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RESEARCH PAPER

Studies on heterosis and combining ability in rice (*Oryza sativa* L.)

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Abstract : Hybrid vigour and combining ability of two lines, 25 testers and their 50 hybrids was studied for grain yield, yield components and quality parameters during *Rabi* 2017-18. A perusal of the results revealed that the expression of heterosis was maximum over mid-parent for grain yield plant^{-1} and number of grains panicle^{-1} (>90%). Grain yield plant^{-1} and number of grains panicle^{-1} had also recorded high levels of heterosis over better parent (>70%). Standard heterosis more than 50 per cent was also recorded for grain yield plant^{-1} and number of grains panicle^{-1} over both varietal and the hybrid check. Further, combining ability analysis revealed pre-ponderant non-additive gene action for all the traits studied. A perusal of the GCA effects revealed MTU 2247-55-2, JMP 16, MTU 2336-70-46-25-44, MTU 2336-62-25-39-16, MTU 2337-216-1-1 and MTU 2331-216-1-1 to be good combiners for grain yield plant^{-1} and quality parameters. Analysis of the specific combining ability effects revealed none of the hybrids to possess consistently high SCA effects for all the characters and the best cross combination was observed to vary from character to character. Further, nine hybrids had recorded high *per se* performance, heterosis and desirable SCA effects for grain yield plant^{-1}. Among these three hybrids, APMS 8A x MTU 2247-55-2, APMS 8A x MTU 2331-216-1-1 and APMS 8A x MTU 2337-216-1-1 involving poor and good combiner parents for grain yield plant^{-1}, had recorded maximum grain yield plant^{-1}, in addition to desirable SCA effects and standard heterosis >50 per cent for grain yield plant^{-1}.

Key Words : Heterosis, Combining ability, Grain yield, Quality, Rice

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