

Abstract for the COST869 meeting in Hamar 22.-25. May 2007

## Integrated risk assessment of nitrogen and phosphorus losses in Norway

Marianne Bechmann

There has in recent years been an increased attention to tools and models for the risk assessment and identification of critical source areas of agricultural land. A prerequisite for the usefulness of these tools is that they reflect the processes actually occurring in the regions where they are applied. In Norway, the cold climate creates special conditions regarding snowmelt and erosion. Large temporal variation in erosion characterize the snowmelt period. Another process related to the cold climate is the freezing of plants, which causes release of highly bioavailable phosphorus. Additionally, the intensive tile drainage and macropore transport because of cracking clay soils have an effect on the relative importance of subsurface drainage compared to surface runoff. These conditions need to be reflected in tools to assess the risk of N and P losses.

The major objective of study was to develop an integrated approach, based on risk assessment indices for losses of nitrogen (N) and phosphorus (P) in Norway. The N index was based on an N balance approach, whereas the P index was based on a source, transport and delivery approach. The P index was adapted from the US P index and modified for Norwegian conditions by Bechmann (2005). The integrated tool was based on easily available input data at the field scale and applied to a small agricultural catchment (4,5 km<sup>2</sup>) in SE Norway. Results showed that losses of P and N in the case catchment have different critical source areas and pathways of loss. Overall, the present study showed the potential in the usage of a simple assessment methodology to rank farmer fields according to their risk of phosphorus and nitrogen losses.

Bechmann, M. (2005). The phosphorus index tool for assessing phosphorus transfer from agricultural areas in Norway. Dr. Scientiarum Thesis 2005:24. Norwegian University of Life Sciences, Ås, Norway