Combining ability estimates for yield and fibre quality traits in line x tester crosses of desi cotton 
(\textit{Gossypium arboreum} L.)

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The present investigation was undertaken with the study to the estimate general and specific combining ability effects. Six lines were crossed with 4 testers to obtain 24 hybrids in Line x Testers design in this study. The crosses and parents with two checks were evaluated in a randomized block design with three replications during Kharif 2013. Data were recorded on 18 character viz., days to 50 per cent flowering, days to 50 per cent boll bursting, number of sympodia plant-1, number of bolls plant-1, boll weight (g), number of seeds boll-1, plant height (cm), days to maturity, lint index, ginning outturn, seed index (g), 2.5 per cent span length (mm), fibre fineness/micronaire value (mg inch-1), fibre strength (g tex-1), uniformity ratio, short fibre index, seed cotton yield plant-1 (g) and harvest index. Analysis of variance for means revealed significant differences for all the eighteen characters studied. Line x tester interaction mean square was significant for all the characters except number of sympodia plant-1, harvest index and uniformity ratio which indicated sufficient genetic diversity among them. The variance due to GCA and SCA indicated that the non-additive type of the gene action was predominant for all the characters studied except plan height and harvest index. Among ten parental lines, four lines were found to be the best general combiners who had significant GCA effects for seed cotton yield and its contributing characters and fibre quality traits. Moreover, PA 760 for number sympodia plant-1, seed cotton yield plant-1 and harvest index. PA 720 for days to maturity. PA 734 for plant height and days to 50 per cent boll bursting, PA 713 for boll weight, PA 743 for seed index, PA 760 for ginning outturn and 2.5 % span length, PA 743 for fibre fineness (micronaire), PA 720 for fibre strength, PAIG 326 for uniformity ratio and PA 720 for short fibre index. There was close agreement between per se performance and GCA as well as SCA effects for most of the characters. Observations on various characters indicated that the crosses showing high heterosis and high SCA effects had high per se performance and they involved at least one highly combining parent. The combination of PA 734 x PA 528 was found to be the best for specific combining ability which had significant SCA effects for seed cotton yield, number of bolls plant-1 and number of sympodia plant-1, indicating potential for exploiting hybrid vigor in breeding programme.

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