

LEAF AREA INDEX (LAI) OF WETLAND VEGETATION

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The value of leaf area index is defined as a ratio of leaf area to the soil area underneath. This quantity very well characterizes the plant canopy condition and plays a fundamental role in the description of the interaction between vegetation and its environment. The investigation of heat balance structure conducted for some years at the Department of Agrometeorology, AU Poznań proved that primarily vegetation condition is responsible for heat balance structure. The better plants condition the bigger latent heat flux and lower sensible heat flux are. The lower plants condition cause a reversion of the division of energy and then a bigger part of energy is used for air heating. On the basis of several years of measurement a model describing this division was developed. The Bowen ratio, i.e. the ratio of sensible to latent heat flux, is estimated in this model. In the model the assumed values of the Bowen ratio depend on some meteorological parameters and the plant development stage which in the first studies was described by the ratio of the actual height of plants to their maximum height. The latest investigations showed that it is more reliable to assume the ratio of the current LAI value to the maximum LAI value. In the 1990's Laicor developed a device making it possible to determine the LAI value in a relatively simple way (LAI 2000). As a result of its application it is possible to easily collect data on LAI values in different plant areas. This makes it possible – in combination with on-site observations – to determine relatively accurately the maximum LAI values. In recent years LAI measurements were taken for plant cover of wetlands. The leaf area index was measured for shrubs and other plants in flooded areas of the Wisła and Warta Rivers, as well as vegetation typical of boglands. The paper presents the results of the conducted investigations. It was observed that LAI for vegetation in these areas is frequently lower than that for cultivated crops. Moreover, especially in boglands the development of plants is delayed. Probably the lower LAI values are caused by lower fertility of these areas. The delay in plant development in boglands is caused by a delayed increase in mean temperatures in these areas. The obtained results may be successfully used in modeling evapotranspiration processes.