

### ABSTRACT

The current study was done to find out the effect of salt tolerant bacteria on the growth, yield, ion contents and some physiological parameters of *Triticum aestivum* L. cv. Galaxy-13 under different levels of NaCl stress. In some pots of respective salt treatment 10mL of salt tolerant bacteria isolated from the saline soil of Khewra were also inoculated after fifteen days of sowing of seeds. Salt tolerant bacteria did ACC-deaminase activity, phosphorus solubilization and production of phytohormones and exopolysaccharides and had a positive impact on the vegetative growth of wheat and increased the plant height and number of leaves to 75.13% and 87.5% respectively at  $12\text{dSm}^{-1}$  as compared to the un-inoculated plants grown at  $12\text{dSm}^{-1}$ . Salt tolerant bacteria increased the shoot length, root length, shoot fresh weight, root fresh weight, shoot dry weight and root dry weight to 74.11%, 47.11%, 75%, 74.35%, 73.35% and 76.47% at  $12\text{dSm}^{-1}$  as compared to the un-inoculated plants grown at  $12\text{dSm}^{-1}$ . Application of salt tolerant bacteria increased the rate of photosynthesis, rate of transpiration and stomatal conductance to 68.57%, 76.92% and 71.42% at  $12\text{dSm}^{-1}$  as compared to the un-inoculated plants grown at  $12\text{dSm}^{-1}$ . Salt tolerant bacteria increased the ear length, rachis length, number of spikelet per ear, number of spikelet per plant, number of grains per ear and number of grains per plant to 98.24%, 94.33%, 80%, 90%, 96% and 46.07% respectively at  $12\text{dSm}^{-1}$  as compared to the un-inoculated plants grown at  $12\text{dSm}^{-1}$ . Salt tolerant bacteria decreased the sodium ion content in shoots and roots to 79.59% and 66.96% respectively at  $12\text{dSm}^{-1}$  as compared to the un-inoculated plants grown at  $12\text{dSm}^{-1}$ . Salt tolerant bacteria increased the potassium ion, calcium ion, magnesium ion, phosphorus and nitrogen content in shoots to 45.50%, 90%, 81.83%, 75% and 75% respectively at  $12\text{dSm}^{-1}$  as compared to the un-inoculated plants grown at  $12\text{dSm}^{-1}$ . Salt tolerant bacteria increased the potassium ion, calcium ion, magnesium ion, phosphorus and nitrogen content in roots to 95.48%, 62.49%, 40%, 83.83% and 88.23% respectively at  $12\text{dSm}^{-1}$  as compared to the un-inoculated plants grown at  $12\text{dSm}^{-1}$ .