Package 'OPTeCD'

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Type Package

Title Optimal Partial Tetra-Allele Cross Designs

Version 1.0.0

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Description Tetra-allele cross often referred as four-way cross or double cross or four-line cross are those type of mating designs in which every cross is obtained by mating amongst four inbred lines. A tetra-allele cross can be obtained by crossing the resultant of two unrelated diallel crosses. A common triallel cross involving four inbred lines A, B, C and D can be symbolically represented as (A X B) X (C X D) or (A, B, C, D) or (A B C D) etc. Tetra-allele cross can be broadly categorized as Complete Tetra-allele Cross (CTaC) and Partial Tetra-allele Crosses (PTaC). Rawlings and Cockerham (1962)<doi:10.2307/2527461> firstly introduced and gave the method of analysis for tetra-allele cross hybrids using the analysis method of single cross hybrids under the assumption of no linkage. The set of all possible four-way mating between several genotypes (individuals, clones, homozygous lines, etc.) leads to a CTaC. If there are N number of inbred lines involved in a CTaC, the the total number of crosses, T = N*(N-1)*(N-2)*(N-3)/8. When more number of lines are to be considered, the total number of crosses in CTaC also increases. Thus, it is almost impossible for the investigator to carry out the experimentation with limited available resource material. This situation lies in taking a fraction of CTaC with certain underlying properties, known as PTaC.

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Encoding UTF-8

Repository CRAN

RoxygenNote 7.3.2

NeedsCompilation no

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OPTeCD *Optimal Partial Tetra-Allele Cross Designs for Prime Number of Lines*

Description

Optimal Partial Tetra-Allele Cross Designs for Prime Number of Lines

Usage

```
OPTeCD(v)
```

Arguments

v	Any prime number (>3)

Value

This function generates a series of universally optimal family of designs using MOLS. The method starts with selecting any of the (N-1)/2 MOLS of a given order N (the number of lines) and retaining the first four rows and making crosses with the lines occurring in each column. The parameters of the developed class of design is total number of crosses (T) =N*(N-1)/2, number of blocks (b) = (N-1)/2, number of replications (r), block sizes (k) = N and degree of fractionation (f)=4/(N-2)(N-3)

Examples

```
library(OPTeCD)
OPTeCD(5)
```

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