

Evaluation of Drought Tolerant Sunflower Hybrids Indicated Their Broad Adaptability Under Stress Environment

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Abstract : Purpose: Drought stress is a major production constraint in sunflowers and causes yield losses under tropical and subtropical environments having high evapo-transpirational losses. Given the consequences, three trials were designed to evaluate drought-resistant sunflower hybrids. Research Methods: Field trials were conducted under a split-plot arrangement with 17 hybrids and two contrasting regimes at Sargodha, Pakistan and 7 hybrids at Karj, Iran. Water stress condition was simulated by holding water in a stress regime. Hybrids were also screened against five levels of osmotically induced stress, i.e. 0-15%, under a completely randomized design with 3 replications. Findings: Hybrids H1 (C.112.× RH.344) and H3 (C.112.× RSIN.82) showed the highest seed yield ha⁻¹ and early flowering at Karj Iran. Commercial hybrid had the highest CTD (18.2°C) followed by C112 × RH.344 (17.29 °C). Hybrid C.250 × R.SIN.82 had the highest seed yield (m⁻²), followed by C.112 × RH.365 and C.124 × RSIN.82 under both stress and non-stress regimes at Sargodha, Pakistan. Seedling trial results showed that 6 hybrids only germinated in 5 and 7.5% PEG-induced osmotic stress, respectively. H1 (C.112 × RH.344) and H2 (C.112 × RH.347) had the highest germination% at 5% and 7.5% osmotic stress (OS). Seedling vigor index (SVI) was the highest in H1 (C.112 × RH.344) hybrids at 5% OS, H2 had the highest SVI under 7.5% OS, followed by H3 (C112 × RH344) and H4 (C116 × RH344). Originality/Value: In view of above results, it was concluded that hybrid combination H1 had the highest seed yield under stress conditions in both environments. High seed yield may be due to its better germination and vigor index under stress conditions.

Keywords : climate change, CTD, genetic variability, osmotic stress

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