IMPACT OF THE PROJECTED CLIMATE CHANGE ON SOYBEAN WATER NEEDS IN THE KUYAVIA REGION IN POLAND

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According to the SRES A1B climate change scenario, by the end of the 21st century the temperature in Poland will increase by 2–4°C, while no increase in the precipitation totals is predicted. This will rise the irrigation needs of plants, and thus it will be necessary to develop irrigation systems. In the study, the impact of projected air temperature changes on the water needs of soybean, one of the most valuable high-protein crops, in 2021–2050 in the Kuyavia region in Poland was analyzed. The calculations based on meteorological data collected in 1981–2010 were considered as the reference period. Potential evapotranspiration was adopted as a measure of crop water requirements. The potential evapotranspiration was estimated using the Penman-Monteith method and crop coefficient. Based on these estimations, it was found that in the forecast years the water needs of soybeans will increase by 5% in this crop growing period (from 21 April to 10 September), and by 8% in June–August. The largest monthly soybean water needs increase (by 15%) may occur in August. The predicted climate changes and the increase in the arable crops water requirements, may contribute to an increase in the irrigated area in the Kuyavia region.