

Development of Dutch exposure scenarios for aquatic organisms

Theme: Water Framework Directive

BO-06-006-002

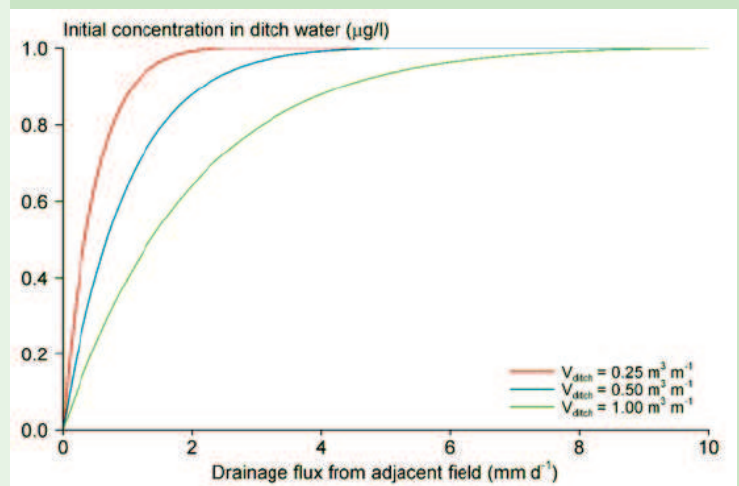
Problem

At present the exposure of aquatic organisms is probably underestimated in the Dutch registration procedure for most substances applied in arable crops. The only entry route considered is spray drift whereas also drainage and surface runoff may be important entry routes.

Approach

The aim of the study is to select a vulnerable scenario for the drainage entry route.

- PBL calculated yearly maximum concentrations in water flowing out of drainpipes at the Dutch national scale using the PEARL model
- Alterra developed a metamodel of TOXSWA to convert drainpipe concentrations into surface water concentrations
- Alterra and PBL combined these two items to generate a vulnerability map of concentrations in Dutch surface waters resulting from drainpipe leaching



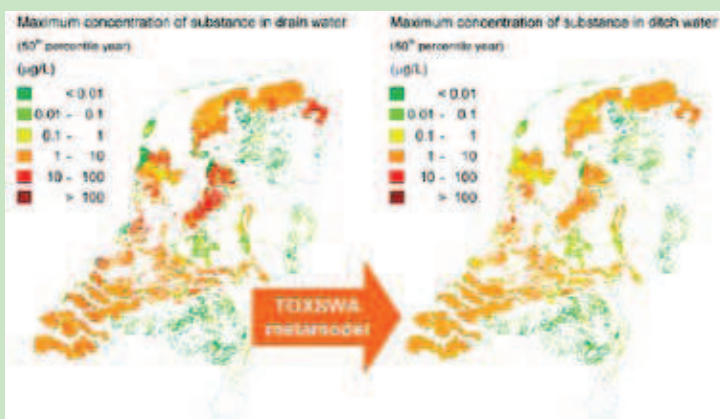
The concentration in ditch water as a function of the daily drain flux for three ditches of different size. The concentration in the drainpipe is assumed to be 1 µg/L.

Results

- For a daily drain flux of about a few millimetres the concentration in the ditch is almost equal to the concentration in the drainpipe. For daily drain fluxes of about 0.1 mm, the dilution of the drainpipe concentrations in the ditch is considerable
- The spatial patterns of drainpipe concentrations and of ditch concentrations are similar; the maps shown are not yet final because of continuing discussion on the quality of the leaching calculations

Future use in risk assessment

- On the basis of the map with the concentrations in the ditches, one or two scenarios will be selected and parameterised
- These scenarios will be used in the Dutch pesticide registration procedure to assess the exposure of aquatic organisms



Maps of the yearly maximum concentrations in drainpipes and of the yearly maximum concentrations in ditches for Dutch drained field systems.

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This project is part of the BO research programme Plant Health of the Ministry of Agriculture, Nature and Food Quality