

Article

Hydrochemical Assessment of the Irrigation Water Quality of the El-Salam Canal, Egypt

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Supplementary Materials

Table S1. Factors used in calculating Irrigation Water Quality Index in water samples collected from different sites (S1–S5) along the El-Salam Canal.

Water Parameters	V(standard)	V(ideal)	Weight (Wi)	Relative Weight (Rwi)	Stations				
					S1	S2	S3	S4	S5
pH	8.4	7	0.12	0.15	58.57	67.14	80	101.43	55.71
EC	3	0	0.33	0.43	24	32.33	74.67	78	70
HCO ₃	518.6	0	0	0	23.67	37.07	39.71	66.78	60.89
Cl	354.5	0	0	0	15.39	19.05	20.71	37	67.71
SAR	9	0	0.11	0.14	84.10	145.08	176.1	351.55	290.67
PI	25	0	0.04	0.05	131.54	170.31	183.22	241.08	206.74
MH	50	0	0.02	0.03	72.28	82.38	82.87	59.81	71.94
Fe	5000	0	0	0.00	0.02	0.03	0.04	0.03	0.03
Mn	200	0	0.01	0.01	0.34	0.98	0.89	0.48	1.5
Cu	200	0	0.01	0.01	1.17	2.52	3.22	2.06	2.44
Zn	2000	0	0	0	0.01	0	0.02	0.01	0.02
Ni	200	0	0.01	0.01	0.14	0.72	0.86	1.02	0.76
Cd	10	0	0.10	0.13	0.51	0.87	2.24	4.79	20.7
Co	50	0	0.02	0.03	0.71	6.94	9.35	11.19	8.07
Cr	100	0	0.01	0.01	0.18	0.88	1.02	1.47	0.77
Pb	5000	0	0	0	0.09	0.15	0.13	0.11	0.1

EC: Electric conductivity, SAR: sodium adsorption ratio, PI: Permeability Index, MH: magnesium hazard.

Table S2. Pearson's correlation matrix various water parameters and heavy metals from five sites along El-Salam Canal, Egypt.

	pH																				
EC	0.583	EC																			
TDS	0.688	0.802	TDS																		
Na	0.428	0.984**	0.604	Na																	
K	0.309	0.940*	0.767	0.753	K																
Ca	0.097	0.692	0.404	0.939*	0.737	Ca															
Mg	-0.276	0.551	0.416	0.594	0.787	0.764	Mg														
Cl	-0.147	0.860*	0.255	0.828	0.678	0.970**	0.845	Cl													
SO ₄	0.274	0.871*	0.682	0.948*	0.877	0.941*	0.804	0.877	SO ₄												
CO ₃	0.300	0.249	0.547	-0.292	0.285	-0.419	0.008	-0.459	-0.112	CO ₃											
HCO ₃	0.497	0.809	0.680	.992**	0.750	0.900*	0.566	0.774	0.944*	-0.22	HCO ₃										
Fe	0.632	0.718	0.980**	0.440	0.708	0.245	0.372	0.116	0.557	0.696	0.524	Fe									
Mn	-0.439	0.318	0.324	0.381	0.613	0.579	0.953*	0.704	0.637	0.075	0.367	0.323	Mn								
Pb	0.077	-0.14	0.444	-0.299	-0.021	-0.390	0.041	-0.383	-0.113	0.695	-0.194	0.577	0.257	Pb							
Cu	0.219	0.487	0.800	0.217	0.722	0.166	0.577	0.146	0.460	0.800	0.275	0.877	0.593	0.631	Cu						
Co	0.700	0.769	0.980**	0.748	0.816	0.558	0.469	0.401	0.791	0.384	0.809	0.922*	0.334	0.283	0.707	Co					
Ni	0.685	0.728	0.985**	0.724	0.786	0.533	0.465	0.381	0.776	0.394	0.792	0.932*	0.351	0.348	0.718	0.997**	Ni				
Cr	0.853	0.665	0.938*	0.687	0.631	0.426	0.213	0.226	0.655	0.333	0.764	0.872	0.081	0.285	0.545	0.957*	0.958*	Cr			
Cd	-0.325	0.368	0.143	0.703	0.638	0.903*	0.886*	.979**	0.795	-0.432	0.637	0.028	0.775	-0.373	0.157	0.273	0.253	0.063	Cd		
Zn	-0.148	0.547	0.135	0.514	0.731	0.668	0.681	0.708	0.592	-0.104	0.429	0.065	0.48	-0.566	0.243	0.234	0.173	0.012	0.755		

Values in bold are significance at $p \leq 0.05$. EC: electric conductivity, TDS: total dissolved salts. Bold values showed the significant correlation.