

Supplementary Material for sustainability-900639**Table S1.** Removal efficiencies (%) for different contaminants for EDTA and Citric Acid extractants

Metal Ion	Extractant	Load Ratio (mg/kg)	Molarity	Red Soil	Red + EICP 1	Red + EICP 2	Red + EICP 3	Black Soil	Black + EICP 1	Black + EICP 2	Black + EICP 3
Nickel (Ni)	EDTA	50	0	0	0	0	0	0	0	0	0
			0.1	44.52	34.65	24.64	29.67	33.12	30.24	25.84	28.33
			0.25	49.21	40.93	28.96	33.58	43.88	37.19	28.64	32.09
			0.5	57.2	48.23	41.32	44.18	72.36	64.32	56.96	61.22
		100	0	0	0	0	0	0	0	0	0
			0.1	21.94	19.33	12.22	17.35	7.4	4.36	1.75	2.59
			0.25	34.66	28.97	13.22	19.53	20.9	18.69	13.04	15.32
			0.5	47.4	29.24	20.26	23.77	53.88	41.67	34.48	38.28
	Citric Acid	50	0	0	0	0	0	0	0	0	0
			0.1	24.06	19.83	11.23	15.67	15.37	12.39	6.48	9.34
			0.25	29.94	23.67	18.4	21.61	56.21	44.68	21.44	38.37
			0.5	55.52	45.37	36.85	41.29	64.88	58.34	49.32	52.24
		100	0	0	0	0	0	0	0	0	0
			0.1	45.8	26.28	8.46	17.69	19.56	17.44	12.26	15.32
			0.25	52.16	35.67	12.38	28.66	47.96	29.65	16.06	24.67
			0.5	57.42	41.66	18.44	30.57	52.48	32.77	25.21	30.28
Lead (pb)	EDTA	50	0	0	0	0	0	0	0	0	0
			0.1	84.7	36.8	17.08	25.63	72	59.37	33.08	45.09
			0.25	88	44.67	25.36	33.62	76.04	65.34	36.56	55.99
			0.5	99.96	53.11	31.72	45.13	84.3	70.26	38.56	60.84
		100	0	0	0	0	0	0	0	0	0
			0.1	64.3	27.39	9.5	21.97	59.4	41.28	21.02	36.97
			0.25	71.6	33.86	15.28	23.68	62.3	49.08	31.44	40.04
			0.5	97.52	47.82	23.06	30.09	67.26	55.59	32.02	44.27
	Citric Acid	50	0	0	0	0	0	0	0	0	0
			0.1	76.76	13.05	2.56	10.83	55.24	15.67	1.44	10.25
			0.25	84.07	24.32	5.64	15.37	75.8	18.39	9.72	15.22
			0.5	90.28	39.83	11.2	28.09	79.68	29.89	15.24	22.36
		100	0	0	0	0	0	0	0	0	0
			0.1	57.86	12.91	2.18	10.64	46.38	23.63	5.92	12.37

Metal Ion	Extrac- tant	Load Ratio (mg/kg)	Mol ar- ity	Red Soil	Red + EICP 1	Red + EICP 2	Red + EICP 3	Black Soil	Black + EICP 1	Black + EICP 2	Black + EICP 3
Nickel (Ni)	EDT A	50	0.1	6.41	6.8	8.66	7.51	20.28	18.01	17.22	18
			0.25								
			0.5								
		100	0.1	12.7 3	5.65	4.38	3.26	23.91	18.82	16.63	18.09
			0.25								
			0.5								
	Citric Acid	50	0.1	16.7 3	13.77	13.22	13.41	26.44	23.6	21.74	21.89
			0.25								
			0.5								
		100	0.1	5.82	7.75	5.03	6.95	17.85	8.1	6.66	7.56
0.25											

