

Metsulfuron-methyl sorption/desorption behavior on volcanic ash-derived soils.

Effect of phosphate and pH

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Metsulfuron-methyl sorption/desorption behavior was studied through batch sorption experiments in three typical volcanic ash-derived soils belonging to Andisol and Ultisol orders. Their distinctive physical and chemical properties are acidic pH and variable surface charge. Organic matter content and mineral composition affected in different ways sorption of metsulfuron-methyl (K_{OC} ranging from 113 to 646 mL g⁻¹): organic matter and iron and aluminum oxides mainly through hydrophilic rather than hydrophobic interactions in Andisols, and Kaolinite group minerals, as major constituents of Ultisols, and iron and aluminum oxides only through hydrophilic interactions. The Freundlich model described metsulfuron-methyl behavior in all cases ($R^2 > 0.992$). K_f values (3.1-14.4 g^{1-1/n} mL^{1/n} g⁻¹) were higher than those reported for different class of soils including some with variable charge. Hysteresis was more significant in Ultisols. A strong influence of pH and phosphate was established for