

Phosphate sorption by some kenyan soils as evaluated by the langmuir and freundlich adsorption equations

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Abstract:

The sorption of added inorganic phosphate (P) by eight soils which varied appreciably in their ability to sorb P was evaluated using the Langmuir and Freundlich adsorption equations. When the sorption data were plotted according to the conventional Langmuir and linear Freundlich equations, linear relationships were obtained. Regression analysis was used to compute the straight lines obtained. The Freundlich equations gave significantly to highly significantly correlation coefficients ($r^2 = 0.509 - 0.972$) in all the soils tested while the Langmuir equation was non-significant in the highest and lowest sorbing soils (r^2 0.004 and 0.453 respectively) but was highly to very highly significant in the other soils ($r^2 = 0.816 - 0.988$). The Freundlich equation was, therefore, adequate in describing the sorption data in all the soils tested but with varying precision as shown by the different correlation coefficients. A comparison of the two equations indicated that Freundlich equation gives the best fit in majority of soils and would, therefore, be recommended for estimating the P-sorption characteristic of soils tested in this work.