SORPTION AND LEACHING OF S-METOLACHLOR IN SURFACE HORIZONS OF ROMANIA

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Abstract
Sorption is the major process that determines the fate and behavior of most herbicides in soil. Understanding herbicide sorption within soil profile is the first step to predict groundwater contamination. Laboratory studies were conducted to determine the influence of surface soil properties on s-metolachlor sorption. Sorption isotherms were determined from soil plough layer (0-25 cm) using the batch equilibrium method and six concentration (0, 1, 5, 10, 20 and 50 mg L-1). Sorption affinity of herbicide was approximated by the Freundlich equation. The environmental behavior of smetolachlor was studied at the Didactical and Experimental Research Station Ezareni belonging to "Ion Ionescu de la Brad" University of Agriculture and Veterinary Medicine Iasi, Romania. A randomized complete block design with three replications was used in the experiment. S-metolachlor EC (96% v/v) was applied as a pre-emergence at dosages of 1500, 2100 and 2700 mL ha-1 1 day before sowing the soybean seeds in the field. The soil was collected at different layers and the residues of s-metolachlor were analyzed by GC-MS. Maximum concentration of s–metolachlor was recovered from 0-15 cm depth in all three doses. Results indicated high mobility of s-metolachlor under field conditions that may be significant in terms of ground water contamination.

Key words: Degradation, Leaching, S-Metolachlor, Sorption

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