

## Effect of Polyameins (PAs) and Humic Acid (HA) on Growth, Yield and Concentration of Mineral Elements in shoot and Root of Strawberry

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Salinity stress is one of the most important destructive factors of plant growth and yield, which has very unpleasant effects on plant growth and production in agriculture. Strawberry is a salt-sensitive plant. The aim of this study was to use of polyamines and humic acid (HA) to reduce negative effect of salinity on growth, yield and absorption of minerals elements. For this purpose, a factorial excrement based on randomized block design was conducted in a hydroponic commercial greenhouse with media culture Cocopeat and perlite (equal ratio) in Yasooj suburb. The first factor was polyamines in 5 concentrations (Putrescine (Put) 0, 500 and 1000 mg l<sup>-1</sup> and Spermidine (Spd) 500 and 1000 mg l<sup>-1</sup>) and humid acid at 0 and 5 g l<sup>-1</sup> concentration. All plants were irrigated with 40 mM NaCl salinity during experiment. Results showed that salinity reduced the growth parameters of strawberry. Application of HA and PAs reduced the harmful effect of salinity stress, although in all traits improved the quantity characteristics. Use of PAs increased the Fe, Ca and K contents in shoot and root of strawberry plant under salinity stress. So use of PAs and HA rescued the absorption of Na in shoot and root of strawberry. In general, results showed the salinity stress caused reduce the growth parameters in strawberry but application of Put and Spd 500 mg l<sup>-1</sup> and HA 5 g l<sup>-1</sup> can reduced the salinity harmful effect and increased vegetative and reproductive traits and absorption of mineral elements under salinity stress.

**Keywords:** Na, Potassium (K), Putrescine, Salinity stress, Spermidine.

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