

SOIL FORMATION OF GYTTJA SOILS WITH RESPECT TO THEIR SEDIMENT COMPOSITION AND LANDUSE HISTORY

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The formation of gyttja soils takes place in former lakes, predominantly under aeration. This phenomenon of now terrestrial, but former subhydric soils (so called gyttja soils) is mainly due to artificial drainage. In northern Europe gyttja deposits are found in northern Germany, Poland, Finland and Sweden, where in Poland the majority of these soils is allocated. Their investigations date back to the middle of the last century (e.g. Ugglar 1964). After to their accumulation the majority of these soils have been affected by man. Their cultivation led to a secondary pedogenesis, which affected the chemical and physical properties. Thus, the sustainable use of this special type of very young land (subhydric soils) is of special importance. Subhydric soils have a very specific composition, which differs greatly from other soils. The amount of organic matter and CaCO_3 range from 5 to 95 %. Almost all sediments have a high amount of very small particles and, as consequence, a high pore space volume, particularly of the micro-pores. Hence, special emphasis has to be directed towards evaluating the changes of the sequence: formation of sediment under water -> drainage/drying -> agricultural use/pedogenesis -> degradation/devastation in order to prevent negative consequences for the environment. The work presented here depicts sites in Germany and Poland, most of which had been used until the 1990s, some of them are still in use. In Germany, diatomaceous earth and in Poland carbonate gyttja and lacustrine chalk is exploited. The aim of the work was: i) to establish criteria for the classification of gyttja substrates, ii) to describe characteristic horizons of gyttja soils and iii) to evaluate the transformation of soil properties induced by the pedogenesis. The properties of different types of gyttja substrates are described.