Fourth Article

Article title	**Effect of foliar application of potassium silicate and α-tocopherol on mitigating the adverse impacts of low temperature and salinity stresses on young mango trees**
Participants	Abd Elsamad, G.A, Moustafa, A.A., Reda Hussein and **Hussein, H.A.Z** Horticulture Department, Faculty of Agriculture, Fayoum University, Egypt.
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Abstract

The investigation was conducted during two successive seasons (2019 /2020 and 2020/2021) on two young mango trees cvs. "Sediek" and "Ewais" to determine the impact of foliar spray with different levels of silicone which applied in form of potassium silicate **"**25% SiO_2+10% k_2O**"** (0.0%, 0.1% and 0.2%) and α-tocopherol "vitamin E" (0 ppm, 200 ppm and 400 ppm) alone or combined, to mitigate the harmful effect of low temperature and negative effect of soil salinity on young mango trees. growth characteristics (tree height, leaf area and shoot length) for trees of Sediek and Ewais mango cvs. negatively influenced by abiotic stresses. Meanwhile, foliar application of potassium silicate "P.S." and/or *α*-tocopherol "α-Toc." alone or in combination significantly improved the morphological and physiological characteristics compared with control. The foliar application of tocopherol alone was more noticeable compared to sprayed with potassium silicate alone particularly at the higher rates as it maintained the growth and plant performance under abiotic stresses.

Abiotic stresses, including salinity, cold caused adverse effects on (RWC) and (MSI) of young mango trees under study. On the other hand, foliar application of P.S. and *α-Toc.* alone or together enhanced significantly these parameters.

Negative relationship was detected among free proline content in leaves of young mango trees grown under adverse environmental conditions and foliar application of potassium silicate and *α-tocopherol* singular or together.

Keywords: Abiotic stress, potassium silicate **"P.S."**, α-tocopherol **"α-Toc."** salinity stress, low temperatures, Morphological and physiological characteristics, Sediek and Ewais mango.