Package 'MEDesigns'

May 7, 2026

Type Package

Title Mating Environmental Designs

Version 1.0.1

Maintainer Ashutosh Dalal <ashutosh.dalal97@gmail.com>

Description In breeding experiments, mating environmental (ME) designs are very popular as mating designs are directly implemented in the field environment using block or row-column designs. Here, three functions are given related to three new methods which will generate mating diallel cross designs (Hinkelmann and Kempthorne, 1963<doi:10.2307/2333899>) or mating environmental (ME) designs along with design parameters, C matrix, eigenvalues (EVs), degree of fractionations (DF) and canonical efficiency factor (CEF). Another one function is added to check the properties of a given ME diallel cross design.

Suggests MASS

License GPL (>= 2)

Encoding UTF-8

RoxygenNote 7.3.2

Depends R (>= 3.5)

LazyData true

NeedsCompilation no

Author Ashutosh Dalal [aut, cre],
Cini Varghese [aut, ctb],
Rajender Parsad [aut, ctb],
Mohd Harun [aut, ctb]

Repository CRAN

Date/Publication 2025-04-24 14:30:02 UTC

Contents

`CheckME_Diallel` *Checking the Properties of a ME-PDC*

Description

Checking the Properties of a ME-PDC

Usage

```
CheckME_Diallel(design)
```

Arguments

`design`	Provide a ME-PDC

Value

Generates parameters of the designs along with C matrix, eigenvalues (EVs), degree of fractionations (DF) and canonical efficiency factor (CEF).

Examples

```
library(MEDesigns)
design<-ME_PDC1(10)$ME_PDC
CheckME_Diallel(design)
```

`MEBanalysis` *Analysis of ME-designs in Block Set-up*

Description

For a given field data it will provide analysis result through ANOVA table including gca and sca effect analysis.

Usage

```
MEBanalysis(data)
```

Arguments

`data`	Columns of dataset should be in order of block, line1,line2, cross number and response.

Value

Returns the ANOVA table of gca and sca effect analysis.

Examples

```
library(MEDesigns)
MEBanalysis(MEdata)
```

MEdata *Dataset for ME-PDC*

Description

This is a sample dataset for user.

Usage

```
data("MEdata")
```

Format

A data frame with 40 observations on the following 5 variables.

`block` a numeric vector

`line1` a numeric vector

`line2` a numeric vector

`cross_no` a numeric vector

`yld` a numeric vector

Examples

```
data(MEdata)
```

ME_CDC *ME-CDCs for Even Number of Lines*

Description

ME-CDCs for Even Number of Lines

Usage

```
ME_CDC(lines)
```

Arguments

`lines`	Number of Lines >=6

Value

ME-CDCs for an even number of lines along with their parameters, C matrices, eigenvalues (EVs) and canonical efficiency factor (CEF).

Examples

```
library(MEDesigns)
ME_CDC(6)
```

ME_PDC1 *ME-PDCs for Even Number of Lines*

Description

ME-PDCs for Even Number of Lines

Usage

```
ME_PDC1(lines)
```

Arguments

lines	Number of Lines >=6

Value

ME-PDCs for an even number of lines along with their parameters, C matrices, eigenvalues (EVs), degree of fractionations (DF) and canonical efficiency factor (CEF).

Examples

```
library(MEDesigns)
ME_PDC1(6)
```

ME_PDC2 *ME PDCs for Composite Number of Lines*

Description

ME PDCs for Composite Number of Lines

Usage

```
ME_PDC2(p, q)
```

Arguments

p	Any value (p>=3)
q	Any value (q>=3)

Value

This function will provide ME-PDCs for a composite number, v(= pq) along with basic parameters, C matrix, eigenvalues (EVs), degree of fractionations (DF) and canonical efficiency factor (CEF).

Examples

```
library(MEDesigns)
ME_PDC2(3,3)
```

Index