Surface and canopy conductance of a maize stand

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A b s t r a c t: The daily and seasonal changes in surface and canopy conductance were determined and analyzed during the vegetation period of 2000 for a maize stand growing at Žabčice (Czech Republic). The obtained surface and canopy conductance reached their hourly maxima of 2.04 and 1.18 cm/s. The diurnal courses of the surface conductance showed a steep increase in the morning followed by a decline, caused by the stomatal control of the transpiration. During periods with water stress, a midday depression occurred after the morning maximum.

The canopy resistance of the maize stand responded sensitively to changes in the environmental factors. The global radiation was a limiting factor for the opening of stomata only in the period of 1-2 h near sunrise and sunset. The range of air temperature optimal for the high canopy conductance covers the relatively wide interval about the value of 21°C. The soil water content of 25% of volume represents the threshold above which the canopy conductance is not more limited by the soil water in the root zone. The canopy conductance of the maize stand was strongly influenced by the vapour pressure deficit which reached in analyzed growing season extremely high daily maxima.

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