

Abstract

A total of forty two maize hybrids produced through a full diallel mating design and seven parental inbred lines were evaluated in three sites located at different agro-ecological zones in Kenya to determine the genetic parameters governing the inheritance of grain yield and related agronomical traits. The genetic parameters studied among the traits included the mean performance, genotypic variances, phenotypic variances, genotype by environment variances, broad sense heritability and phenotypic and genotypic correlation coefficients. Significant differences were recorded for all traits studied thereby revealing the diversity of the maize genotypes. The grain yield and days to maturity which showed high heritability had low genotypic variances suggesting the involvement of non-additive gene action which could be utilized through heterosis breeding. Ear height and plant height showed the highest heritability and high genotypic variances suggesting the preponderance of additive gene action. Grain yield was positively and strongly correlated with ear height and plant height. The tall plants with high ear placement gave better yields and this could be attributed to the high dry matter accumulation function carried out by the high number of leaves possessed. The positive relationships observed in this study imply that the desirable traits in these hybrids could be exploited in further breeding activities for the development of composites and synthetics for the resource constrained maize farmers who cannot access hybrid seeds every year.