



**Second Article** (Considered single - Shared with others inside and outside and in the same specialization – Published in International Journal).

Humic Acid Application Improves Field Performance of Cotton (*Gossypium barbadense* L.) Under Saline Conditions

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### Abstract

Humic acid (HA) application may enhance plant stress-defence responses. This study was investigated the mitigation effect of HA on growth, photosynthesis, water use efficiency (WUE), nutritional status and yields of salt-stressed cotton plants grown for two seasons at two different sites with ECe of 3.46 and 12.86 dS m<sup>-1</sup>. Each site was applied with HA at the level of 15 kg ha<sup>-1</sup>. The improving effect of 15 kg HA ha<sup>-1</sup> was better in the site with ECe of 3.46 dS m<sup>-1</sup>. HA-treated plants showed improved photosynthetic efficiency, WUE, nutritional status, seed and lint yields and fiber quality compared to untreated plants. In contrast, the soil application of HA led to significant reductions in the leaf concentrations of Na, total soluble sugars and free proline. It has been concluded that HA has a pronounced positive effect on the growth, yields, fiber quality and WUE of salt-stressed cotton plants. Humic acid therefore has the potential to be used as a soil amendment for cotton plants to overcome the adverse effects of soil salinity.

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