

## ABSTRACT

Brassinosteroids (BRs) have been recognized to alleviate damages caused by drought stress and to enhance tolerance to water deficit. Soaking of maize kernels before the sowing in solution with different 24-epibrassinolide concentrations (especially the  $10^{-8}$  M) had a positive effect on growth of plants before and after the stress period, although it did not affect relative water content and photosynthetic parameters. After the recovery under optimal conditions there were no differences among the treatments. When compared to spraying, soaking of maize kernels was not proved to have any advantages, though its positive effect on plants germination under water deficit conditions could be possible. Based on the results of the second season experiment it is not possible to deduce the role of exogenous BRs application (spraying with 24-epibrassinolide) or endogenous BRs biosynthesis (spraying with biosynthesis inhibitor – brassinazole) in maize plants subjected to water deficit. However, decrease in relative water content in contrast to chlorophylls content increase during the days following after drought stress onset in both cultivars (contrastive in drought sensitivity) challenges for further investigation of this problem. Understanding the role of BRs in plant drought tolerance and resistance is important not only for the basic research but could become an important prerequisite for breeding drought tolerant crops under specific environmental conditions.