Seasonal changes in the energy budget of a maize field

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A b s t r a c t : Components of the energy budget of a maize stand were determined at the experimental site of the Agricultural School Enterprise at Žabčice (the Czech Republic, latitude 49°01′ N, longitude 16°37′ E and 179 m above the see level). The structure of the energy balance equation of the maize field was analysed over the period from planting to the stage of the full ripeness (3. 5.–30. 9. 2000). During this period, each square metre of the maize field had 1477.66 MJ of the net radiation at its disposal. Simultaneously, the surface lost 184.99 MJ m^{-2} as the soil heat flux. The energy of 713.45 MJ m^{-2} has been used for evapotranspiration as a latent heat flux and remainder of 579.22 MJ m^{-2} was accounted for the sensible heat flux. Components of the energy budget varied significantly within the analysed period. Their variability can be explain as a result of seasonal changes in the meteorological conditions, the soil water content, and the development of the maize stand. It was found out that the leaf area index and availability of soil water for plants are most important factors controlling the structure of the energy budget of the maize stand.

Key words: surface fluxes, maize, soil moisture, Bowen ratio, plant water regime

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