Package ‘gpbStat’

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**alphaltc**

*Line x Tester data (only Crosses) in Alpha Lattice design.*

**Description**

The Line x Tester data of containing only crosses laid out in Alpha Lattice design.

**Usage**

`data(alphaltc)`

**Format**

A data frame of five variables of 15 crosses derived from five lines and three testers.

- **replication** four replications
- **block** five blocks
- **line** five inbred genotype
- **tester** three inbred genotype
- **yield** trait of interest

**See Also**

`rcbdltc, alphaltcchk, rcbdltcchk`

**Examples**

```r
result = ltc(alphaltc, replication, line, tester, yield, block)
```
**alphaltcchk**

*Line x Tester data (Crosses and Checks) in Alpha Lattice*

---

**Description**

The sample Line x Tester data of containing crosses and checks laid out in Alpha Lattice design. The data is composed of five lines, three testers and three checks.

**Usage**

```r
data(alphaltcchk)
```

**Format**

A dataframe of six variables.

- **replication** three replications
- **block** six blocks
- **line** five lines
- **tester** three testers
- **check** three check
- **yield** trait of interest

**See Also**

`rcbdltc`, `alphaltc`, `rcbdltcchk`

**Examples**

```r
result = ltcchk(alphaltcchk, replication, line, tester, check, yield, block)
```

---

**alphaltcmt**

*Line x Tester data (only Crosses) in Alpha Lattice design.*

---

**Description**

The Line x Tester data of containing only crosses laid out in Alpha Lattice design.

**Usage**

```r
data(alphaltcmt)
```
Format

A data frame of 15 crosses derived from five lines and three testers.

- **repetition** four replications
- **block** five blocks
- **line** five inbred genotype
- **tester** three inbred genotype
- **hsw** hundred seed weight
- **sh** shelling per cent
- **gy** grain yield

See Also

`rcbdltc, alphaltcchk, rcdltcchk, rcdltcmt`

Examples

```r
result = ltcmt(alphaltcmt, replication, line, tester, alphaltcmt[,5:7], block)
```

Analysis of Diallel Method 2 data containing only Crosses laid out in RCBD or Alpha Lattice design.

Description

Analysis of Diallel Method 2 data containing only Crosses laid out in RCBD or Alpha Lattice design.

Usage

```r
dm2(data, rep, parent1, parent2, var, block)
```

Arguments

- **data** dataframe containing following variables
- **rep** replication
- **parent1** parent 1
- **parent2** parent 2
- **var** trait of interest
- **block** block (for alpha lattice only)

Details

Analyzing the Diallel Method 2 data containing only crosses which are evaluated in RCBD & Alpha lattice design. All the factors are considered as fixed.
Value

<table>
<thead>
<tr>
<th>Mean</th>
<th>Two way mean table.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANOVA</td>
<td>ANOVA for the given variable.</td>
</tr>
<tr>
<td>Coefficient of Variation</td>
<td>Coefficient of Variation of the variable.</td>
</tr>
<tr>
<td>Diallel ANOVA</td>
<td>Diallel ANOVA for the given trait.</td>
</tr>
<tr>
<td>Genetic Variance</td>
<td>GCA &amp; SCA variance.</td>
</tr>
<tr>
<td>Combining ability effects</td>
<td>Two way table containing Combining ability effects of parents and crosses</td>
</tr>
<tr>
<td>Standard Error</td>
<td>Standard Error for combining ability effects.</td>
</tr>
<tr>
<td>Critical Difference</td>
<td>Critical Difference at 5 percent for combining ability effects.</td>
</tr>
</tbody>
</table>

Note

The blocks are mentioned at end of the function if the experimental design is Alpha Lattice. For RCBD no need mention the blocks.

Author(s)

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References


See Also

ltcchk, ltc

Examples

```r
## Not run: #Diallel Method 2 analysis containing only crosses in RCBD.
library(gpbStat)
data(dm2rcbd)
result1 = dm2(dm2rcbd, rep, parent1, parent2, DTP)
result1

#Diallel Method 2 analysis containing only crosses in Alpha Lattice
library(gpbStat)
data(dm2alpha)
result2 = dm2(dm2alpha, replication, parent1, parent2, TW, block)
```
result2

# Save results to csv file
lapply(result2, function(x) write.table(data.frame(x), 'result2.csv', append=T, sep=','))

## End(Not run)

dm2alpha

Diallel Method 2 data in Alpha Lattice.

