



RESEARCH PAPER

Physiological evaluation of salinity stress in foxtail millet under *in-vitro* screening

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Abstract : A persistent challenge to the sustainability of agricultural output is soil salinity/sodicity, which is a significant problem in both rain-fed and irrigated areas. It is the nutrient rich grains with high milling recovery. Foxtail millet duration is 80-85 days. Soil salinity is the major abiotic stress, which reduces the crop production and productivity in semi-arid and tropics. Salination can be caused by natural processes such as mineral weathering or by the gradual withdrawal of an ocean. The ions responsible for salination are Na^+ , K^+ , Ca^{2+} , Mg^{2+} and Cl^- . Salinity affects almost all aspects of plant development including germination, vegetative growth and reproductive development. The objective of this study was to determine the effect of NaCl and CaCl_2 at various concentrations on different morphological characteristics of the foxtail millet variety ATL This study was undertaken to analyze the comparative responses of salinity stresses induced by various concentrations of NaCl (50 mM, 75 mM, 150 mM) and CaCl_2 (50 mM, 75 mM, 150 mM) on germination and seedling stages under *in-vitro* conditions in foxtail millet variety ATL 1. After 15 days of salinity stress treatments, the seeds sowed in 50 mM NaCl showed better germination percentage, root length, shoot length, leaf length, seedling length, fresh and dry weight of seedling, promptness index and seedling vigour index followed by 75 mM NaCl . The results revealed that the seeds sowed in 75 mM and 150 mM CaCl_2 was proves to be very lethal.

Key Words : Saline stress, Shoot length, Root length, Promptness index, Seedling vigour index

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