

The impact of 90 years of drainage works on some chemical properties of raised peat bog organic soils - case study from valley of the Upper San river in Polish Bieszczady Mts. (Eastern Carpathians).

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Wetland ecosystems, including raised peat bogs are characterized by a specific water conditions and unique vegetation, which makes peatland highly important habitats due to protection of biodiversity. Transformation of peat bog areas is particularly related to changes in the environment e.g. according to reclamation works. Drainage of peatlands is directly associated to the decrease of groundwater levels and lead to a number of changes in the chemical and physical properties of peat material, included contents of exchangeable cations in the surface layers of peat soils in the decession phase of peat development and release above compounds from the soil to ground or surface waters.

The aim of the research was to determine the impact of extended drainage works on chemical composition of sorption complex of raised peat bog organic soils and identification the potential environmental effects of alkaline cations leaching to the surface waters.

Research was carried out on the peat bogs located in the Upper San valley in Polish Bieszczady Mts. (Eastern Carpathians). Soil samples used in this study were collected from 3 soil profiles in 10 or 20 cm intervals to the approximately 130 cm depth. Laboratory analyses included determination of basic properties of organic material such as the degree of peat decomposition, ash content, soil pH and carbon, hydrogen, nitrogen concentrations. Additionally the amount of alkaline cations, exchangeable and extractable acidity was determined. Furthermore, the degree of saturation of the sorption complex with alkaline cations (V) and cation exchange capacity (CEC) are calculated. In order to evaluate the impact of the examined peat bog to the environment, also water samples were collected and ions composition was measured.

The obtained results show that studied organic soils are oligotrophic and strongly acidic. In the case of organic material related to decession phase of peat development, as a result of the lengthy drainage works, increased pH values, changes in the morphology of the peat, high nitrogen contents and lower values of C/N ratios are noticed. The increased contents of calcium, occurred in soil layers comprised of moorsh forming process are probably the effect of peat mineralization process or changes in the chemistry and fluctuations of groundwater levels. As a result of above factors, increased calcium and magnesium concentrations in surface waters in the immediate vicinity of investigated bogs are observed.