Hyteretic Bahavior of Atrazine and Metribuzin Adsorption-Desorption by Sugarcane Mulch Residue. (S01-selim094214-Poster)

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Abstract:

The purpose of this study was to investigate the adsorption-desorption characteristics of metribuzin and atrazine by sugarcane mulch residue. Another objective was to assess the extent of hysteresis of metribuzin and atrazine by the mulch residue in comparison to the surface soil. An adsorption kinetic-batch method was used to quantify retention by the mulch residue for a wide range of (radio-labeled) metribuzin and atrazine concentrations and reaction times. Desorption was carried out following 504 h of adsorption using successive dilution steps (24 h each) with 0.005 M CaCl2 background solution. Retention results by the mulch residue were well described using linear and Freundlich models. For metribuzin, the Kd values increased with reaction time from 10 to 14 mL per g after 1 and 21 days, respectively. In contrast, for atrazine, the Kd values increased from 15 to 23 mL per g after 1 and 21 days, respectively. These Kd values were at least an order of magnitude higher than those for Commerce soil where limited kinetic behavior for adsorption was observed. The use of a multireaction model proved successful in describing the hysteresis behavior of atrazine and metribuzin by the mulch residue and was in close agreement with measured results.

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