



Delineation of priority areas for the implementation of agro-environmental nitrogen reduction measures in the Federal State of North Rhine-Westfalia, Germany

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The main goal of the project was to assess nitrogen pollution of surface waters and groundwater in the river basins of the Federal State of North Rhine Westphalia (NRW), Germany. For this purpose the hydrological models GROWA-DENUZ/WEKU were coupled to the agro-economic model RAUMIS. By combining approaches to quantify the inputs from point sources and from diffuse sources with economic profitability analyses, the model instrument was able to consider simultaneously the complex socio-economic and hydrological/hydrogeological interdependencies.

The focus of this presentation will be the procedure for the identification of hot spot areas for the implementation of agricultural reduction measures in order to reach the EU groundwater quality target for nitrate (50 mg/l). At first the actual N inputs into groundwater and surface waters resulting from diffuse sources and point sources are assessed. Based on this status-quo analysis, the effects of agricultural and environmental measures which have to be implemented by the year 2015 at EU level (baseline scenario) are predicted. Then, by means of a backward model calculation the additional N reduction to guarantee nitrate concentrations in groundwater below the EU threshold value of 50 mg/l are determined.

Model results indicate that additional N reduction measures don't have to be implemented area-covering in order to be efficient, but in certain subareas only. It is suggested that in these subareas the available financial resources for the implementation of N reduction measures shall be used for individual, i.e. regionally adapted nitrate reduction measures.