Eutrophication in the Azores islands – Portugal

Jorge Pinheiro
University of the Azores

Nonpoint source pollution, especially from fertilizer and manure applications in agricultural lands, has been identified in many parts of the world as the major source of nutrients responsible for accelerating the rate of eutrophication, affecting fresh water quality for most of human uses. The recent intensification of pasture production and caw grazing in the Azores archipelago – Portugal, has brought an excess of nutrient loads to the soils and several lakes are currently subjected to an eutrophic condition. In this paper the volcanic crater of Sete Cidades of S. Miguel Island is taken as a case example for the discussion of the eutrophication process in the Azores where pasture-based grazing of milking caws is the dominant agricultural system. As the native P fertility of these soils is low, fertilizer applications by farmers have been increasingly high over the years. The average annual application rates of phosphorus and nitrogen has been estimated as 135 kg P_2O_5 and 750 kg N, respectively. Results of Olsen P soil tests for the entire pasture area of the watershed in 1998 indicate that the excess of P fertilizer application has build up a high soil P load increasing the risk of transport to the lakes. The degree of phosphorus saturation (DPS) analytical correlates well with Olsen P soil test and it is admitted that soil testing programs can become important in the development of the environmentally oriented best management practices (BMP) to be applied at the Sete Cidades watershed in order to reduce P losses from pastures to the superficial water masses.