

SIMULATION OF CRITICAL LOAD FOR NITROGEN FOR TERRESTRIAL PLANT ASSOCIATION IN THE NETHERLANDS

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An iterative search procedure was used to 'invert' the soil chemical model SMART2. This 'inverted' form of SMART2 was used to estimate atmospheric nitrogen deposition at the critical conditions for 139 terrestrial vegetation associations. The critical conditions are the lower end of the pH range, and the upper end of the nitrogen availability range for each association, estimated on the basis of Ellenberg values of vegetation relevees. The resulting critical load values were subjected to an uncertainty analysis. The estimation of nitrogen availability on the basis of Ellenberg's indicator for N has the largest contribution to the uncertainty. The critical load over all vegetation types and soil types is estimated to be 22 ± 8 kg N ha⁻¹.y⁻¹. This is a rather 'hard' value, however critical loads per vegetation type are less 'hard', and it is not possible to determine critical load values per site. The uncertainties can only be reduced if more data become available on the abiotic response per species under field conditions. The critical loads found in this study were compared to the 'herijking' and 'SMB' critical loads and to empirically derived values. The 'SMB' critical loads appeared to be far lower than all other critical loads, which were in the same order of magnitude.