A web-based P index as a mitigation planning tool

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We have developed a P index for Denmark by adapting the traditional P Index concept and combining this with an interactive mitigation planning facility. Instead of one single index value per field we calculate sub-indices for individual P loss processes. The risk of P loss is assessed according to the P transfer continuum. For each P loss process we describe and parameterize the factors: source, mobilisation, and transport. At present the Danish P Index includes parameterized descriptions for soil erosion, surface runoff, and leaching by both matric and macropore flow. Phosphorus index maps have been constructed for the entire agricultural area at the field block level in Denmark. The potential of P loss from field blocks by individual transport pathways is distinguished into low, medium or high risk classes. Fourteen different options for mitigating P loss have been assessed regarding their effect on P loss and the associated cost. The Danish P Index and the associated mitigation options were incorporated into a web-based tool with three components: (1) a GIS component where P risk maps and background information can be viewed; (2) a mitigation planning facility that permits interactive data input by the user and calculates the effect and costs of mitigation scenarios for an area chosen by the user; (3) a download component where GIS information and mitigation scenarios can be downloaded by the user for further processing in local applications.
The tool gathers all currently, for the whole agricultural area, available information regarding P loss and thus facilitates access to relevant data. The purpose of the tool is both educational and to assist local environmental planners and agricultural advisers in prioritizing P mitigation in small and medium-sized catchments with a known problem in a recipient. Despite the conceptual simplicity of the representation of P loss processes, a major challenge lies in quantifying the uncertainties associated with the risk assessment.