Description

The Diallel Method 2 data laid out in Alpha Lattice Design.

Usage

data(dm2alpha)

Format

A data frame for Diallel analysis Method 2 containing 105 crosses and 15 parents.

replication two replications
block twelve blocks
parent1 fifteen inbred genotype
parent2 fifteen inbred genotype
TW data for test weight

See Also

alphaltcchk, alphaltc, rcbdltcchk, dm2rcbd

Examples

result2 = dm2(dm2alpha, replication, parent1, parent2, TW, block)
### dm2rcbd

**Description**

The Diallel Method 2 data laid out in Randomized Complete Block Design (RCBD).

**Usage**

```r
data(rcbdltc)
```

**Format**

A data frame for Diallel analysis Method 2 containing four variables of 105 crosses and 15 parents.

- **rep** four replications
- **parent1** five inbred genotype
- **parent2** three inbred genotype
- **DTP** data for days to pollen shed

**See Also**

- `alphaltcchk`, `alphaltc`, `rcbdltcchk`, `dm2alpha`

**Examples**

```r
result2 = dm2(dm2rcbd, rep, parent1, parent2, DTP)
```

### ltc

**Description**

Analysis of Line x Tester data containing only Crosses laid out in RCBD or Alpha Lattice design.

**Usage**

```r
ltc(data, replication, line, tester, y, block)
```
Arguments
data dataframe containing following variables
replication replication
line line
tester tester
y trait of interest
block block (for alpha lattice design only)

Details
Analyzing the line by tester data only using the data from crosses which are evaluated in alpha lattice design. All the factors are considered as fixed.

Value
Overall ANOVA ANOVA with all the factors.
Coefficient of Variation ANOVA with all the factors.
Genetic Variance Phenotypic and Genotypic variance for the given trait.
Genetic Variability Phenotypic coefficient of variability and Genotypic coefficient of variability and Environmental coefficient of Variation.
Proportional Contribution Proportional contribution of Lines, Tester and Line x Tester interaction.
GCA lines Combining ability effects of lines.
GCA testers Combining ability effects of testers.
SCA crosses Combining ability effects of crosses
Line x Tester ANOVA ANOVA with all the factors.
GV Singh & Chaudhary Genetic component of Variance as per Singh and Chaudhary, 1977.
Standard Errors Standard error for combining ability effects.
Critical Difference Critical Difference at 5 percent for combining ability effects.

Note
The block variable is inserted at the last if the experimental design is Alpha Lattice. For RCBD no need to have block factor.

Author(s)
Nandan Patil <tryanother609@gmail.com>
ltcchk

Analysis of Line x Tester data containing crosses and checks laid out in RCBD or Alpha Lattice experimental design.

Description

Analysis of Line x Tester data containing crosses and checks laid out in RCBD or Alpha Lattice experimental design.

Usage

ltcchk(data, replication, line, tester, check, y, block)

Arguments

data dataframe containing following variables
replication replication variable
line line variable
tester tester variable
check check variable
y trait of interest
block block variable (for alpha lattice design only)
Details
Analyzing the line by tester data only using the data from crosses which are evaluated in alpha lattice design. All the factors are considered as fixed.

Value
- **Overall ANOVA**: ANOVA with all the factors.
- **Coefficient of Variation**: ANOVA with all the factors.
- **Genetic Variance**: Phenotypic and Genotypic variance for the given trait.
- **Genetic Variability**: Phenotypic coefficient of variability and Genotypic coefficient of variability and Environmental coefficient of Variation.
- **Proportional Contribution**: Proportional contribution of Lines, Tester and Line x Tester interaction.
- **GCA lines**: Combining ability effects of lines.
- **GCA testers**: Combining ability effects of testers.
- **SCA crosses**: Combining ability effects of crosses.
- **Line x Tester ANOVA**: ANOVA with all the factors.
- **GV Singh & Chaudhary**: Genetic component of Variance as per Singh and Chaudhary, 1977.
- **Standard Errors**: Standard error for combining ability effects.
- **Critical Difference**: Critical Difference at 5 percent for combining ability effects.

