SUPPLEMENTARY MATERIAL TO

Properties of humic acids from copper tailings 20 years after reclamation

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EXPERIMENTAL DETAILS

Fig. S-1. Study area: aerial view of copper mine (PFT: post-flotation tailings) and the city of Bor with soil sampling locations: TCs-Technosols (lines – direction of taking TC soil samples), CBs-control arable soils.

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TABLE S-I. General properties of Technosols (TC1-6) and control natural soils: arable soil near Bor city (CB7-9) and Chernozem (CCH)

Soil	Depth, cm	Content of sand, %	Content of silt, %	Content of clay, %	MWD[a]	pH in H_2O	TOC[b], %
TC1	0-25	65.15	16.39	18.46	0.82	4.71	1.01
TC2	0-25	56.28	19.69	24.03	0.67	4.64	0.74
TC3	0-25	61.59	15.92	22.49	0.98	5.43	0.74
TC4	0-25	49.90	22.76	27.34	1.32	6.48	1.14
TC5	0-25	51.28	24.11	25.61	1.37	7.24	1.24
TC6	15-50	40.00	34.60	25.40	0.82	4.17	0.39
CB7	0-25	51.60	28.20	20.20	2.74	4.96	3.46
CB8	0-25	31.12	30.32	38.55	3.65	7.46	2.12
CB9	0-25	44.00	25.56	30.44	1.99	5.00	3.44
CCH	0-25	33.76	34.24	32.00	ND[c]	7.83	1.89

[a]MWD – mean weight diameter of soil aggregates; [b]TOC – total organic carbon; [c]ND – not detected

Detailed description of control soil samples

The first group consisted of three HAs (CB7-9) isolated from natural arable soils used in crop production originating from the location nearby a new residential area of Bor, which surface soil layers were used for reclamation of PFT. These control soil samples were selected primarily due to different pHs, namely two were acid (CB7 and CB9) and one alkaline (CB8). The other reason was the mean weight diameter (MWD) of soil aggregates, ranging from 1.99 to 3.65. Control soil samples had significantly higher SOC content than Technosols. Their soil texture classes were clay loam and loam.

The second group of control samples, formed under different environmental conditions, included Chernozem and Elliot Soil. Chernozem was alkaline clay loam with 1.89 % soil organic C. Elliott Soil is silt loam, silty clay loam or loam, moderately acid to neutral.
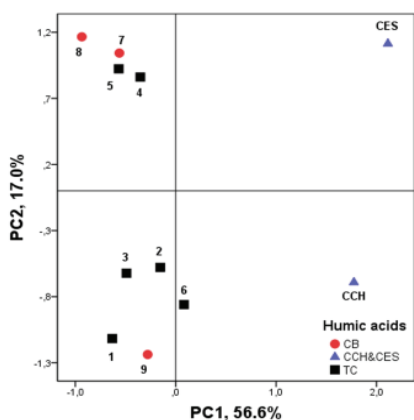

Fig. S-2. PCA score plots of HAs from Technosols (TC1-6) and control natural soils: arable soils near the city of Bor (CB7-9), Chernozem (CCH) and standard Elliot Soil (CES).
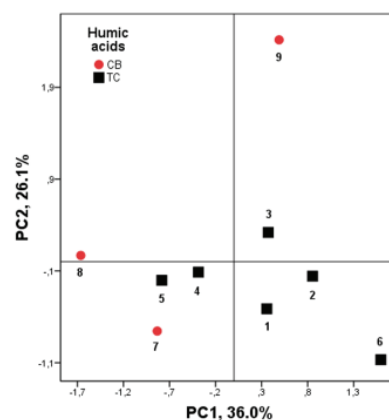

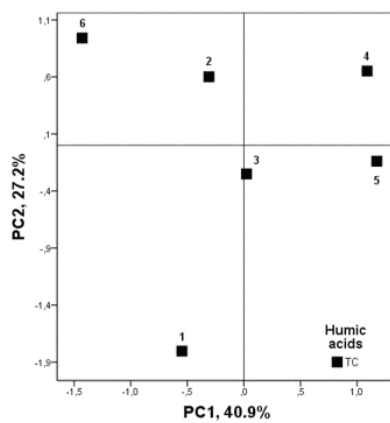Fig. S-3. PCA score plots of HAs from Technosols (TC1-6) and control arable soils near the city of Bor (CB7-9).

Fig. S-4. PCA score plots of HAs from Technosols (TC1-6).