

Biostimulants and soil amendments from the hydrothermal processing of spent coffee grounds

Supplementary information

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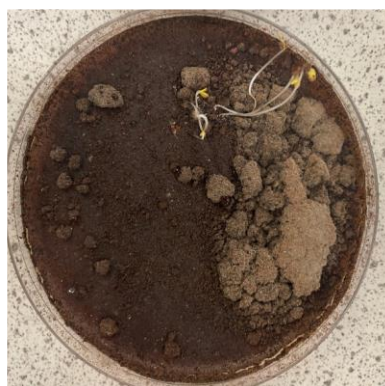
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Blank



223 PE unextracted hydrochar



Raw SCG



223 PE primary hydrochar

Figure S1 Petri-dish germination toxicity tests using *Lactuca Sativa L* seeds: top left: Blank; top right: 223 PE unextracted hydrochar at 40 t ha⁻¹ dose rate; bottom left: raw SCG at 40 t ha⁻¹; bottom right: 223 PE primary hydrochar at 5 t ha⁻¹ dose rate

Table S1 Chemical and physicochemical properties of peat-based compost (PBM, Levington + S2) and commercial topsoil (TS) + PBM at 100 t ha⁻¹ application rate

	OM ¹	pH	CEC ²	OC ^{1 3}	N ¹	C:N	Ca ⁴	Mg ⁴	Mn ⁴	B ⁴	Cu ⁴	Fe ⁴	Zn ⁴	P ⁴	K ⁴	Na ⁴
PBM	42.2	5.6	22.5	24.5	0.752	32.6	1510	1042	11	1.16	3.6	208	3.8	41	458	75
TS + 100 t ha ⁻¹ PBM	9.8	8	21.9	5.7	0.583	9.8	3269	291	57	5.17	3.5	1213	11.4	55	1990	529

¹Organic Matter, (%)

²Cation Exchange Capacity (meq/ 100 g)

³Organic Carbon

⁴ppm

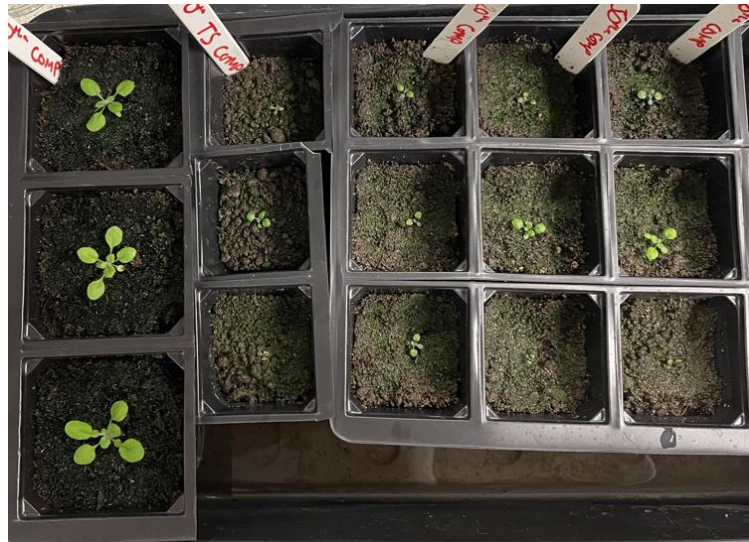


Figure S2 *Arabidopsis thaliana* 14 days after planting in different media (Left to right: 100 % Peat-based compost (PBM, Levington + S2); 100 % Sandy-Loam topsoil (TS, Melcourt Topsoil™); 20 t ha⁻¹ PBM + TS; 50 t ha⁻¹ PBM + TS; 100 t ha⁻¹ PBM + TS)

