

# Reprint: Investigation of Genetic Divergence in Local Sunflower Hybrids and Inbred Lines by Applying Morphological Markers

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## Abstract

Knowledge of genetic diversity is the basic requisite for any plant breeding program. Seventeen sunflower hybrids and fifteen inbred lines including ten Cytoplasm male sterile lines and five restorer lines were evaluated at the experimental area of National Agriculture Research centre, Islamabad, Pakistan during autumn-2011. The objective of study was to investigate the genetic diversity, categorize the proficient cross combiners and approximate characters association among sunflower hybrids and inbred lines. Data was estimated on i.e. flower initiation days, full flowering days, full developmental days, height of plant, disk diameter, stem thickness, leaves per plant, hundred achenes weight, achenes yield and oil content percentage. The maximum achenes yield was contributed by Hysun-33 2119 kg ha<sup>-1</sup>. Followed by SMH-0924 and SMH-0925, SMH-1028 and SMH-0926 were suggested as potential significant hybrids for future breeding plans to incorporate maximum achenes yield and oil content percentage. The CMS-11, CMS-25 and CMS-10 were long statured with vigorous stem and all the restorers were early maturing recommended for including in hybridization program to generate high heterotic factions. Cluster diagram based on Euclidean dissimilarity matrix grouped hybrids as well as inbred lines in four groups. The group I and IV consist of four whereas group II and group III have three and five hybrids respectively. All the restores were clustered in III and IV and CMS in I and II groups respectively. According to principle component analysis the first two components contribute 64% and 89% in total variation in hybrids as well as in inbred lines respectively.

**Key words:** sunflower; *helianthus annuus* L; genetic diversity; cluster analysis; principle component analysis