

PRODUCTION AND EVALUATION OF F1 CHILLI HYBRIDS  
USING DIALLEL GENETIC DESIGN AND DNA FINGERPRINTING

By

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**ABSTRACT**

The genetics of plant height at flowering, days to flowering, rate of photosynthesis at harvesting/pod filling stage, pod length, number of pods, fresh and dry weights of pods were studied in the F<sub>1</sub> generation and parents of a 7×7 half diallel cross of chilli (*Capsicum annum* L.). The data were analyzed using SAS statistical package and "dial" genetic package. The evaluation of genotypes for putative genetic markers were carried out by using Random Amplified Polymorphic DNA (RFLP).

The effect of genotype on the variability was significant for all tested characters except rate of photosynthesis at harvesting/ pod filling stage.

The additive dominance model was adequate only to explain the inheritance of days to flowering and dry weight of pods. Significant non-allelic interaction was detected in fresh weight of pods. Additive and additional dominance effects were the only significant genetic variables for explaining inheritance of height at flowering, pod length and number of pods.

Significant heterosis was observed for all characters studied, although over-dominance was not detected. Therefore, heterosis observed in all characters could be due to accumulation of additive alleles and/or epistasis in heterozygous condition. Therefore, all the characters studied, except fresh weight of pods, showed good scope for improvement through selection and production of pure lines rather than producing hybrids.



All tested random primers and microsatellite primers failed to amplify chilli DNA. Therefore, further testing of different random primers in different amplification conditions are necessary to develop putative DNA markers in the parents for tested yield and yield related characters and to differentiate hybrids from parents at the molecular level.