



Phenotypic Evaluation Of Salt Stress Tolerance In Wheat Lines Derived From The Introgression Of NAX1 And NAX2 Genes

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Abstract

Salt stress constitutes one of the main abiotic factors limiting cereal productivity worldwide. The introgression of sodium exclusion genes (Nax1 and Nax2) represents a major strategy to improve wheat tolerance. This study evaluates the phenotypic impact of these genes in ten wheat lines (Nax) compared to five reference parents their recurrent parents (Maali, Karim, Salim, Razzek, and Nasr) subjected to salt stress (100 mM and 150 mM NaCl) under pot culture conditions. Morphological parameters based on the Growth Reduction Index (GRI), the Salinity Tolerance Coefficient (STC), and an overall visual score were analyzed. The results demonstrate significant inter-genotypic variability. Among the recurrent The parents Maali was found to be the most tolerant (STC = 80.0%), while Nasr proved to be the most sensitive (STC = 46.4%). Remarkably, four introgressed lines (B11L1, B4L8, B4L2, and B4L7) outperformed the best parent Maali, showing STC gains of up to +7% and minimized GRI (up to 13%). These elite lines constitute promising candidates candidates for breeding programs in arid, salinity-stressed marginal landsfor breeding programs in arid and semi-arid zones.

Keywords: Salt, Morphological, visual score

