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Evaluation of Yield and Yield Components in Inbred Maize Lines I. Heterosis and Line x Tester Analysis of Combining Ability

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Abstract: In maize, three male testers and six female lines together with their 18 F_1 hybrids were evaluated to study the general and specific combining ability estimates and heterosis following line x tester approach. Analysis of variance indicated the existence of significant variation among F_1 and parents for all characteristics. Average heterosis was significant for all characteristics studied and was positive, except for days to tasseling, with the average yield of hybrids being 79.8% above that of the parents. In view of the general combining ability effects of the parents, the parental lines YUZ P709 and FR 64A were identified as being the best overall parent combiners in the experiment for grain yield and yield components. Combining ability analysis showed that general combining ability (GCA) effects were significant for all attributes and specific combining ability (SCA) effects were significant for ear diameter, ear height and grain yield per unit area. With respect to ear height and grain yield per unit area, SCA effects were more pronounced when compared to GCA effects, indicating the predominance of non-additive gene action in the inheritance of these traits.

Key Words: Maize, Zea mays L., line x tester analysis, combining ability, heterosis

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