

TEXTILE AND DYE INDUSTRY EFFLUENT, SLUDGE AND AMENDMENTS ON HEAVY METALS CHROMIUM, NICKEL, CADMIUM AND LEAD STATUS OF MAIZE CULTIVATED SOIL

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ABSTRACT

To assess the impact of textile and dye industrial effluent on soil and crops, the Pot culture experiment carried out with maize crop to determine the effect of dye and textile factory effluent in combination with amendments (poultry manure, green leaf manure, bio compost, vermin compost) revealed that application of CETP sludge @ 5 t ha⁻¹ + poultry manure @ 5 t ha⁻¹ + NPK increased the soil organic carbon, available N, P, K, Ca, Mg and heavy metals like chromium in soil under treated effluent irrigation compared to river water irrigation. The total Cr content ranged from 0.50 to 13.25, 1.00 to 36.52 and 1.65 to 32.52 mg kg⁻¹ at vegetative stage, flowering stage and at harvest stages, respectively under effluent irrigation. However, it did not produce any toxic effects to the crops. This showed that the treated effluent could be safely used for irrigation along with poultry manure @ 5 t ha⁻¹ and NPK. However, continuous monitoring of the soil and ground water quality parameters are essential to suggest suitable remediation measures when treated textile and dye factory effluent is continuously use for irrigation

KEYWORDS: T- Treatment, N- Nitrogen, P- Phosphorus, K- Potassium, Cr- Chromium, GR Gypsum Recommendation, COH- Coimbatore Hybrid, Chromium- Cr, Cadmium-Cd, Nickel- Ni, Lead-Pb