

Evaluation of Existing Wheat Genotypes of Bangladesh in Response to Salinity

Authors : Jahangir Alam, Ayman El Sabagh, Kamrul Hasan, Shafiqul Islam Sikdar, Celaleddin Barutçular, Sohiful Islam

Abstract : The experiment (Germination test and seedling growth) was carried out at the laboratory of Agronomy Department, Hajee Mohammad Danesh Science and Technology University (HSTU), Dinajpur, Bangladesh during January 2014. Germination and seedling growth of 22 existing wheat genotypes in Bangladesh viz. Kheri, Kalyansona, Sonora, Sonalika, Pavon, Kanchan, Akbar, Barkat, Aghrani, Prativa, Sourab, Gourab, Shatabdi, Sufi, Bijoy, Prodip, BARI Gom 25, BARI Gom 26, BARI Gom 27, BARI Gom 28, Durum and Triticale were tested with three salinity levels (0, 100 and 200 mM NaCl) for 10 days in sand culture in small plastic pot. Speed of germination as expressed by germination percentage (GP), rate of germination (GR), germination coefficient (GC) and germination vigor index (GVI) of all wheat genotypes was delayed and germination percentage was reduced due to salinization compared to control. The lower reduction of GP, GR, GC and VI due to salinity was observed in BARI Gom 25, BARI Gom 27, Shatabdi, Sonora, and Akbbar and higher reduction was recorded in BARI Gom 26, Duram, Triticale, Sufi and Kheri. Shoot and root lengths, fresh and dry weights were found to be affected due to salinization and shoot was more affected than root. Under saline conditions, longer shoot and root length were recorded in BARI Gom 25, BARI Gom 27, Akbar, and Shatabdi, i.e. less reduction of shoot and root lengths was observed while, BARI Gom 26, Duram, Prodip and Triticale produced shorted shoot and root lengths. In this study, genotypes BARI Gom 25, BARI Gom 27, Shatabdi, Sonora and Aghrani showed better performance in terms shoot and root growth (fresh and dry weights) and proved to be tolerant genotypes to salinity. On the other hand, Duram, BARI Gom 26, Triticale, Kheri and Prodip affected seriously in terms of fresh and dry weights by the saline environment. BARI Gom 25, BARI Gom 27, Shatabdi, Sonora and Aghrani showed more salt tolerance index (STI) based on shoot dry weight while, BARI Gom 26, Triticale, Durum, Sufi, Prodip and Kalyanson demonstrate lower STI value under saline conditions. Based on the most salt tolerance and susceptible trait, genotypes under 100 and 200 mM NaCl stresses can be arranged as salt tolerance genotypes: BARI Gom 25> BARI Gom 27> Shatabdi> Sonora, and salt susceptible genotypes: BARI Gom 26> Durum> Triticale> Prodip> Sufi> Kheri. Considering the experiment, it can be concluded that the BARI Gom 25 may be treated as the most salt tolerant and BARI Gom 26 as the most salt sensitive genotypes in Bangladesh.

Keywords : genotypes, germination, salinity, wheat

Conference Title : ICCPP 2016 : International Conference on Crop Production and Phytohormones

Conference Location : Istanbul, Türkiye

Conference Dates : July 21-22, 2016