

عنوان مقاله:

Assessment of drought tolerance in land races of bread wheat based on resistance/ tolerance indices

محل انتشار:

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خلاصه مقاله:

One of the possible ways to ensure future food needs of an increasing world population involves the better water use through the development of crop varieties which need less water and are more tolerant to drought. In order to study the response of twenty landraces of bread wheat to drought stress, an experiment was conducted in a randomized complete block design with three replications under two irrigated and water stress conditions during 2010-2011 cropping season. Sixteen drought tolerance indices including stress tolerance index (STI), stress susceptibility index (SSI), tolerance index (TOL), harmonic mean (HM), geometric mean productivity (GMP), mean productivity (MP), yield index (YI), yield stability index (YSI), sensitive drought index (SDI), drought resistance index (DI), abiotic tolerance index (ATI), relative decrease in yield index (RDY), stress non-stress production index (SNPI), modified stress tolerance index (MSTI), relative drought index (RDI) and stress susceptibility percentage index (SSPI) were calculated based on grain yield under drought (Ys) and irrigated (Yp) conditions. Grain yield in stress (Ys) condition was significantly and positively correlated with STI, GMP, MP, HM, YI, DI, RDI, YSI, SNPI, K1STI and K2STI. Grain yield in non-stress (Yp) condition was significantly and positively correlated with STI, MP, GMP, HM, YI, DI, ATI, K1STI, K2STI and SNPI. Grain yield in stress and non-stress conditions was significantly and negatively correlated with SSI. Results of this study showed that the indices K1STI, K2STI, SSPI, RDI, ATI, SNPI, and DI can be used as the most suitable indicators for screening drought tolerant cultivars. Cluster analysis classified the genotypes into three groups i.e., tolerant, susceptible and semi-tolerant or semisensitive to drought conditions. Therefore they are recommended to be used as parents for improvement of drought tolerant cultivars.

کلمات کلیدی:

Land races of bread wheat, Drought tolerant indices, Principal component analysis

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