

COST Action 869, Mitigation options for nutrient reduction in surface water and groundwater. WG4 workshop, 18th - 22th May 2008, Waidhofen/Ybbs - Austria

Abstract:

Retention of Phosphorus and Nitrogen in lowland river floodplains.

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Nitrogen and Phosphorus transport and retention was studied in several restored floodplain areas of lowland rivers in the Netherlands. During 2 years of flooding events river inflow and outflow of the floodplain areas was measured. At the same time, sedimentation rates of suspended matter was measured at different transects. The river Beerze floodplain area (fig.1) was constructed in 1999 as a water retention reservoir and nature development area. Over an area of around 55 ha the topsoil is removed (0.15 to 0.35 m) to enable inundation. In the last years flooding occurred during 4 to 6 months per year. River Beerze discharge is around 2.5 m³/s in winter and around 0.5 m³/s in summer. Field measurements with sedimentation mats resulted in average annual sedimentation rates of 2000-3000 g/m²/year (gross sedimentation), clearly decreasing with increasing distance to the river. From the difference between the suspended matter loads from the inflow and the outflow net sedimentation was calculated at 400-800 g/m²/year. From inflow to outflow river water concentrations of nitrogen dropped 5-15% and of phosphorus 20-30%. The largest part of the phosphorus retention could be attributed to sedimentation, whereas for nitrogen this was only 25%. Here other processes (e.g. denitrification, biomass uptake) are expected to contribute most. More detailed mass balance and process research is needed to set guidelines for quantification retention capacities in restored river floodplains.

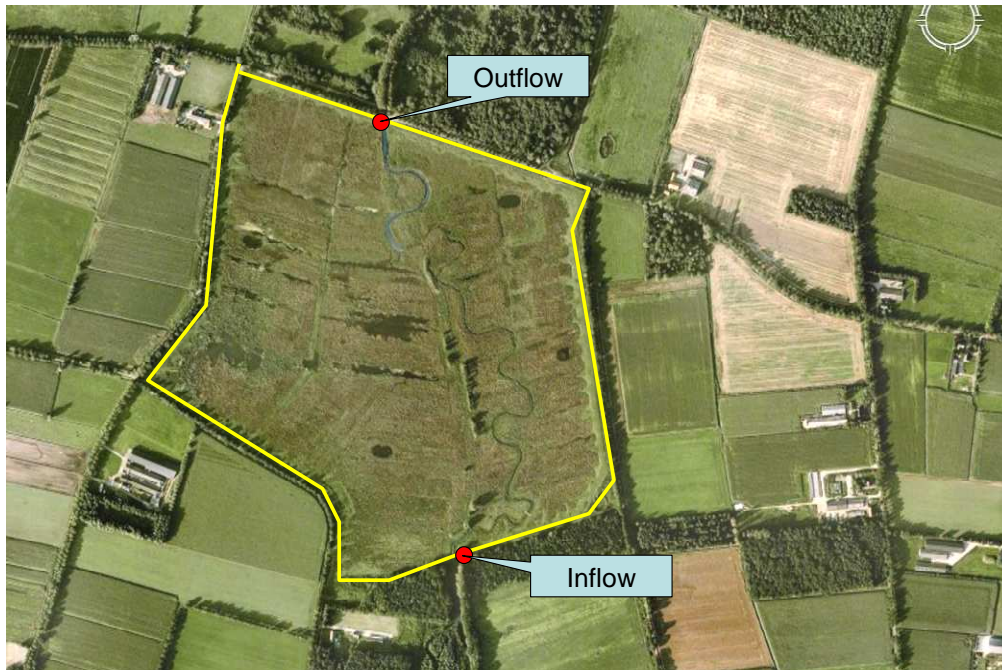


Figure 1. The river Beerze floodplain area (Logtse Baan)