Application of vermicompost for reducing the destructive effects of salinity stress on tall fescue turfgrass (*Festuca arundinacea* Schreb. 'Queen')

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Abstract

Salt problems are of great concern in arid and semi-arid regions and can severely limit plant growth and yield. Vermicomposts have high porosity, aeration, drainage, and water-holding capacity and contain nutrients in forms readily taken up by plants. This research was conducted to investigate the effect of different rates of vermicompost (0, 100, 200 and 300 g), mixed with farm soil, on catalase (CAT) and ascorbate peroxidase (APX) enzymes and some of the morphological traits of *Festuca arundinacea* cv Queen, under salinity stress (0, 3, 6 and 12 dS/m) conditions. Results showed that the highest activities of CAT (50.47 Ug/FW) and APX (715.53 Ug/FW) was obtained at NaCl concentrations of 12 dS/m with 300 g vermicompost. The highest values of leaf area (10.41 cm^2), shoot length (28 cm) and dry shoot weight (46.07 g) were obtained when plants were grown in soil with 300 g vermicompost. The present findings revealed that salinity (NaCl) and application of vermicompost triggered an antioxidant response in *Festuca arundinacea*. Therefore, application of vermicompost not only can increase plant growth and anti-oxidant enzymes activity, but also could be an effective solution to reduce the effects of high concentrations of sodium chloride on growth of *Festuca arundinacea* cv Queen in saline soils.

Keywords: Ascorbate peroxidase, Catalase, Antioxidant responses, morphological traits.

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