

Chelator-assisted Phytoextraction of Nickel from Nickeliferous Lateritic Soil by Phyllanthus sp. nov.

Authors : Grecco M. Ante, Princess Rochelle O. Gan

Abstract : Plants that can absorb greater than 10,000 µg Ni/g dry mass in their stems and leaves are termed as 'hypernickelophores'. Chelators are chemicals that make the metals in the soil more soluble, making them a potential enhancer for phytoextraction. This study aims to observe the effect of different concentrations of the chelating agent ethylene diamine tetraacetate (EDTA) on the metal uptake (or rate of phytoextraction) of Nickel by Phyllanthus sp. nov. The plant is found to be a hypernickelophore in normal conditions. The addition of EDTA increased the metal uptake of the plant. The increasing amount of the chelating agent causes a decrease in the phytoextraction of the plant but moves the onset of its peak of maximum nickel content in its tissue to an earlier time. The chelator-assisted phytoextraction of nickel by Phyllanthus sp. nov. is proven to be an efficient auxiliary mining operation for nickel laterite mines.

Keywords : phytomining, Phyllanthus sp. nov., EDTA, nickel, laterite

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