

Beneficial Use of Lake Erie Dredged Material as Farm Soil Amendment

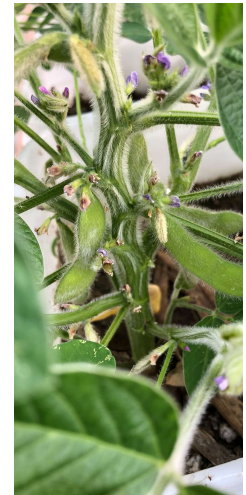
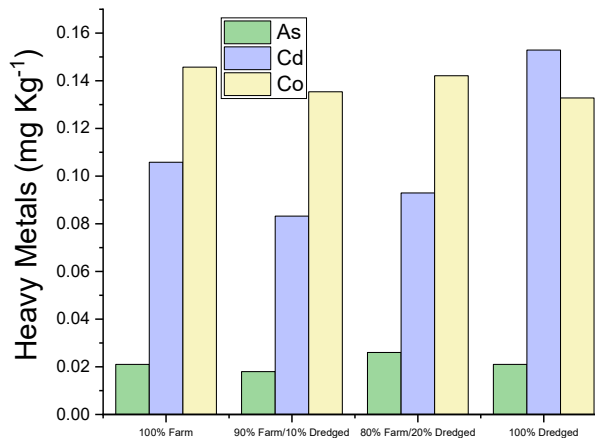
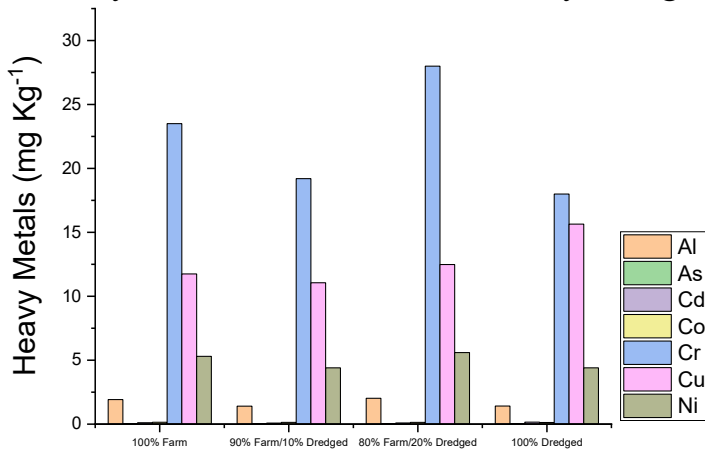
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Heavy metal content in the farm soil and dredged material at collection. All values are in mg kg⁻¹.

Parameters	100% Farm Soil	100% Dredged Sediments
Aluminum	70126	67956
Iron	35671	36230
Manganese	364	651
Chromium	80	80
Cobalt	11	12
Nickel	30	40
Cooper	40	30
Zinc	140	140
Arsenic	8	8
Lead	46	29

- Dredged material contains similar heavy metal content as a Hoytville farm soil.

Heavy metal bioaccumulation in soybean grains



- Heavy metal bioaccumulation was similar in treatments with 100% farm soil and different dredged material ratios.

PCBs (mg kg⁻¹)

Aroclor	100% FS	100% DM	100% FS_S	100% DM_S
1016	<0.0764	<0.885	<0.0881	<0.0791
1221	<0.0764	<0.885	<0.0881	<0.0791
1232	<0.0764	<0.885	<0.0881	<0.0791
1242	<0.0764	<0.885	<0.0881	<0.0791
1248	<0.0764	<0.885	<0.0881	<0.0791
1254	<0.0764	<0.885	<0.0881	<0.0791
1260	<0.0764	<0.885	<0.0881	<0.0791

PAHs (mg kg⁻¹)

Analyte	100% FS	100% DM	100% FS_S	100% DM_S
Acenaphthene	0.0147	<0.009	<0.086	<0.009
Anthracene	0.0638	0.0139	<0.086	<0.009
Benzo(a)pyrene	0.582	0.116	<0.086	<0.009
Benzo(g,h,i)perylene	0.248	<0.009	<0.086	0.103
Naphthalene	0.0454	0.031	<0.086	<0.009
Phenanthrene	0.646	0.115	<0.086	<0.009
Pyrene	1.27	0.221	<0.086	<0.009

FM = farm soil, DM = dredged material, FS_S = soybean grown in farm soil, DM_S = soybean grown in DM
Our farm soil received biosolids and it is considered a phosphorus “legacy” site.

- Overall, no bioaccumulation of PCBs and PAHs in the soybean grains was observed.