

# Package ‘ME Designs’

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**Type** Package

**Title** Mating Environmental Designs

**Version** 1.0.1

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**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](https://doi.org/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

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**Repository** CRAN

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| CheckME_Diallel | <i>Checking the Properties of a ME-PDC</i> |
|-----------------|--------------------------------------------|

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**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 | <i>Analysis of ME-designs in Block Set-up</i> |
|-------------|-----------------------------------------------|

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**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 | <i>Dataset for ME-PDC</i> |
|--------|---------------------------|

---

**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 | <i>ME-CDCs for Even Number of Lines</i> |
|--------|-----------------------------------------|

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**Description**

ME-CDCs for Even Number of Lines

**Usage**

```
ME_CDC(lines)
```

**Arguments**

lines                      Number of Lines  $\geq 6$

**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 | <i>ME-PDCs for Even Number of Lines</i> |
|---------|-----------------------------------------|

---

**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 | <i>ME PDCs for Composite Number of Lines</i> |
|---------|----------------------------------------------|

---

**Description**

ME PDCs for Composite Number of Lines

**Usage**

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

**Arguments**

|   |                          |
|---|--------------------------|
| p | Any value ( $p \geq 3$ ) |
| q | Any value ( $q \geq 3$ ) |

**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)
```

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