



## **Sensitivity of Land Use Change Scenarios to the Vegetation Parameterization in SWAT**

S. van der Heijden and U. Haberlandt

Leibniz Universität Hannover, Institute of Water Resources Management, Hydrology and Agricultural Hydraulic Engineering,  
Hannover, Germany (vdheijden@iww.uni-hannover.de)

The effects of possible land use changes on the water balance of a catchment is an important topic for sustainable water resources management. In order to quantify such effects, ecohydrological models are needed which are able to simulate the growth cycles of cultivated crops and natural vegetation alike. SWAT (Soil and Water Assessment Tool) is such a model, in which different plant species are defined by a large number of parameters.

Since plants are an integral part of the water cycle due to interception and transpiration, different plant parameterizations can have considerable impact on the water budget. When calibrating on a current state, different parameters in the plant database only play a minor role, since their influence is superimposed by other prevalent calibration parameters. Their effect becomes apparent however when simulating scenarios of land use change.

A catchment of 1000 km<sup>2</sup> was calibrated on its current state for several selected sets of plant parameters. Two scenarios were simulated, the first converting a good part of the arable land into forested area, and the second vice versa. The modelling results and the resulting changes between current state and scenarios were compared for each of the different plant parameter sets. Average annual and seasonal water budget, the separation into surface runoff, interflow and base flow, and the effect on peak flows was examined.