



# Supplementary Materials: Effect of Sewage Irrigation on the CT-Measured Soil Pore Characteristics of a Clay Farmland in Northern China

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**Table S1.** Characteristics of sewage effluents and groundwater used for irrigation of agricultural soils.

Irrigation water	pH	Electrolytic conductivity ( $\mu\text{S cm}^{-1}$ )	Total Organic carbon ( $\text{mg L}^{-1}$ )	$\text{Na}^+$ ( $\text{mg L}^{-1}$ )	$\text{Ca}^{2+}$ ( $\text{mg L}^{-1}$ )	$\text{Mg}^{2+}$ ( $\text{mg L}^{-1}$ )	Sodium adsorption ratio	Cr ( $\mu\text{g L}^{-1}$ )	Cd ( $\mu\text{g L}^{-1}$ )	Pb ( $\mu\text{g L}^{-1}$ )
Sewage effluents	7.7	1599	136.9	162.5	107.7	30.6	3.5	14.9	7.9	25.3
Groundwater	7.2	1347	16.7	46.2	139.8	52.9	0.8	1.1	1.9	2.0

**Table S2.** Soil physical properties in the S1 irrigated with sewage for 25years, S2 irrigated with sewage for 52 years, and CK irrigated with groundwater.

Sites	Depth (mm)	Water content (%)	Bulk density ( $\text{g cm}^{-3}$ )	Sand content (%)	Silt content (%)	Clay content (%)	USDA textural classification
S1	0-200	21.33±0.10	1.51±0.02	16.45	47.67	35.88	Silty clay loam
	200-400	18.64±0.36	1.68±0.05	17.79	39.00	43.21	Clay
S2	0-200	21.48±0.56	1.61±0.03	26.79	32.67	40.55	Clay
	200-400	18.29±0.31	1.70±0.02	21.45	44.00	34.55	Clay loam
CK	0-200	22.72±0.82	1.57±0.01	23.79	41.33	34.88	Clay loam
	200-400	20.35±0.12	1.61±0.03	22.45	43.33	34.22	Clay loam

USDA: United States; Department of Agriculture, values represent means followed by the standard error.

**Table S3.** Soil chemical properties in the S1 irrigated with sewage for 25years, S2 irrigated with sewage for 52 years, and CK irrigated with groundwater.

Sites	Depth (mm)	pH	Electrolytic conductivity ( $\mu\text{S cm}^{-1}$ )	Organic carbon ( $\text{g kg}^{-1}$ )	Total nitrogen ( $\text{g kg}^{-1}$ )	Total phosphorus ( $\text{g kg}^{-1}$ )	Total Chrome ( $\text{mg kg}^{-1}$ )	Total Lead ( $\text{mg kg}^{-1}$ )
S1	0-200	8.58±0.10	268±9.65	24.36±1.09	1.42±0.05	0.71±0.05	16.90±7.84	12.14±4.56
	200-400	8.56±0.06	273±7.68	11.14±0.48	0.71±0.03	0.56±0.01	8.64±5.67	8.96±0.89
S2	0-200	8.37±0.26	286±12.34	24.58±0.75	1.45±0.04	0.82±0.07	32.27±13.99	16.43±6.85

	200-400	0.62±0.40	293±10.02	11.60±0.37	0.58±0.10	0.49±0.03	22.19±2.89	8.39±1.25
	0-200	8.64±0.42	173±14.56	19.10±2.20	1.01±0.06	0.68±0.03	6.38±3.92	6.94±0.58
CK	200-400	0.62±0.06	206±19.06	8.99±0.32	0.61±0.04	0.51±0.06	7.13±1.57	6.77±3.67

Values represent means followed by the standard error.

**Table S4.** Soil microbial properties in the S1 irrigated with sewage for 25years, S2 irrigated with sewage for 52 years, and CK irrigated with groundwater.

Sites	Depth (mm)	Bacteria number (10 <sup>6</sup> cfu g <sup>-1</sup> )	Fungi number (10 <sup>4</sup> cfu g <sup>-1</sup> )	Actinomycete number (10 <sup>6</sup> cfu g <sup>-1</sup> )
S1	0-200	10.60±5.15	1.08±0.27	9.01±1.74
	200-400	4.09±2.56	0.25±0.00	2.25±0.39
S2	0-200	16.55±1.16	1.06±0.27	13.69±3.50
	200-400	7.33±0.01	0.32±0.19	3.75±0.24
CK	0-200	8.51±1.20	1.17±0.22	5.05±0.71
	200-400	4.25±0.00	0.36±0.27	1.09±0.19

Values represent means followed by the standard error.



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