

Phosphate sorption characteristics of European alpine soils

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Soil chemistry plays an important role in the composition of surface waters. In areas with limited human activities, properties of catchment soils directly relate to the exported nutrients to surface waters. Phosphate sorption research is common in agricultural and forest soils, but data from alpine areas are limited.

Scientists from the Biology Centre of the Academy of Sciences of the Czech Republic, from the Centre for Advanced Studies of Blanes, and from the Forest Sciences Center of Catalonia, have conducted research of the impact European alpine soils have on numerous catchments of alpine lakes.

By comparing phosphate sorption characteristics of soils with different levels of acidification, the scientists determined which soil chemical properties affected phosphate sorption.

The study showed that the sorption of alpine soils from different localities were generally similar, ranging between 9 – 145 mmol kg⁻¹. This data was positively correlated with the sum of concentrations of aluminum and iron oxides.

Aluminum oxide concentration was the most important factor tested, accounting for an average of 67% of the sorption variability from the test sites.

Results also showed that similar concentrations of aluminum and iron

oxides are able to more effectively retain phosphate in more acidic areas than in areas with high soil pH. Therefore, different levels of acidification of soils may contribute to lower [phosphate](#) concentrations in lakes in more acidified areas, compared to lakes less affected by acidification.

The complete results from this study can be found in the May-June 2011 issue of the *Soil Science Society of America Journal*.

More information: The full article is available for no charge for 30 days following the date of this summary. View the abstract at www.soils.org/publications/sssaj/articles/75/3/862

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