



## Vertical Distribution of Nutrients *vis-a-vis* Soil Properties in Different Geomorphic Units of North-Eastern Haryana, India

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**Abstract:** The profile distribution of primary nutrients (N, P and K) and diethylenetriamine pentaacetic acid (DTPA) extractable micronutrients (Zn, Mn, Cu and Fe) was investigated in soils developed on different geomorphic units of north-eastern Haryana, India. The soils exhibited a gradual fining of texture from Shivalik hills to flood plains. By and large, the soils were slightly acidic to strongly alkaline and calcareous. The macro and micronutrients irrespective of the geomorphic unit were higher in surface horizons than subsurface horizons. However, none of the micronutrients exhibited any systematic pattern of distribution with depth on different geomorphic surfaces. Contents of all micronutrients were higher in fine-textured as compared to coarse-textured soils. Soil pH, organic matter, calcium carbonate and size fractions had strong influence on the distribution of extractable micronutrients. Based on linear coefficients of correlation, DTPA-extractable micronutrients increased with increase in organic carbon and clay content and decreased with increase in pH and CaCO<sub>3</sub> content. Organic carbon was significantly and positively correlated with N, P, K and micronutrients except Zn. The use of principal component analysis (PCA) in the present study effectively reduced fifteen variables to five principal components and described 73.29% of the original variance. Among all the soil properties organic carbon had prominent effect on distribution of micronutrients.

**Keywords:** Geomorphic unit, Macronutrients, Micronutrients, Calcium carbonate, Principal component analysis

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