



Heterotic groups in tropical maize germplasm by test crosses and simple sequence repeat markers

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ABSTRACT. The objectives of the present study were to determine heterotic groups of germplasm lines of tropical maize by test crosses and by simple sequence repeat (SSR) markers and to compare five grouping methods of heterogeneous maize. Sixteen lines of nine populations in the S₅ generation were evaluated in test crosses with three testers. The results of four experimental trials over two years were used to group the lines by five methods: evaluation based on the hybrid mean in top-cross tests, hybrid index, genetic diversity by the Mahalanobis distance, genetic diversity by the Euclidean distance, and genetic diversity by SSR markers. The concordance of grouping by the Mahalanobis and Euclidean distance amounted to 87.50%, and the concordance of these methods and grouping by SSR markers was 56.25%. Grouping by SSR markers was consistent with

the genealogy of the lines and is a useful procedure for the formation of heterotic groups of tropical maize lines.

Key words: Heterotic group; Tropical heterotic maize; *Zea mays* L.; Simple sequence repeat markers; Heterotic grouping methods; Combining ability