عنوان مقاله:

Evaluation drought stress indices and yield stability in some chamomile ecotypes

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خلاصه مقاله:

Breeding for drought tolerance is an important objective of crop breeding programs in arid and semi-arid regions. A factorial experiment based on a randomized complete blocks design with three replicates was carried out to determine suitable drought tolerance indices in chamomile ecotypes under stress and non-stress conditions in ۲۰۱۸. According to the results of the analysis of variance, there was a significant difference among the ecotypes regarding plant yield under both environmental conditions (stress and non-stress). The highest average yield (۰.۵۶۸ and ۰.۶۶۵ g plant-۱) under stress and non-stress conditions were associated with Arak and Kerman ecotypes, respectively. Based on the plant yield of ecotypes under non-stress environments (Yp) and moisture stress (Ys), ecotypes were evaluated in terms of drought tolerance by six different indices of geometric mean productivity (GMP), stress tolerance index (STI), stress sensitivity index (SSI), tolerance index (TOL), mean productively (MP), and harmonic mean (HM). According to the results obtained under both stress and non-stress conditions, SSI and STI were selected as the best indices for isolation of tolerant ecotypes. Based on these indices, biplot diagram, and mean comparison table, ecotypes of Mashhad, Khuzestan, and Kerman were identified as tolerant. Isfahan, Arak and Shiraz ecotypes were the most sensitive ecotypes to drought stress. Also, cluster analysis by Ward′s method was used to group ecotypes based on plant yield; based on which the ecotypes were divided into ۳ separate groups in both environments. Considering the results of this study, it is recommended to exploit the drought stress tolerance of indigenous chamomile populations of the country and conserve this valuable plant as valuable genetic resources.

کلمات کلیدی:

Biplot, cluster analysis, Chamomile ecotype, Drought tolerance and sensitivity indices, Yield