EVALUATION OF SOME RICE VARIETIES FOR WIDE COMPATIBILITY AND RESTORING ABILITY TRAITS

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Expression of variable degree of spikelet sterility in Indica / Japonica inter-subspecific crosses is one of the barriers in the exploitation of higher degree of heterosis manifested in such crosses. Two cytoplasmic male sterile (CMS) and their maintainer lines (B) one of them was Japonica (Giza177 A and Giza177 B) and the other was Indica (IR 69625 A and IR 69625 B) were crossed as female parents in lines x tester mating design with twenty seven diverse tester lines to study their behavior and combining ability for wide compatibility traits pollen fertility, spikelet fertility and filled grains panicle). The results indicated that the mean squares of genotypes and including parental lines were highly significant for all studied WC traits at the two years and their combined data, indicating the presence of large variations among them. The interactions of genotypes, parents, crosses and parents VS crosses with years were highly significant for all studied traits. Combining ability analysis revealed that both additive and non-additive gene action contributed in the genetic expression of the studied traits. The results also indicated that the tester lines, Giza175, Giza178, Giza181, Giza182, IR25571-31, GZ5121, GZ1368, GZ6296-12-1-4, GZ6296-12-1-2, IR56381-139 and BR1141-28-37 showed high fertilities with Indica CMS line (IR69625 A) and their maintainer line IR69625 B in the two years and their combined data and were identified as restorer lines. On the other hand, the tester lines IR65598-112, Palawan, 02428-p7-1, Pecos and Dular showed high fertility with both Indica and Japonica maintainer lines and confirmed as wide compatibility (WC) rice varieties. In addition, the tester lines Mars, 02428-p7-1, Pecos, Dular and Lambyque showed complete sterile with both of the Indica and Japonica CMS lines and defined as a maintainer lines to increas the probability of getting new CMS and maintainers lines with the WC gene.