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FACTOR ANALYSIS AND ITS RELATIONSHIP WITH GENETIC DIVERSITY IN COTTON.

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ABSTRACT: ***The relationship between the biometrical methods depended on single trait and multivariate analysis of genotypes in breeding programs are very important. Therefore, this study was carried out to access factor analysis and diversity among 13 parents and 36 F_1 hybrids performance to evaluate 12 variables into separate groups at the Agricultural Research Station, Sakha, Kafr El-sheikh governorate, Egypt during 2008 and 2009 seasons. The analysis of variance revealed that highly significant genotypic differences for the most traits among parents and hybrids. Multivariate analysis reported that, the first factors which accounted for 70 % of the total variance are important. Factor 1, which accounted for about 25.3 % and it was associated with micronalre reading (mic), lint index (L.I.), lint percentage (L.P. %) and degree of yellowness (+ b). Factor 2, which accounted 17.3 % and it was associated with lint quality traits i.e., fiber length (F.L.), uniformity ratio (U.R. %) and lint color (+ b).***

The male parents Kar.2, Seuvin, G.75 and G.76 were grouped into 4 separate groups, these parents varied in general combining ability for the most traits. The female parents were also grouped into 4 different groups .Some of these were grouped with male parents in the same cluster showing nearly related and the other grouped in the same cluster.

Specific combining ability (S.C.A.) effect revealed that most of the combinations having high of (S.C.A.) effect were found between genetically diverse parents. The cross combination Kar.2 x (Pima S 6 x G.89) surpassed all crosses for earliness index and the common parents were distantly related .Also, not only the genetic divergence might be used choose parents for crossing, but also their performance of parents and the F_1.However (G.C.A.) and (S.C.A.) effects are more informative than performance values.

Generally, the breeder can use the parents according to divergence with performance. Also, breeder might be evaluates characters to know the relative importance of such characters in genetic variability and divergence.

Kay Words : *Factor analysis, Combining ability, Genetic diversity, Cotton.*