田间土壤剖面中阿特拉津的迁移试验

Experimental investigation of atrazine transport in field soil profile

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中文摘要：

为了评价阿特拉津的污染风险，采用原位试验法研究了土壤剖面中阿特拉津、Br-与水分耦合迁移特征。结果表明，施用阿特拉津24 h后，模拟降雨1 h，降雨量为40 mm的处理(Ⅰ)和80 mm的处理(Ⅱ)的土壤含水率随土层深度增加先减小后增加；而施用阿特拉津前模拟降雨1 h，降雨量为10 mm，施用24 h后，模拟降雨1 h，降雨量为40 mm的处理(Ⅲ)和80 mm的处理(Ⅳ)的则呈“S”形变化。Br-与阿特拉津在0～10 cm土层的残留浓度最大，分别为1.40、1.09、0.62、0.52 mol/kg和0.82、0.74、0.54、0.29 μg/g。处理Ⅰ、Ⅱ的各土层中Br-与阿特拉津的变异较小。土壤溶液中阿特拉津的浓度随土层深度的增加而降低，表层(20 cm)土壤溶液中阿特拉津残留浓度为：处理Ⅰ>处理Ⅲ>处理Ⅱ>处理Ⅳ。

英文摘要：

To evaluate the potential pollution risk of atrazine, a field in-situ experiment was carried out to investigate the transport characteristics of atrazine, Br- and soil water coupling. The results show as follows: The soil water contents reduce at first, and then increase with the increase of soil depth for the treatment I that 24 hours after application of atrazine the duration of simulating rain event is one hour and the rainfall is 40 mm, and the treatment II that the rainfall is 80 mm. However, the changes of soil water contents with soil profile depth are in the presentation of the "S" shape for the treatment III that prior to application of atrazine the duration of simulating rain event is one hour and the rainfall is 10 mm, 24 hours after applying atrazine the duration of simulating rain event is one hour and the rainfall is 40 mm, and the treatment IV that the rainfall is 80 mm. In field experiments, the highest residual concentrations of Br- and atrazine appear in surface layers (0～10 cm), the values of residual concentrations for four treatments (I, II, III and IV) are 1.40, 1.09, 0.62, 0.52mol/kg for Br-, and 0.82, 0.74, 0.54, 0.29 μg/g for atrazine, respectively. Compared with the treatments III and IV, the concentrations of atrazine and Br- in soil surface layers are higher, however the variability of concentration is less for the treatments of I and II. The residual concentration of atrazine in soil solution gradually reduces with the increase of soil depth. For all the treatments, the order of residual concentration of atrazine in soil solution at surface soil layers (20 cm) is I>III>II>IV.

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