



## **Field and numerical study of chlorotoluron behaviour in Haplic Chernozem**

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The chlorotoluron mobility and persistence in the soil profile of Haplic Chernozem were studied under field conditions. The experimental plot 2 x 2 m was cultivated for the first time to the depth of 20 cm two months before the herbicide application. Two liters of water with 1 g of chlorotoluron were applied on this cropland experimental field on 13.9. 2006. This dose corresponds to the usually applied amount of herbicide in the field. The experimental field was divided into two sections. One section of the experimental field was used for soil sampling to detect chlorotoluron concentration in the soil profile. Soil samples from layers 2 cm thick (to the depth of 20 cm) and 5 cm thick (from 20cm to the total depth 50 cm) were collected on the day of herbicide application and then 12, 35 and 48 days after the herbicide application. The soil samples were analyzed in the laboratory to determine chlorotoluron distributions in the soil profiles using the method described in Kocarek et al. (2004). The total amount of chlorotoluron presented in the soil samples were expressed as the total amount of solute per mass unit. Three suction cups were installed in the depths of 10, 15 and 20 cm at the second section of the experimental field. Soil water samples were taken 48 days after the herbicide application and subsequently analyzed in the laboratory to obtain chlorotoluron concentrations in the soil solutions. To monitor soil water regime in the soil profile four tensiometers were used to measure pressure heads at depths of 10, 25, 47 and 80 cm of the soil profile. The atmospheric data (daily rainfall, minimal, average and maximal daily temperatures) were also measured. Soil physical, hydraulic and chemical properties were determined in the laboratory. Two simulation models BPS (Kozak and Vacek, 1996) and HYDRUS 1-D (Simunek et al., 2005) were then used to predict pesticide behaviour in the soil. Obtained data were used as inputs into the models as well as for verification of the simulated results.