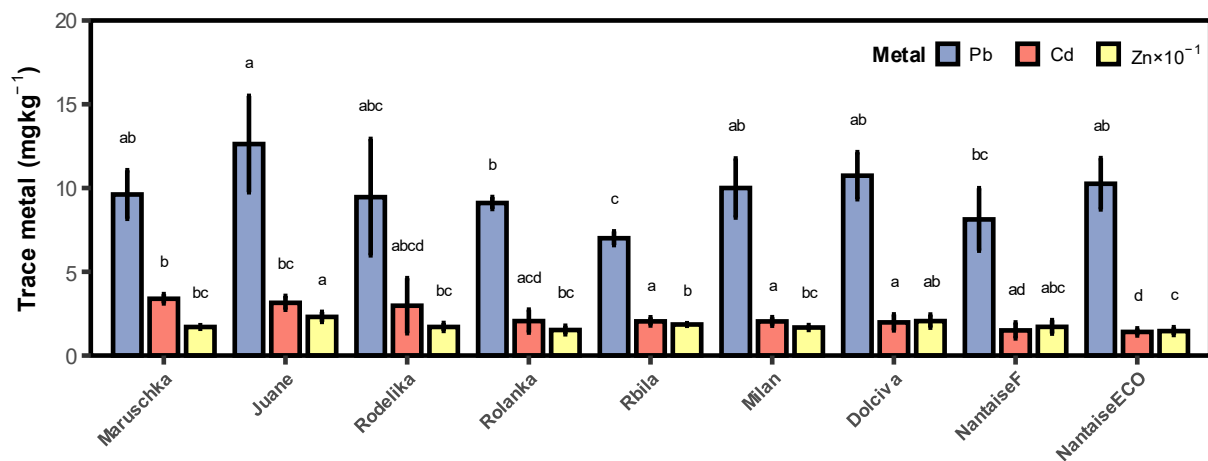


Figure S6: Uptake of heavy metals into carrot cultivars (mean  $\pm$  SD,  $n = 4$ ). Different lower-case letters indicate significant differences between cultivars.



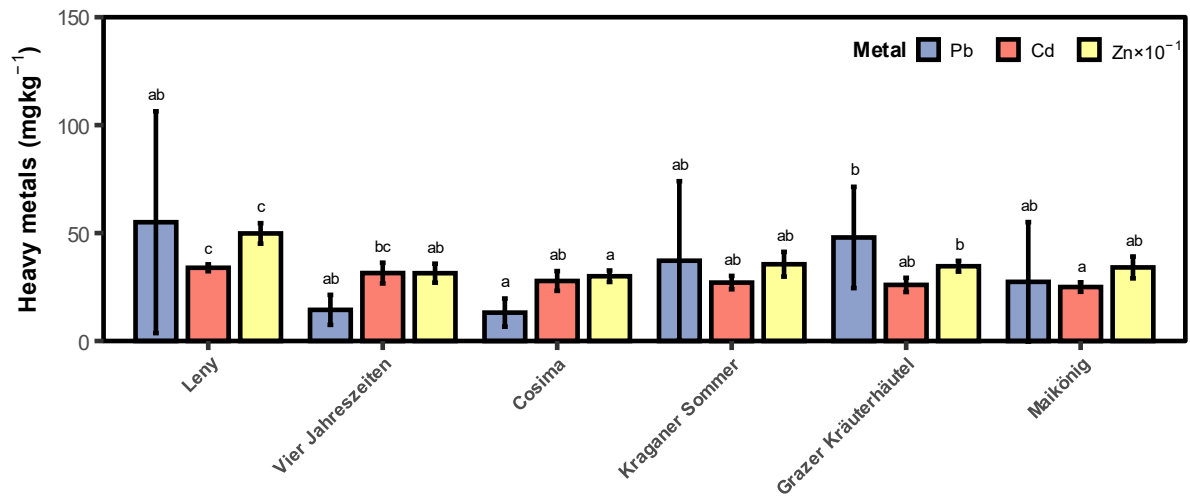


Figure S7: Uptake of heavy metals into lettuce cultivars (mean  $\pm$  SD,  $n = 4$ ). Different lower-case letters indicate significant differences between cultivars.

