

STUDIES ON HETEROSIS AND COMBINING ABILITY FOR DEVELOPING NEW PLANT TYPE HYBRIDS IN RICE (*ORYZA SATIVA* L.).

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Abstract : The heterosis and combining ability were estimated for grain yield, and its component traits in 27 cross combinations including 9 elite promising new plant type lines used as testers and 3 wild abortive type cytoplasmic male sterile lines generated through Line x Tester mating design with 15 characters to develop efficient heterotic hybrids for this ecosystem. New plant type models have been modified to adjust to various rice growing regions. The result revealed that grain yield and its component showed highly significant differences for all the traits. Among the 27 hybrids, five hybrids viz., IR58025A /IRFAN-115, IR58025A/SR-6-SW-8, IR58025A /ET 1-13, APMS 6A /ET 1-12, and APMS 6A /NPTR-2 were recorded to have significant heterosis for grain yield and seven hybrids showed significant negative heterosis for earliness and three hybrids for plant height. These may be exploited for heterosis breeding and should be screened for stability in yield.

Among the lines IR 79156A was identified as a good general combiner followed by APMS 6A and IR58025A and within the tester ET 1-13, IRFAN-115, and ET 1-12, was found to be good combiner for grain yield per plant. Promising hybrids based on *per se* performance, SCA, GCA and Heterosis for grain yield per plant are IR79156A/ET-1-10, APMS6A/ET1-12, IR58025A/IRFAN-115, IR79156A/ET-1-1 and IR79156A /TOX 981-11-2-3. These promising hybrids offer greater scope for further exploitation of hybrid vigour commercially.

Keywords : Heterosis, Combining Ability, New Plant Type, Yield, Rice, CMS

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