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Fluvial sediment phosphorus fractions vary seasonally

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Emptying a fluvial suspended sediment sampler in one of the streams. Photo by Mikael Östlund.

Agriculture is an important source of phosphorus losses, causing eutrophication and degradation of surface water quality. Phosphorus is usually transported bound to different compounds (i.e., iron, aluminum, and organic material) on small soil particles.

However, the composition of different phosphorus fractions on fluvial suspended sediments in small agricultural streams is not well researched.

Researchers conducted a field study in three small agricultural streams over two years to see the variation of phosphorus fractions over seasons as well as their connection to the composition of the streambed sediment. Fluvial suspended sediment was continuously sampled in the water, and streambed sediment was sampled once using a sediment corer.

The results, published in the *Journal of Environmental Quality*, showed that the dominating fraction varied between catchments depending on clay content and geology. Iron-bound phosphorus, which is mostly bioavailable, varied seasonally in all three catchments, with high concentrations during summer and low concentrations during winter. High concentrations during summertime can increase biological production and enhance eutrophication. By studying fluvial suspended sediment and different phosphorus fractions, this study increases understanding of the eutrophication risks caused by agricultural sediment losses.

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Sandström, S., Futter, M.N., O'Connell, D.W., Lannergård, E.E., Rakovic, J., Kyllmar, K., Gill, L.W., & Djodjic, F. (2021). Variability in fluvial suspended and streambed sediment phosphorus fractions among small agricultural streams. *Journal of Environmental Quality*, *50*, 612–626. **https://doi.org/10.1002/jeq2.20210**

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