



Eutrophication indices of an atlantic agroforestry catchment

P. Sande-Fouz and J.M. Miras-Avalos

Universidade da Coruña, Instituto Universitario de Xeoloxía, Facultad de Ciencias, A Coruña, Spain (jmirasa@udc.es, +34 981167000)

The main elements causing eutrophication in waters are nitrogen and phosphorus. It is admitted that surface waters productivity is limited by either phosphorus, in lakes, or nitrogen, in rivers. Therefore, this study aims to analyze the seasonal fluctuation of N and P concentrations and to assess the N/P ratio at the outlet of an agroforestry catchment under atlantic climatic conditions in order to assess its eutrophication status. The studied catchment is located in A Coruña province (NW Spain). Water samples were collected at the catchment outlet from 2003 to 2007, amounting to a total of 555 samples. Total phosphorus contents were measured using ICP-MS whereas those of nitrogen were assessed by capilar electrophoresis. Maximum average values were registered in 2006 for nitrogen and 2005 for phosphorus. Nitrogen minimum average values were measured in 2003 and those of phosphorus in 2007. Coefficients of variation were higher for phosphorus than for nitrogen. The highest N/P ratios were observed in 2007 and the lowest ones in 2003. Usually, higher N/P values were related to base flow periods whereas lower values of this ratio occurred during floods. N/P values higher than 7 indicate eutrophication conditions caused by phosphorus and if the ratio is lower than this threshold, nitrogen is the limitant element. Our results indicated that, in this catchment, phosphorus was the limitant element for eutrophication. Moreover, eutrophication risk is higher during flood events with phosphorus supplies by runoff.