

ABSTRACT

Present study was conducted to evaluate the combine effects of salinity and Glutathione (G) on growth, yield and some physiological parameters of *Helianthus annuus* L. Hysun 33. To verify the role of Glutathione as alleviating the harmful effects of NaCl salinity, an experiment was conducted in which Glutathione was applied in two different ways, one as priming agent and second as foliar spray in two different concentrations i.e. at 100ppm and 200ppm on *H. annuus* L. plants grown in four different levels of salinity means at control, 4dSm^{-1} , 8dSm^{-1} and 12dSm^{-1} . With the increasing salinity there was delayed in seed germination and decreased in percentage germination of seeds, at control salinity level at 7th day percentage seeds germination was 100% while at 12dSm^{-1} salinity level 40% without the use of Glutathione. Seedling fresh and dry weights were also reduced with increasing salinity, at 4dSm^{-1} the mean of fresh weight of Plumule was 0.50g treated with 100ppm of Glutathione while at 8dSm^{-1} the mean of weights of Plumule was 0.43g treated with 100ppm of Glutathione. Salinity cause reduction in plant height (at control salinity the plant height at the 9th week was 122cm treated with 200ppm of Glutathione while at while at 8dSm^{-1} salinity concentration the plant height was 104.5cm at 9th week treated with 200ppm of Glutathione), number of leaves, length of root and shoot, fresh and dry weights of root and shoots (at control the fresh weight of root was 24.08g of the plants which were treated with 200ppm of Glutathione), chlorophyll contents (at 8dSm^{-1} the chlorophyll 'a' contents was 0.55mg/g treated with tween-20 and the chlorophyll 'b' contents was 0.99mg/g), photosynthesis rate, transpiration rate, number and weight of seeds. Glutathione improves all these parameters in saline and non saline environments. 100ppm Glutathione proves best in improving plant height, root fresh and dry weights and their length and all other parameters mentioned above. It is depicted by the present study that Glutathione use proves best in alleviating the harmful effects of salinity on the *H. annuus* L. plants. Different physiological parameters like photosynthesis and transpiration rates are also improved by the Glutathione application.