

# SEAB2021

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## The 5<sup>th</sup> Symposium on EuroAsian Biodiversity

the 5<sup>th</sup> international  
symposium on  
euroasian  
biodiversity

JULY 1-3  
2021 Almaty  
KAZAKHSTAN  
Muğla TURKEY

Abstract  
eBook

Chief Editor

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ISBN: 978-625-409-945-8



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## Effect of Growth Stimulators on Relative Water Content (RWC) in Leaves of Soybean Plants Affected by Salinization

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**Abstract:** With the increasing salinity of soils around the world, understanding the mechanisms of plant salt tolerance is becoming increasingly important to reduce crop losses due to salt stress. In the fight against abiotic stresses, one of examples of which is salinization, various growth stimulants are used. Relative water content (RWC) is an indicator that characterizes the saturation of leaves with water, which is consumed by the plant for normal photosynthesis, respiration, and other physiological processes, the intensity of which is known to decrease with increasing water scarcity. The change in the relative water content of the leaves is one of the many consequences of the salt stress that the leaf cells endure by synthesizing and accumulating organic compounds such as proline, soluble proteins, and soluble sugars.

In this research, growth stimulators were studied on having an effect on RWC in leaves of soybean plants grown under NaCl-salinization conditions.

Growth stimulators: «Epin-extra» (ANO «NEST M», Russia), «Circon» (ANO «NEST M», Russia), «Beres-4» (Ltd «Beres», Russia), salicylic acid (chem. pure, LLC "QazBioHim Industries", Kazakhstan). Soybean variety – Zhansaya. Before planting, the seeds were treated according to the fertilizer instructions.

The relative water content (RWC) was determined according to Schonfeld et.al. (1988). According to the results of the study, the relative water content in the leaves of soybean plants varies from 76-73% (control), 80-78% (Epin-extra), 76-74% (Circon), 73-72% (Beres-4), 83-81% (salicylic acid). Among the 4 studied growth stimulators, the highest index of RWC (83%) was obtained from soybean plant leaves pretreated with 0.5 mM salicylic acid, and the lowest index was obtained from plants treated with Beres-4.

As a result, obtained RWC indicators, of the analyzed growth stimulators from larger to smaller were arranged in the following order: 110% (salicylic acid), 106% (Epin-extra), 101% (Circon), 97% (Beres-4) relative to the control. Thus, salicylic acid has the best stimulating effect.

Thus, pre-sowing treatment of seeds with salicylic acid significantly improves the ability of plants to retain water, which noticeably increases the tolerance of plants in salinization conditions. The use of this compound is very relevant, especially due to the fact that salicylic acid is an endogenous growth regulator that exhibits a growth-stimulating and protective effect in extremely low concentrations, that is, in environmentally safe doses. All this together allows us to consider salicylic acid as a promising compound for practical use in order to protect plants from a wide range of stress factors.

**Keywords:** *Glycine max* L, Growth stimulators, Salinity (NaCl) stress, Relative water content