ABSTRACT

The scenario to which current study planned was to determine the effect of exogenously applied Salicylic Acid as foliar and priming agent in alleviation of harmful effects of salinity in addition to notice the effects of various salinity levels on Growth, Yield and various physiological parameters on *Hordeum vulgare* L. cv. Haider-93. It was also aimed to find out endogenous antioxidant contents of Barley Plants by exogenous Salicylic Acid application. Various concentrations of Salicylic Acid i.e., 100 ppm and 200 ppm were used for seed priming. The next application of Salicylic Acid in the form of foliar spray was carried out on 7th week at vegetative stage of Barley plants. Tween-20 (0.1%) was used as surfactant. The effect of Salicylic Acid was observed at different levels of salinity (control, 4dSm^{-1}, 8dSm^{-1}, 12dSm^{-1} and 16dSm^{-1}). It was observed that all parameters studied were greatly affected by salinity. Plant height (28.48%), leaf number (25.30%), number of tillers (40.00%), plant fresh (69.30%) and dry weights (60.88%) were reduced by increasing salinity level to 16dSm^{-1}. Chlorophyll a (98.46%), b (94.33%) and total chlorophyll (96.61%), contents were also decreased with increasing salinity. A substantial decrease in the photosynthetic rate and transpiration rate was also noted. Seed germination, plant, root length, number of ears per plant, number of spikelets per plant, number of grains per plant, weight of 1000 grains was found to be reduced by increasing salinity. Plants showed much better growth when treated with Salicylic Acid in comparison to plants which were not treated with Salicylic Acid. Application of 200ppm Salicylic Acid as priming agent and foliar spray increased all parameters under study including height(16.59%), number of leaves(30.00%), number of grains per plant(25.06%), number of tillers (25.12%), photosynthesis rate as well as endogenous antioxidant activity of Shoot; DPPH (11.84%), TPC(45.72%) and TAA(50.41%) at 16dSm^{-1}. It can be suggested that the exogenous application of 200ppm Salicylic Acid as priming agent and as foliar spray gave excellent results at all the levels of salinity and considerably improved growth, yield, physiological parameters as well as improved antioxidant activity of *Hordeum vulgare* L. cultivar Haider-93 and Salicylic Acid can be connected in alleviation of adverse effects of salinity on Barley plants.