



Leaching of dissolved organic carbon in a microlysimeter set-up: the effect of fertilization and soil texture

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Agricultural land use is prone to increase the delivery of nutrients such as carbon and nitrogen to aquatic systems, nevertheless the impact of fertilizer type on the transport, concentration and quality of soil's organic carbon is still largely unknown. Dissolved organic carbon in aquatic systems is changing basic metabolic processes at the water-sediment interface, affecting the ecological state and influencing the health of the water bodies.

The aim of this study was to evaluate the impact of different fertilizer applications (no application as opposed to organic and mineral fertilizer application) and different soil textures (silty loam and sandy soil) on the amount and composition of dissolved organic carbon (DOC). The different fertilizers were added on top of microlysimeters (0-16 cm) and soil cores were rained, receiving 6 mm per day.

We found a distinct and specific effect of the nitrogen fertilizer on the amount and composition of leached DOC; furthermore, soil texture altered the response of DOC to the type of fertilizer applied. For the silty loam soil the highest DOC release occurred at non-fertilized plots, whereas in the case of sandy soil the organic fertilizer application resulted in the highest DOC leaching.

The concentration of DOC decreased constantly with time when no fertilizer was applied. For both fertilizer treatments DOC leaching increased during the first 25 days due to microbial activity. Finally, DOC concentrations decreased to the control level.