

IMMUNOLOCALIZATION OF AQUAPORINS IN THE LEAVES OF TWO *SOLANUM TUBEROSUM* L. GENOTYPES DIFFERENTIATED IN TERMS OF SENSITIVITY TO DROUGHT

Anna Bilska-Kos^{1*}, Karol Maciejak¹, Anna Pawłowska², Krzysztof Treder², Dominika Boguszevska-Mańkowska³

¹ Plant Breeding and Acclimatization Institute – National Research Institute in Radzików, Department of Biochemistry and Biotechnology, Radzików, 05-870 Błonie, Poland

² Plant Breeding and Acclimatization Institute – National Research Institute in Radzików, Bonin Division, Department of Potato Protection and Seed Science at Bonin, 76-009 Bonin, Bonin Str. 3, Poland

³ Plant Breeding and Acclimatization Institute – National Research Institute in Radzików, Jadwisin Division, Department of Potato Agronomy, 05-140 Jadwisin, Szaniawskiego Str. 15, Poland

*E-mail: a.bilska@ihar.edu.pl

Keywords: aquaporins, drought stress, potato, transmission electron microscope.

In the last decade, the frequency of long-term drought periods in Central Europe has increased, which has serious consequences for the yield of crops, including potato (*Solanum tuberosum* L.). The plant aquaporins from the PIP subfamily (plasma membrane intrinsic proteins) are widely studied in the context of their key role in the regulation of the cell water potential under stress conditions.

In this work, we present the changes in the intensity of labelling of aquaporins in stressed plants of two potato varieties differing in tolerance to drought stress: Gwiazda - resistant genotype to soil drought and Oberon – susceptible genotype to water deficiency. For immunolocalization of aquaporins, leaf samples were prepared according to standard procedures in two experimental variants: 1) control (watered plants) and 2) drought (unwatered plants). The primary antibody specific to PIPs and secondary antibodies conjugated to 10 nm gold particles were used to visualize aquaporins under a transmission electron microscope (TEM).

The observed changes in aquaporin labeling in the membrane of the palisade and spongy mesophyll in one of the tested potato cultivars under drought stress may indicate the ability of this genotype to maintain proper water balance and physicochemical activity under conditions of water deficiency.

This work was supported by the grants awarded by the Ministry of Agriculture and Rural Development (MRiRW:29, 3-1-00-3-05), Poland.