



Humus compounds of organic soils developed in river valleys

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The quality of humus compounds of organic soils developed in two river valleys was examined using the fractionation scheme proposed by Duchaufour and Jacquin, as well as by examining humus susceptibility to oxidation with solutions of potassium permanganate (KMnO_4). The first method is based on extraction of fulvic and humic acids by sodium hydroxide, sodium pyrophosphate, and a mixture of sodium pyrophosphate and sodium sulphate. The soils studied contain strongly humified organic matter, with substantial admixture of silty and clayey mineral particles as a result of floods connected with the river's activity. Soils in semi-natural conditions with ongoing processes of organic matter accumulation, as well as soils drained and used as meadows and pastures, were studied. The soils are situated in the river valleys of the Narew River tributaries (NE Poland). The properties of these soils are mostly dependent on the humus compounds. The examined soils vary greatly in terms of organic carbon content (from 4% to 24%). The humus consists mainly of humic acids strongly bounded with clay minerals. The non-extractable part of the humus, defined as humins, amounted to about 80-90% of the total organic carbon in the soils with the current process of organic matter accumulation, and to about 60-70% in the drained, moorsh soils. The content of the non-oxidizing fraction is also high, and therefore it can be stated that the humus is not easily susceptible to oxidation. The positive effect of clay admixture on the quality and stability of organic matter in organic soils occurring in river valleys was observed. Fractionation of organic matter by means of the two methods applied provides data useful for humus characterization and evaluation of qualitative changes in the soils due to dewatering.