

EVALUATION OF A DYNAMIC MULTI-CLASS SEDIMENT TRANSPORT MODEL IN CATCHMENTS UNDER SOIL-CONSERVATION AGRICULTURE

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Soil erosion models are essential tools for the successful implementation of effective and adapted soil conservation measures on agricultural land. Therefore, models are needed which predict sediment delivery and quality, give a good spatial representation of erosion and deposition, and allow to account for various soil conservation measures.

Here, we evaluate how well a modified version of the spatially distributed multi-class sediment transport model (MCST) simulates the effectiveness of control measures for different event sizes. We use 8-yr runoff and sediment delivery data from two small agricultural watersheds (0.7 and 3.7 ha) under optimized soil conservation. The modified MCST model successfully simulates surface runoff and sediment delivery from both watersheds; one of which was dominated by sheet and the other was partly affected by rill erosion. Moreover, first results of modelling enrichment of clay in sediment delivery are promising showing the potential of MCST to model sediment enrichment and nutrient transport.

In general, our results and those of an earlier modelling exercise in the Belgian Loess Belt indicate the potential of the MCST model to evaluate soil erosion and deposition under different agricultural land use. As the model explicitly takes into account the dominant effects of soil-conservation agriculture it should be successfully applicable for soil-conservation planning/evaluation in other environments.