

## Assessment of Genetic Variability of Potato Genotypes for Proline Under Salt Stress Conditions

**Authors :** Elchin Hajiyev, Afet Memmedova Dadash, Sabina Hajiyeva, Aynur Karimova, Ramiz Aliyev

**Abstract :** Although potatoes have a wide distribution range, the yield potential of varieties varies greatly depending on the region. Our country is made up of agricultural regions with very different environmental characteristics. In this case, we cannot expect the introduced varieties to show the same adaptation to the different conditions of our country. For this reason, in our country, varieties with high general adaptability should be used, rather than varieties with special adaptability in certain areas. Soil salinization has become a global problem. Increased salinity has a serious impact on food security by reducing plant productivity. Plants have protective mechanisms of adaptation to salt stress, such as the synthesis of physiologically active substances, resistance to antioxidant stress and oxidation of membrane lipids. One of these substances is free proline. Our study revealed genetic variation in proline accumulation among samples exposed to stress factors. Changes in proline content under stress conditions were studied in 50 samples. There was wide variation across all treatments. The amount of proline varied between 7.2-37.7  $\mu\text{M/g}$  under salinity conditions. The lowest rate was in the SF33 genotype (1.5 times more than the control (2.5  $\mu\text{M/g}$ )). The highest level of proline under the influence of salt stress was in the SF45 genotype (7.25 times higher than the control (32.5  $\mu\text{M/g}$ )). Our studies have found that the protective system reacts differently to the influence of stress factors. According to the results obtained on the amount of proline, adaptation mechanisms must be more actively activated to maintain metabolism and ensure viability in sensitive forms under the influence of stress factors. At high doses of the salt stressor, a tenfold increase in proline compared to the control indicates significant damage to the plant organism as a result of stress. To prevent damage to the body, the antioxidant system needs to quickly mobilize and work at full capacity in adverse conditions. An increase in the dose of the stress factor salt in our study caused a greater increase in the amount of free proline in plant tissues. Considering the functions of proline as an osmoprotector and antioxidant, it was found that increasing its amount is aimed at protecting the plant from the acute effects of stressors.

**Keywords :** genetic variability, potato, genotypes, proline, stress

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