

عنوان مقاله:

Evaluation of grain sorghum (*Sorghum bicolor* L.) lines/cultivars under salinity stress using tolerance indices

محل انتشار:

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خلاصه مقاله:

Selecting and cultivating the crops/varieties that can tolerate water salinity is potentially an important strategy to save fresh water resources and maximize the crop yield in salt affected areas. To evaluate the responses of 36 sorghum lines and cultivars to salinity stress, two field experiments were conducted in non-stress ($EC=2$ dS/m) and salinity stress conditions ($EC=12$ dS/m) using randomized complete block design with three replications. The field experiments were carried out at research station of Agricultural Research Center and Natural Resources of Yazd, Iran in 2014 and 2015 growing seasons. Under salinity stress conditions, grains/panicle, panicle length, 1000 grain weight, grain yield, biological yield and harvest index were decreased 36%, 15%, 42%, 64%, 40% and 39%, respectively. The highest grain yield under non-stress conditions was produced by KDFGS2 (8182.6 kg/ha) while the highest grain yield under salinity stress conditions was achieved by KDFGS6 (3310 kg/ha). Correlation coefficients between grain yield (for both conditions) and tolerance indices showed that geometric mean productivity (GMP), stress tolerance index (STI) and harmonic mean (HAM) indices were appropriate for screening high-yielding genotypes. Principal component analysis validated the results of screening methods and introduced lines number 1, 7 and 9 as superior genotypes under both conditions. Lines number 2, 8, 15, 19, 29 and cultivars Ghalami-Herat, Sepideh and Kimia showed greater sensitivity to salinity stress. Since lines number 4, 6, 10 and 24 had greater yield stability, it appears that they may be worth further explorations in future breeding projects.

کلمات کلیدی:

Principal component analysis, Sorghum, Tolerance indices

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