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Dissolved reactive phosphorus in runoff assessed by soil extraction with an acetate buffer

Keywords eutrophication, phosphorus, runoff, soil testing, catchment studies,

Abstract

Agronomic soil test phosphorus (STP) data is, in addition to fertility studies, increasingly utilised in environmental risk ass
compared relationships between soil P extracted by acid ammonium acetate (AAAc-P) and water-soluble P (Pw) in laboratory, and A
dissolved molybdatereactive P (DRP) in field runoff. The laboratory study suggested a close relationship (R2 = 0.87, n = 64) be
and soluble P concentration in 1:100 (w/v) soil-to-water extracts, described by a linear equation:Pw (mg l?) =0.021 ?AAAc-P (mg
(mg l?). In Lake Rehtijärvi cathcment, dominated by clayey soils, the AAAc-P content of field Ap horizon in a similar manner in
flow-weighted DRP concentration in surface runoff and drainflow:a 1 mg l? increase in soil AAAc-P corresponded to 0.015 and 0.0
increase in surface runoff and drainflow DRP, respectively. When the AAAc-P vs.Pw relationship obtained in the laboratory test
predict the average DRP concentration in edge-of-field runoff, the precision of the DRP estimates inferred from STP data was in
cases ?0.10 mg l?. In the L. Rehtijärvi catchment, 50% of the diffuse DRP loading risk was assigned to an area that corresponde
20% of the fields and the situation may be similar in the national scale.

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[Full text] (PDF 249 kt)

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