

Genetic distance estimates among single cross hybrids and correlation with specific combining ability and yield in corn double cross hybrids

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ABSTRACT. The objective of the present study was to correlate the genetic distances (GD) of single cross hybrids with yield, heterosis and specific combining ability (SCA) in the double cross hybrid synthesis. For this, 10 single cross commercial hybrids were used from different companies, and all the possible double hybrids were synthesized by a complete diallel. The hybrids were assessed in 15 locations in the 2005/2006 agricultural season, using the randomized complete block design with three repetitions. DNA was extracted from the single cross hybrids and 20 simple sequence repeat primers were used, nine of which were linked to the quantitative trait loci. It was ascertained that the single hybrids were superior in general to the double cross hybrids and that yield was highly correlated with heterosis and SCA ($r = 0.75$ and 0.82 , respectively). There was no significant correlation between yield and GD ($r = 0.25$), but this index was at the limit of significance. There was a medium correlation between GD and heterosis ($r = 0.40$) and GD and SCA ($r = 0.38$). The intergroup hybrids placed by genetic grouping were generally more productive than intragroup hybrids, and the hybrids with GD greater than 0.84 had the maximum heterosis and SCA. It was concluded that the markers were efficient in placing

hybrids in different heterosis groups and were also useful in eliminating the most negative heterosis and SCA.

Key words: Diallel; SSR; Heterotic groups; Molecular markers