

Sorption behavior of bensulfuron-methyl on andisols and ultisols volcanic ash-derived soils: Contribution of humic fractions and mineral-organic complexes

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Bensulfuron-methyl sorption was studied in Andisol and Ultisol soils in view of their characteristic physical and chemical properties, presenting acidic pH and variable charge. Humic and fulvic acids (HA and FA) and humin (HUM) contributions were established. Sorption was studied by using two synthetic sorbents, an aluminum-silicate with iron oxide coverage and the same sorbent coated with humic acid. Freundlich model described Bensulfuron-methyl behavior in all sorbents (R^2 0.969-0.998). K_f for soils (8.3-20.7 $\text{g}^{-1/n} \text{mL}^{1/n} \text{g}^{-1}$) were higher than those reported in the literature. Organic matter, halloysite or kaolinite, and specific surface area contributed to the global process. The highest K_f for HA, FA and HUM were 539.5, 82.9, and 98.7 $\text{g}^{-1/n} \text{mL}^{1/n} \text{g}^{-1}$. Model sorbents described the participation of variable charge materials with high adsorption capacity. The constant capacitance model was used to assess effects of Bensulfuron-methyl adsorption on the distribution of SOH,