



Impact of land use on soil water conditions in transformed hydrogenic sites used as grasslands

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The evolution of hydrogenic peat soils is closely related to the genesis of peat and to changes in water relations. Agricultural use of peatlands and their exploitation lead to the release of carbon. Drainage and intensity agricultural use of peatlands caused land use surface subsidence and initiated the moorhing process. The rate of subsidence varies strongly and depends on a number of factors such as type of peat, rate of decomposition, density of thickness of peat layer, drainage depth, climate, land use and drainage duration. Long-term cultivation and agricultural use of peatlands has led to a number of effects including lowering of the water table, increased aeration, and changes in plant communities. Aeration of the upper peat layers resulting from drainage and agricultural land use triggers the aerobic decomposition process. As results of drained and due to a number of factors including oscillation of ground water level, changes of aerobic conditions, different plant communities, root exudes and products of degradation of rest of plant remains, peat-muck soils may undergo a process of secondary transformation. Drainage in particular results in a sharp change of biotic and abiotic properties and consequent degradation of peat organic matter.

The aim of this study was to estimate the influence of the intensity of the land use on soil water regime. The investigations demonstrate long-term results carried out on Kuwasz drainage-subirrigation system (Biebrza Basin, North-East Poland). The intensification of agriculture caused of agricultural use from extensively utilized wetlands areas. This fact causes continuous changes in plant succession. Area of meadow veg-

etation starts to be overgrown with osier and with willow-birch shrubs. Such changes in the succession cause an increased evapotranspiration and its in turn contributes to the exhaustion of water easily available to plants bringing in effect a more intensity drying of the peat-moorsh soils and changes its physico-chemical properties. The soils are classified as peat (MtIIcb and MtIIcc) stage of the moorshing process. They were created of reed peat strongly decomposed R₃ and medium decomposed R₂ sedge peat which in the deeper layer passed into rush peat with a medium degree of decomposition. These soils belong to dry prognostic soil moisture complex. These investigation shown, that land use as irrigated and non irrigated two cut meadows is the most appropriate for the soil protection. Abandonment of agricultural use of grasslands let to over drying of the soil and caused changes in morphology of the soil profile.