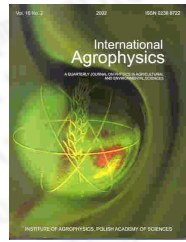


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Influence of groundwater depth and available soil water on evapotranspiration and plant growth

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abstract There is a close relationship between available soil water and evapotranspiration as well as plant growth if we assume adequate soil aeration. Evapotranspiration and plant growth increase with an increasing amount of available water provided either from the soil or from the groundwater, i.e., capillary rise. The relationship between growth and transpiration is based on the stomata regulation which is involved in both water consumption and photosynthesis. Plants regulate their stomata: when they are open and at the same time CO₂ diffuses into the plant atmosphere. These processes are interrupted when stomatas are close. A calibrated simulation model for cropland, grassland, and pine forest, the