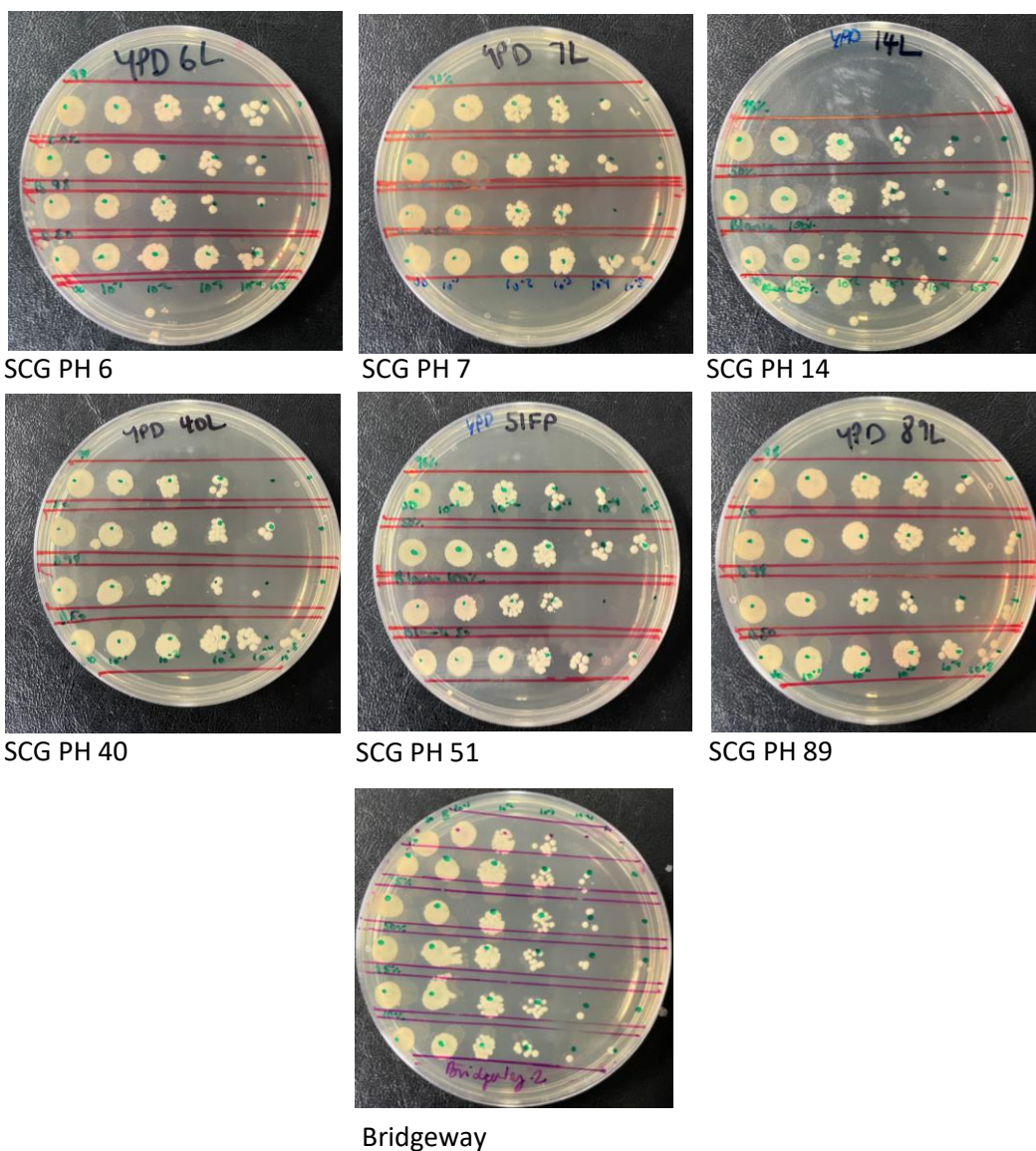


Figure S3 Petri-dish *Saccharomyces cerevisiae* toxicity assays: Top two rows of petri-dish: 98 and 50 % vol SCG PH in H₂O; bottom two rows of petri-dish: 100 and 50 % vol YPD blanks. Bridgeway top row: YPD blank; rest of rows: 98, 75, 50, 25 and 10 % vol in H₂O

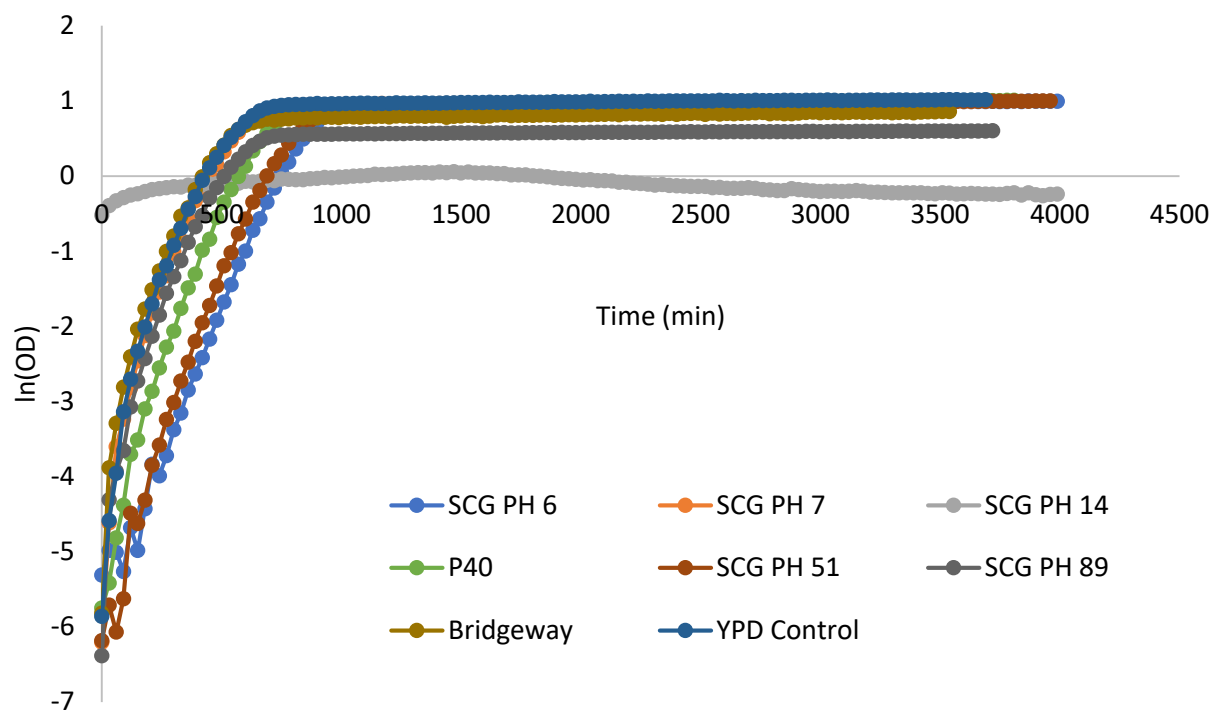


Figure S4 Growth curves ($\ln(\text{OD})$ vs time) of *Saccharomyces cerevisiae* in YPD media with 5 % vol SCG PH or commercial biostimulant Bridgeway