

# Foliar application of silicon enhances growth, flower yield, quality and postharvest life of tuberose (*Polianthes tuberosa* L.) under saline conditions by improving antioxidant defense mechanism

Sana Shahzad, Sajid Ali, Riaz Ahmad, Sezai Ercisli and Muhammad Akbar Anjum

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## Abstract

Tuberose is native to Mexico and then reached Europe and spread other parts of the world. In Pakistan, tuberose stalks come in the market during late summer and autumn when only few flowers are available. However, yield and quality of flowers stalks is low. Several abiotic factors are involved in poor production of tuberose. Among abiotic stresses, salt stress greatly hampers growth of plants ultimately affecting flower yield, quality and postharvest life of tuberose. Current study aimed at foliar application of silicon (control, 50, 100 and 150 mg L<sup>-1</sup>) to mitigate adverse effects of salt stress (control, 50 and 100 mM NaCl) in tuberose plants during the years 2018 & 2019. Salinity level of 100 mM NaCl significantly decreased the plant height, number of leaves per plant, root length, stalk length, spike length, floret number/ spike, floret length, floret fresh weight, bulb fresh weight and vase life and these traits increased under foliar application of silicon (150 mg L<sup>-1</sup>). SOD, POD, CAT, GR and APX activities increased under salinity (100 mM NaCl) and foliar application of silicon (150 mg L<sup>-1</sup>) as compared to other studied treatments. The significant increase of total soluble protein and proline content was recorded under 100 mM NaCl than control. Foliar spray of silicon (50, 100 and 150 mg L<sup>-1</sup>) reduced total soluble protein and proline content. Chlorophyll 'a', chlorophyll 'b' and carotenoids were reduced under 50 and 100 mM NaCl. Current study evaluated that silicon had good potential to alleviate salt stress in tuberose by maintaining metabolic capacities and physiological activities.