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Screening of the Sunflower Genotypes for Drought Stress at Seedling Stage by Polyethylene Glycol under Laboratory Conditions

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Abstract : Drought stress directly affects growth along with the productivity of plants by altering plant water status. Sunflower (Helianthus annuus L.), an oilseed crop, is adversely affected by abiotic stresses. The present study was carried out to characterize the genetic variability for seedling and morpho-physiological parameters in different sunflower genotypes under water-stressed conditions. A total of twenty-seven genotypes, including two hybrids, eight advanced lines and seventeen accessions of sunflower (Helianthus annuus L.) were tested against drought stress at Seedling stages by Polyethylene glycol (PEG). Significant means were calculated among traits using analysis of variance (ANOVA) whereas, correlation and principal component analysis also confirmed that germination percentage, root length, shoot length, chlorophyll content, stomatal frequency are positively linked with each other hence, these traits were responsible for most of the variation among genotypes. The cluster analysis results showed that genotypes Ausun, line-3, line-2, and 17578, line-1, line-7, line-6 and 17562 as more diverse among all the genotypes. These most divergent genotypes could be utilized in the development of drought-tolerant inbreed lines which could be subsequently used in future heterosis breeding programs.

Keywords : sunflower, drought, stress, polyethylene- glycol, screening
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