



The FOOT-CRS tool: Pesticide risk assessment and management in the EU at the catchment scale

S. Reichenberger (1) and the FOOTPRINT team

(1) University Giessen, Institute of Landscape Ecology and Resources Management, 35392 Giessen, Germany (email: stefan.reichenberger@umwelt.uni-giessen.de)

The EU-project FOOTPRINT (www.eu-footprint.org) aims at developing three pesticide risk prediction and management tools, for use at different spatial scales. The tools will allow users to: i) identify the dominant pathways and sources of pesticide contamination in the landscape; ii) estimate levels of pesticide concentrations in ground- and surface water; and iii) make assessments of how the implementation of mitigation strategies would reduce pesticide contamination. The three FOOTPRINT tools share the same underlying science (e.g. a database of agro-environmental scenarios occurring in the EU) and will provide an integrated solution to pesticide risk assessment and management in the EU. The three tools are designed to work in a top-down sequence, i.e. first EU- or nation-wide simulations with FOOT-NES, then catchment-scale simulations with FOOT-CRS, then farm-scale simulations with FOOT-FS. The FOOTPRINT tools are complementary to other initiatives in the field of spatial modelling of exposure of pesticides or other contaminants.

In the tool FOOT-CRS (Catchment and Regional Scale), the emphasis is on i) identifying the areas most contributing to the contamination of water resources by pesticides, and ii) defining and/or optimising action plans at the scale of the catchment. FOOT-CRS is being programmed as an add-on in ArcGIS 9.2.

FOOT-CRS uses the observed surface water network, and Predicted Environmental Concentrations in surface water (PEC_{sw}) are calculated at the catchment outlet (i.e. for one point in space). For the calculation of pesticide inputs into surface water via surface runoff and erosion, a routing to the surface water network is performed and

the load reduction by reinfiltration or redeposition explicitly calculated. Drift input calculation is also done on a grid basis (5 m * 5 m), considering mitigating landscape elements like hedges and riparian vegetation.

Risk assessment for groundwater in FOOT-CRS will make use of the recently developed SUGAR index, which tells whether a particular area contributes more to groundwater recharge or to surface water discharge. SUGAR combines two approaches for hydrological assessments: the IDPR index (which is computed using only observed data: a DEM and the observed surface water network) and the SPR (Standard Percentage Runoff), which is used in catchment hydrology and available for each FOOT-PRINT soil type.

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