

Influence of carbonate salinity on some indicators of water exchange of the triticale of the winter variety "Tribune"

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Abstract

Effect of salt stress induced by carbonate salinity caused by the presence of Na₂CO₃ in a concentration of 120 mM was studied. As a research object were taken Triticale of the winter variety "Tribune". All measurements were carried out on 7-day triticale sprouts with exposure for 12, 24, 48, 72, 96 hours. The parameters of osmotic potential, moisture content, and sprouting length were studied. Carbonate salinity caused changes in all parameters. Thus, during the experiment, almost a twofold decrease in the osmotic potential in triticale shoots was noted for 96 hours of exposure, while in the roots this index changed insignificantly, remaining at the level of control values. At 72 hours exposure, the osmotic potential in the roots was increased by 30%. At the same time, during the first day of salinity, the moisture content in shoots was reduced by 25%, and in roots by 11%. Subsequently, by 96 hours of salinity, this index increased both in shoots and in roots, and by the end of the experiment it was 10% lower than the control one. Also, carbonate salinity adversely affected the growth of plants, causing its inhibition. This was manifested in a decrease in the length of the experimental shoots in comparison with the control samples. The growth activity of the roots was also reduced. Based on the results obtained, it can be concluded that the carbonate ions have a negative effect on winter triticale plants under carbonate salinity. This may be due to partial hydrolysis of sodium carbonate and alkalization of the medium, which is an additional stress factor for plants.

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