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ORIGINAL ARTICLE

CONSTRUCTION OF COMPLETE DIALLEL CROSSES PLANS USING GALOIS FIELD

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Abstract: In Diallel crossing system, quantitative inheritance of two variant forms of gene (allele) for two or more homozygous parental lines is considered. For such experiments highly inbred lines are used as normal. Parents may be individuals, plants, animals etc. This paper proposes an easy method for constructing Complete Diallel Crosses (CDC) plans using the elements of Galois field GF(s), where s is an odd prime number or power of an odd prime number. The efficiency values of the constructed CDC plans for ($s \leq 100$) are tabulated. It is observed that the constructed CDC plan is universally optimal and the efficiency value tends to 1 when s is extremely large. The method is illustrated with appropriate examples.

***Key words*:** Galois field, Complete diallel crosses, General combining ability, Efficiency, Universal optimality.

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