

Nitrogen dynamics in a mixed land use catchment integrating measurement and modelling

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Nitrogen (N) is likely the most important element in plant nutrition and intensive, highly productive agriculture is largely dependent on the addition of N fertilizers. However, when plant requirements are exceeded, high N loss can occur from soils to rivers. The slurry spread, a common agricultural practice in Galicia, has been identified as the largest contributor to non-point N pollution source of surface waters in NW Spain.

This study will present the results of N export through monitoring conducted during 5 years (2005/06-2009/10) in a mixed land use catchment (Corbeira catchment), representative of rural areas of NW Spain. The ability of SWAT model to estimate the N fluxes and the contribution of the different land uses to N export will be assessed as well.

The Corbeira catchment (16 km²) is a headwater catchment of the Mero River, which drains into the Cecebre Reservoir, the main supply of water of the city of A Coruña (NW Spain). Land use in the catchment is mainly forest (65%) and agricultural land (grassland 26% and cultivated land 3.8%). The catch-

ment has been instrumented with a water level coupled to an automatic sampler at the catchment outlet, which allows us to dispose of discharge data and water samples at this point. Moreover, a total of 6 sampling sites were selected inside the catchment taking into account the land use distribution. The data obtained over this period will be used for the calibration and validation of the model.

The results are expected to provide a preliminary assessment of the seasonal behaviour of N export and the role of hydrological conditions and agricultural practices in this seasonality. It is also expected that the model might be able to simulate adequately the key factor and the processes controlling the seasonal and inter-annual nitrogen dynamic and provide detailed information on the relative inputs from the different land uses. This information will help investigate the options for the reduction of the N input and implement Best Management Practices which will, undoubtedly, improve the water quality in the study area.

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