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Soil and Water Research

Laboratory assay of aluminium transport through intact soil sample under controlled conditions

Batysta M., Borůvka L., Drábek O. , Tejnecký V., Šebek O.:

Soil & Water Res., 5 (2010): 69-74

[fulltext]

Aluminium (Al) mobilisation in the forest soils is a serious problem due to the soil acidification. The rate and magnitude of leaching of Al and other elements and compounds from soils can be examined by means of percolation experiments. Aluminium elutriation was studied under laboratory conditions using undisturbed samples of forest topsoil from the Paličnick area in the Jizera Mountains (Czech Republic), which originated under two different vegetation covers: European beech (*Fagus sylvatica* L.) and Norway spruce (*Picea abies* (L.) Karst). Ponding infiltration was performed using three subsequently applied solutions. KCl solution was used to simulate the soil solution. Solutions with sulphates and nitrates addition (of two different pH values) were used to simulate acid rainfall. Passing liquid phase was analysed with respect to Al content and aluminium speciation. Differences were found in Al content and transport between different soils under spruce and beech covers. The soil sample under the spruce forest (SF sample) had a higher initial Al content than the soil sample under the

beech forest (BF sample). As a result, the aluminium leaching from the spruce soil sample and the final content of water-extractable Al in the soil (Al content after the leaching experiment) were higher compared to the beech soil sample. This suggests that Al mobility and potential toxicity in the beech forest are greater than those in the spruce monoculture when studied in the acidification endangered areas.

Keywords:

aluminium transport; forest soils; forest type; percolation experiment; soil acidification

[[fulltext](#)]

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