



## **Evaluation of a power averaging technique of effective parameters on simulation of atrazine transport at agricultural field scale**

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The heterogeneity of agricultural soils lead to the complexity of water flow and solute transport. In this study, we took 100 soil samples from a field plot, which was located in the suburbs of Beijing. By running ROSETTA code, van Genuchten type's hydraulic parameters were generated from the measured soil particle size fraction and soil bulk density, the dispersivities of atrazine were indirectly obtained from the water retention curves, and the adsorption coefficients of different samples were estimated by the measured soil organic carbon content. Then, on the assumption of column model, an infiltration-redistribution process of soil moisture was designed as a numerical experiment, and water flow and atrazine transport were simulated in unsaturated soil by applying the HYDRUS-1D software. And then, the power averaging technique of effective parameters on simulation of atrazine leached in soil at field scale were evaluated. Results showed that: under infiltration-redistribution condition, if we neglect the effect of transpiration on water movement and Atrazine transport in the soil, high accuracy upscaled numerical simulation can be obtained, when the geometry mean or harmonic mean values of hydraulic parameters, transport parameters and adsorption parameters were taken as their effective parameters, while the arithmetic mean of soil water matric potential of normal distribution under initial condition was taken as its equivalent quantity.