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Using hydropedological concepts to parameterize the pesticide fate model MACRO for EU-wide predictions

N. Jarvis (1), J. Hollis (2), F. Stenemo (1), A. Lindahl (1) and I. Dubus (3)

(1) Dept. Soil Sci., SLU, Uppsala, Sweden, (2) Cranfield Univ., Cranfield, U.K., (3) BRGM, Orleans, France (nicholas.jarvis@mv.slu.se / Fax: +46 18 672795 / Phone: +46 18 672465)

In this presentation, we describe ongoing work carried out in the EU 6^{th} framework project FOOTPRINT, to develop a complete and consistent hydropedological parameterization scheme for the pesticide fate model MACRO that only utilizes EU-wide survey data. The scheme is based on $>$ 500 benchmark soil profiles ('FOOTPRINT soil types') with accompanying analytical physical and chemical property data, identified and mapped at the EU-scale. Each soil type is linked to the HOST hydrological classification scheme, which classifies soils according to their hydrologic behaviour. In FOOTPRINT, each soil type is assigned to one of four major classes, with respect to the partitioning between recharge to groundwater and discharge to surface water. These four classes translate into different bottom boundary conditions in the MACRO model, thereby controlling the partitioning of excess water. Pedotransfer functions are employed to translate available soil profile analytical data to hydraulic and physical parameters in the model. A major challenge here is to develop pedotransfer functions that account for the effects of soil structure and macropore flow on pesticide leaching. This work is described in detail, and a proposal is made, which will be tested and refined in the coming years within the FOOTPRINT project.