Tropentag, September 9-11, 2020, virtual conference

"Food and nutrition security and its resilience to global crises"

Line x Tester Analysis for Different Yield and its Attributing Traits in Upland Cotton (*Gossypium hirsutum* L.)

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Abstract

Combining ability analysis was made to identify the superior general and specific combining parents for some seed cotton yield and fiber quality traits in upland cotton. The study was conducted to estimate combining ability effects of inbred lines and to estimate the test cross performance of their hybrids. Eight parents with their 15 hybrids were analysed in Randomised Complete Block Design (RCBD) with 3 replications during Kharif-season at field. Five lines/females (VH-144, MNH-786, MNH-700, FH-159, KZ-181) and three testers/males (VH-232, IUB-212, FH-118) were crossed in line × tester mating fashion, to develop 15 F1 hybrids. General combining ability (GCA) and specific combining ability (SCA) mean squares for various quantitative traits were significant. The seed index, fiber fineness, plant height, bolls per plant, sympodial branches, boll weight, seeds per boll, seed cotton yield, ginning out turn percentage, fiber strength and fiber length exhibited non-additive genetic effects. Parents MNH-786, MNH-700 and KZ-181 among lines and VH-232 from testers were found as good general combiners for most of the traits. Hence these parents proved worth to be used in hybridisation and selection programme for extracting desirable plants from segregating population. The F1 hybrids MNH-786 × VH-232, MNH-700 × IUB-212 and KZ-181 × VH-232, by and large, exhibited their superiority for all traits studied and were noted as the best specific combiners. These hybrids are likely to be used in breeding programs to improve several quantitative and qualitative traits simultaneously. Superior and higher-yielding varieties achieved through hybridisation and selection processes could be a used to improve production efficiency without threatening the environment.

Keywords: GCA, Genetic effects, Hybridisation, inbred line, Non-Additive, Qualitative, Quantitative, RCBD, SCA

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