CONTROLLED RUN-OFF FROM AGRICULTURALLY USED PEATLANDS IN THE NOTEC RIVER VALLEY AND ITS EFFECT ON WATER STATUS OF PEATLANDS

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Peatlands in river valleys have been utilized by agriculture for centuries, with hay-making and grazing as the main land use types. Traditional management led to the development of many unique ecosystems transformed to different habitats, often degraded. Their protection and human economy in the harmony with nature is a very important problem.

The upper Notec river catchment has been chosen as an example, on which a simple method of controlling run-off from agricultural peatlands as a way of their proper protection will be shown.

The upper Notec river catchment occupies an area of 4089 km². It is located in the physico-geographical region called the Wielkopolskie Lakeland. Peatlands cover 42% of the upper Notec river valley.

Apart from the antropogenic reasons of overdrying (irrigation-drainage ditches), frequent atmospheric, hydrologic and soil droughts in the region have their share in the degradation of peatlands. This region is one of the driest in Central Europe. The average annual precipitation rate for this area is about 550 mm and average sum of precitipation in the growing season is only 270 mm. Besides the average mean daily values of air temperature are high and air humidity – low. These conditions cause severe and frequent droughts and scarcity of water resources. The soil is overdried, which is one of the main threats to agriculturally used peatland sites. The agricultural use of wetland areas in the upper Notec river catchment led to their transformation into extensively managed wet and moist grasslands and, more intensively managed, slightly moist and dry grasslands. Some peatlands are completely degraded and have been turned into arable land. This caused degradation of organic matter of soil, natural plant communities and whole natural ecosystem.

The proper water managment in the river valley is important for protection or restoration of peatland sites. Controlled run-off can be one of means to counteract this drainage of organic soils. This technique is recommended for farmers as a cheap and simple measure in the Notec river valley.

Field investigations carried out in 2002-2004 in peatland sites showed positive effect of controlled run-off and groundwater lowering in spring on forming soil moisture and groundwater table depths. The results show that controlling groundwater table depths in meadow sites with organic soils in the river valley with the method of controlled run-off ensures soil moisture in the range required for peatland protection as well as reduces frequency and duration of soil drought and delays the drought occurrence. Drainage in spring due to controlling of run-off from grassland makes gorundwater level and organic soil moisture decrease slower in the river valley, preserving organic mater and maintaining hihg level of moisture in the soil hydrogenic sites.