B12 CONTRIBUTION OF EPISTASIS AND LINKAGE TO HETEROSIS IN RICE

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Hybrid vigour has been reported in a large number of crops. Nevertheless, an analysis of the genetic parameters that contribute to heterosis has not been carried out, as such, overdominance has been reported to have caused hybrid vigour. But it has been shown that this is not always the case. It has been shown that epistasis and linkage disequilibrium can cause hybrid vigour.

Two genetic designs, the Triple Test Cross and the Basic generations were used to identify the cause of heterosis in six yield characters of three crosses of rice selected from the Central Rice Breeding Station, Bathalagoda.

Analysis of the basic generations indicated positive heterosis for three characters. The cause of heterosis was studied by using the model-fitting technique. Overdominance was initially seen only in one of the characters (No. of panicles per plant). In the other characters that showed heterosis, linkage was identified by analysing the Triple Cross progeny, and duplicate type of epistasis was identified by analysing the basic generations. Heterosis therefore in these characters appear to be due to interacting genes in linkage disequilibrium. In

such cases it should be possible to extract inbred lines performing better than the F_1 hybrids.