



RESEARCH ARTICLE :

Combining ability over environments for yield and its components in three line hybrids involving cytoplasmic genetic male sterility in rice (*Oryza sativa* L.)

■ SREEDHAR SIDDI, T. DAYAKAR REDDY AND M.S. RAMESHA

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SUMMARY : This study was under taken to estimate the general and specific combining ability of five cytoplasmic male sterile lines and twelve restorer lines in 60 F₁ combinations for single plant yield and its important traits at three environments during *Kharif*, 2009. The pooled analysis of variance for combining ability revealed significant differences due to environments, parents, hybrids and various interactions indicating the existence of wider variability in the material studied. The ratio of *gca* to *sca* variances showed non-additive gene action was predominant in the inheritance of days to 50% flowering, number of productive tillers, number of filled grains per panicle, spikelet fertility percentage and single plant yield which suggests possibility of exploiting heterosis. The overall perusal of *sca* effects of different traits in the present investigation reveals *sca* effect and *per se* performance of the crosses was not closely related. In majority of the crosses for all the characters investigated, high *sca* was either due to high x low or low x high or low x low combining parents. The *gca* effects of the parents in pooled analysis revealed that the lines *viz.*, APMS 6A and IR-80151A and the testers *viz.*, IR-54742R, BR-827-35R, KMR-3R and IR-21567R were found to be promising general combiners for single plant yield and its components. Based on significant *sca* effects and *per se* performance, the cross combinations *viz.*, APMS 6A x IR-24R, IR-80561A x IR-32809R, IR-80151A x IR-10198R, IR-80555A x DR-714-1-2R and IR-80559A x IR-72R were identified as promising hybrids for single plant yield and other yield contributing characters.

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Author for correspondence :

SREEDHAR SIDDI

Department of Plant
Breeding, Agricultural
Research Station,
KUNARAM (TELANGANA)
INDIA
Email : [siddu.35@
gmail.com](mailto:siddu.35@gmail.com)

See end of the article for
authors' affiliations