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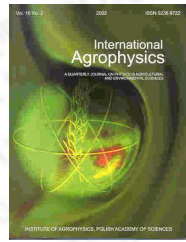
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About the biophysical mechanisms of the long-distance water translocation in plants

[\(get PDF\)](#) M. Kargol<sup>1</sup>, T. Kosztołowicz<sup>1</sup>, S. Przystalski<sup>2</sup><sup>1</sup> Institute of Physics, Pedagogical University, Leśna 16, 25-509 Kielce, Poland<sup>2</sup> Department of Physics and Biophysics, Agricultural University of Wrocław, Norwida 25, 50-375 Wrocław, Poland

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abstract The present work discusses the basic mechanisms of water translocation on the so-called long distances. The translocation includes: transfer of water and mineral components across the root (from the soil to the xylem tracheary elements); transport of water through the xylem (along the plant); permeation of water across the leaf tissue, where most of it evaporates into the atmosphere; and the phloem transport of water and assimilates. The last type of long-distance transport of water occurs in opposite direction to its xylem transport. It has been shown that the long-distance transport of water is mutually connected at its various stages, and their mechanisms are numerous and operative in various parts of the plant. Especially broad coverage has been given in this work to further development of the so-called graviosmotic hypothesis, according to which water might be transported along the xylem vessels by using the graviosmotic mechanisms. This presentation is concerned with that version of the hypothesis which is based on the gravidiffusive mechanism of graviosmosis.

keywords plants, water, mineral components, assimilates, transport mechanisms