Note
The block variable is inserted at the last if the experimental design is Alpha Lattice. For RCBD no need to have block factor.

Author(s)
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Nandan Patil <tryanother609@gmail.com>

References
**ltcmt**

Analysis of Line x Tester data for multiple traits containing only Crosses laid out in RCBD or Alpha Lattice design.

### Description

Analysis of Line x Tester data for multiple traits containing only Crosses laid out in RCBD or Alpha Lattice design.

### Usage

```r
ltcmt(data, replication, line, tester, traits, block)
```

### Arguments

- `data`: dataframe containing following variables
- `replication`: replication
- `line`: line
- `tester`: tester
- `traits`: multiple traits of interest
- `block`: block (for alpha lattice design only)

### Details

Analyzing the line by tester data of multiple traits only using the data from crosses which are evaluated in RCBD and Alpha lattice design. All the factors are considered as fixed.
Value

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>Table of means.</td>
</tr>
<tr>
<td>ANOVA</td>
<td>ANOVA with all the factors.</td>
</tr>
<tr>
<td>GCA.Line</td>
<td>GCA effects of lines.</td>
</tr>
<tr>
<td>GCA.Tester</td>
<td>GCA effects of testers.</td>
</tr>
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<td>SCA</td>
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</tr>
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<td>Coefficient of Variation.</td>
</tr>
<tr>
<td>Std.Error</td>
<td>Standard error for combining ability effects.</td>
</tr>
<tr>
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<td>Critical Difference at 5 percent for combining ability effects.</td>
</tr>
</tbody>
</table>

Note

The block variable is inserted at the last if the experimental design is Alpha Lattice. For RCBD no need to have block factor.

Author(s)

Nandan Patil <tryanother609@gmail.com>

References


See Also

ltcchk

Examples

```r
## Not run: #Line Tester analysis data with only crosses in RCBD
library(gpbStat)
data(rcbdltcmt)
result1 = ltcmt(rcbdltcmt, replication, line, tester, rcbdltcmt[,4:5])
result1

#Line Tester analysis data with only crosses in Alpha Lattice
library(gpbStat)
data(alphaltcmt)
result2 = ltcmt(alphaltcmt, replication, line, tester, alphaltcmt[,5:7], block)
result2

## End(Not run)
```
rcbdltc

| rcbdltc          | Line x Tester data in RCBD |

Description

The sample Line x Tester data containing only crosses laid out in Randomized Complete Block Design (RCBD).

Usage

data(rcbdltc)

Format

A data frame of four variables of 15 crosses derived from five lines and three testers.

- **replication** four replications
- **line** five inbred genotype
- **tester** three inbred genotype
- **yield** trait of interest

See Also

alphaltcchk, alphaltc, rcbdltcchk

Examples

```r
cresult = ltc(rcbdltc, replication, line, tester, yield)
```

rcbdltcchk

| rcbdltcchk | Line x Tester data (Crosses and Checks) in RCBD |

Description

The sample Line x Tester data of containing crosses and checks laid out in Randomized Complete Block Design (RCBD). The data is composed of five lines, three testers and three checks.

Usage

data(rcbdltcchk)
**rcbdltcmt**

**Format**

A dataframe of six variables.

- **replication**: four replications
- **line**: five lines
- **tester**: three testers
- **yield**: trait of interest

**See Also**

- `rcbdltc, alphaltc, alphaltcchk`

**Examples**

```r
result = ltcchk(rcbdltcchk, replication, line, tester, check, yield)
```

---

**rcbdltcmt**

*Line x Tester data (only Crosses) in Randomized Complete Block design.*

**Description**

The Line x Tester data of containing only crosses laid out in Randomized Complete Block design.

**Usage**

```r
data(rcbdltcmt)
```

**Format**

A data frame of 15 crosses derived from five lines and three testers.

- **replication**: four replications
- **line**: five inbred genotype
- **tester**: three inbred genotype
- **ph**: plant height
- **eh**: ear height

**See Also**

- `rcbdltc, alphaltcchk, rcbdltcchk, alphaltcmt`

**Examples**

```r
result = ltcmt(rcbdltcmt, replication, line, tester, rcbdltcmt[,4:5])
```
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