

## **PARENTAGE ANALYSIS OF HYBRID RICE AND EVALUATION OF THE COMBINING ABILITY OF SELECTED VARIETIES**

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The concept of hybrid rice has become one of the best solutions to overcome global hunger. When compared to normally developed cultivars, hybrid rice varieties are capable of giving 20% higher yield over the best inbred varieties. In order to produce high yielding hybrid rice combinations, suitable parental lines have to be selected. Three female lines BgCMS01, BgCMS27, BgCMS85 along with five male lines were investigated to select the best performing parental lines. The five male lines tested were BgR01, BgR86, BgR121, BgR124 and BgSN71. The fifteen hybrid combinations coming from the crossing also were analysed to select the best performing hybrids.

The fifteen hybrid combinations along with eight parents and five standard inbred check varieties were grown according to randomized complete block design with three replicates. After estimation of general combining ability (GCA) effects, the female lines BgCMS85, BgCMS01 and male lines BgR124 and BgR01 were selected as good parental lines to examine morphological characters. High specific combining ability (SCA) effects were observed in the crosses, BgCMS27×BgR01, BgCMS27×BgSN71, BgCMS85×BgR121, BgCMS85×BgSN71 and BgCMS01×BgR124. These hybrids were selected as best combinations for the future yield trials.

Genetic purity testing of hybrid rice through biotechnology is a rapid test method compared to normal procedure, which is carried out in the field. The possibility of applying SSR analysis for genetic-purity testing was investigated. Of all hybrid lines, the BgCMS01×BgR01 showed compatible homologous bands with its parents confirming that SSR markers can be conveniently developed to confirm parentage of hybrid rice.