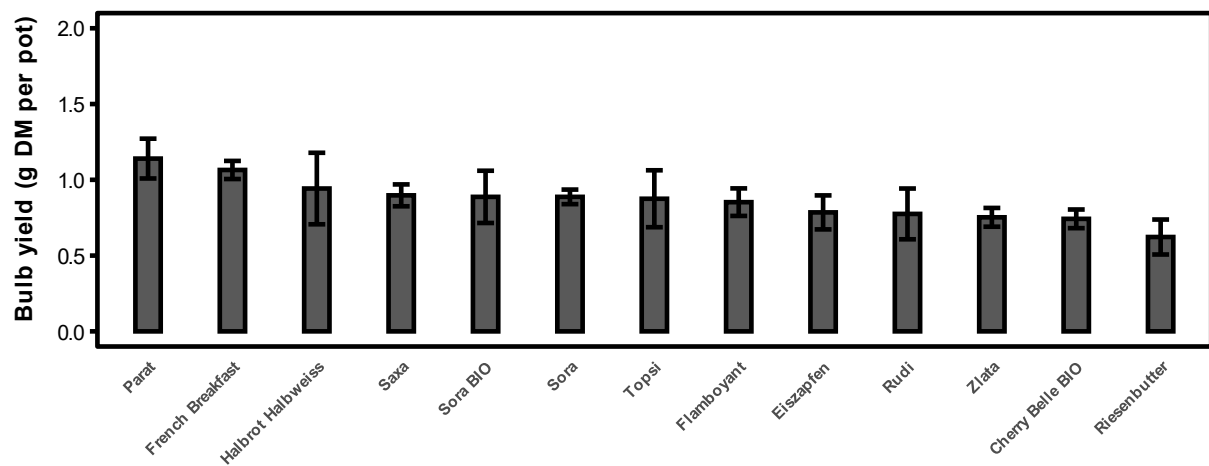


Figure S8: Yields of different radish cultivars (mean  $\pm$  SD,  $n = 4$ ).

Table S1: Chemical characteristics of the vermicompost amendment analyzed by EUROFINs Umweltanalytik GmbH.

pH	C <sub>org</sub>	N <sub>tot</sub>	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	MgO	CaO	NO <sub>3</sub>	NH <sub>4</sub>	Pb	Cd	Zn
	%	%	g kg <sup>-1</sup>	g kg <sup>-1</sup>	g kg <sup>-1</sup>	g kg <sup>-1</sup>	mg l <sup>-1</sup>	mg l <sup>-1</sup>	mg kg <sup>-1</sup>	mg kg <sup>-1</sup>	mg kg <sup>-1</sup>
7.7	12.96	1.08	5.7	14.5	14.1	61.7	5.99	121	15	0.56	98

Table S2: Physicochemical characteristics of the biochar amendment provided by the production company (Sonnenerde GmbH). Nutrients in biochar are mainly present in forms unavailable to plants.

Organic C	Total N	H/C <sub>org</sub> ratio	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	MgO	Surface area
g kg <sup>-1</sup>	g kg <sup>-1</sup>		g kg <sup>-1</sup>	g kg <sup>-1</sup>	g kg <sup>-1</sup>	m <sup>2</sup> g <sup>-1</sup>
632	9.9	0.17	56	50	31	297

Table S3: Measurement conditions for the atomic absorption spectroscopy.

Element	Utility	Lamp	Background Correction	Matrix Modifier	Wavelength	Carbonization	Atomization	LOD
					nm	°C	°C	mg L <sup>-1</sup>
Pb	GF	HCL	D2	NH <sub>4</sub> H <sub>2</sub> PO <sub>4</sub>	283.3	900	1900	0.5
Cd	GF	HCL	D2	Pd-Mg(NO <sub>3</sub> ) <sub>2</sub>	228.8	650	1600	0.06
Zn	F	HCL	D2	-	213.9	-	2150-2300	2.2

Table S4: Limit of detection for all elements measured using AAS-GF/F and ICP-OES.

Element	Technique	Wavelength (nm)	LOD (mg L <sup>-1</sup> )
Pb	AAS-GF	283.3	0.500
Cd	AAS-GF	228.8	0.060
Zn	AAS-F	213.9	2.200
Ca	ICP-OES	317.933	0.126
Fe	ICP-OES	238.204	0.043
K	ICP-OES	766.490	0.341
Mg	ICP-OES	285.213	0.030
Mn	ICP-OES	257.610	0.005
P	ICP-OES	589.592	0.382
Pb	ICP-OES	214.914	0.178
Si	ICP-OES	220.353	0.005
Zn	ICP-OES	180.669	0.144