

Heterosis and Combining Ability in Coffee (*Coffea arabica* L.)*

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SUMMARY

Six indigenous coffee (*Coffea arabica* L.) lines viz., 74110 (P1), 74158 (P2), 20071 (P3), 221A71 (P4), 1377 (P5) and 1577 (P6) were crossed in a half-diallel fashion. The F1's and their parents were recorded for seven seedling characters to obtain estimates of heterosis and combining abilities. The F1's exhibited positive over all mean better-parent heterosis for all the characters studied ranging from 3 to 18%. Based on individual hybrids, the magnitude of heterosis ranged from -28% in P4 x P5 for internode length to 69% in P1 x P4 for shoot volume. For all characters studied, the highest better-parent heterosis was observed in certain crosses in which the two parents distinctly differ in their place of origin and morphological characters.

The combining ability analysis revealed that both additive and nonadditive genetic variances were important in controlling inheritance of the characters studied. However, in all characters, the nonadditive genetic variances were predominant. These results appeared to suggest that a breeding methodology that can exploit the advantage of both additive and nonadditive genetic effects would be more effective to achieve maximum improvement.