

Comparison of three pesticide fate models based on lysimeter data of chloridazon and s-metolachlor from the Wagna test site, Austria

Lisa Brückner (1), Gernot Klammler (1), Andrea Schuhmann (2), Hans Kupfersberger (1), and Johann Fank (1)
(1) JR-AquaConSol GmbH, Graz, Austria, (2) Umweltbundesamt GmbH, Vienna, Austria

A lysimeter experiment was conducted at the agricultural test site in Wagna, Austria, where clayey-sandy cambisol are predominant. The pesticides chloridazon and s-metolachlor were applied between 2010 and 2014 and the concentration of the active ingredients and their metabolites were measured regularly in the soil and the leachate in different depths (Schuhmann et al. 2016). During the lysimeter experiment maize, pumpkin and triticale were cultivated, which are the main field crops in that region. Beside this data, precise measurements of the soil hydrology parameters as well as meteorological data are available. Average annual precipitation at this site is 972 mm, mean annual groundwater recharge is 358 mm (2005-2014).

Based on this data and the different breakthrough curves a comparison of the three different pesticide fate models PEARL, PELMO and MACRO is carried out for the pesticides s-metolachlor and chloridazon and their metabolites metolachlor oxanilic acid, metolachlor ethane sulfonic acid, desphenyl-chloridazon and methyl-desphenyl-chloridazon. The results of the modeling of the water movement and pesticide fate are evaluated and discussed. This work will contribute to a better understanding of the performance of this pesticide fate models for the above mentioned soil and hydrologic conditions.

Schuhmann, A; Gans, O; Weiss, S; Fank, J; Klammler, G; Haberhauer, G; Gerzabek, MH (2016): A long-term lysimeter experiment to investigate the environmental dispersion of the herbicide chloridazon and its metabolites - comparison of lysimeter types. *J SOIL SEDIMENT*. 2016; 16(3): 1032-1045