

Study of Combining Ability for Quality Component in Forage Sorghum [*Sorghum Bicolor* (L.) Moench]

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Abstract—The study envisaged assessing the general combining ability of the parents and specific combining ability of the hybrids, using line x tester mating design. Twenty four hybrids (derived from mating four testers with six lines in L x T design) along with their parents and checks ((SSG 59-3 and MFSH 4)) were evaluated at two locations with two date of sowing (Early and late sowing) during the kharif season of 2016. Data on five randomly taken plants from each genotype in each replication were recorded on different quantitative characters at first cut (55 days after sowing) and second cut (45 days after first cut). The ratio of σ^2 GCA/ σ^2 SCA was less than unity for all the characters indicating preponderance of non-additive gene action (dominance and epistasis). Female parents 9A and 56A were also better combiners for HCN content, IVDMD and DDM in more than two different environments. HJ 513 and G 46 were found to be good general combiner male parents for protein content, protein yield, IVDMD and DDM in more than two different environments. The Cross combination of 465A x HJ 513 and 9A x IS 2389 were better for protein yield, IVDMD and DDM in more than two different environments. This suggests the usefulness of heterosis breeding or any breeding plan which makes use of specific combining ability effects for improvement in these traits.

Keywords: Forage sorghum, Quality traits, Variance, Gene action and Combining ability.