Dutch Framework for P mitigation options and their cost-effectiveness

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Meeting surface water quality goals for N and P in rural areas of the Netherlands requires site specific measures (SSM) in addition to the generic manure policy in force. For the efficient introduction of SSM their cost-effectiveness needs to be known. In the Netherlands there is an ongoing research project (2005-2010) to establish the effectiveness of unfertilized buffer strips. It comprises 5 field experiments to measure the effectiveness of unfertilized buffer strips under different circumstances (1), a model study for up-scaling (2), and a model study to estimate the cost-effectiveness of alternative SSM, including the costs of buffer strips (3).

With the effectiveness from 1 and 2, and the calculated costs from 3, we will be able to calculate cost-effectiveness of buffer strips by the year 2010. In the meantime the results from part 3 may be utilized for the selection of SSM for implementation or further research.

For comparison with buffer strips, we selected both source measures, hydrological measures and two types of constructed wetland ("end-of-pipe"), all tackling different emission sources and routes. The application of source measures was translated into farm management strategies, for which both costs and fertilizer rates were calculated with the farm models (BBPR, dairy) and MEBOT (arable). These fertilizer rates were input for the nutrient leaching model ANIMO. The hydrological model SWAP produces the hydrological input for ANIMO and calculates the effects of hydrological measures. The resulting average nutrient loads were calculated over a 15 year period, starting 7 years after implementation of the measure. The load reduction by constructed wetland was estimated on the basis of literature data and an estimation of expected input levels.

Both the methods used and available results will be presented.