

Package ‘agricolaeplotr’

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Type Package

Title Visualization of Design of Experiments from the 'agricolae'
Package

Version 0.3.1

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Description

Visualization of Design of Experiments from the 'agricolae' package with 'ggplot2' framework
The user provides an experiment design from the 'agricolae' package, calls the corresponding function and will receive a
visualization with 'ggplot2' based functions that are specific for each design. As there are many different designs, each design is tested on its type.
The output can be modified with standard 'ggplot2' commands or with other packages with 'ggplot2' function extensions.

License GPL (>= 3)

Encoding UTF-8

Imports ggplot2, agricolae, raster, sp (>= 2.0.0), methods, FieldHub,
utils

RoxygenNote 7.2.3

Language en-US

Suggests testthat (>= 3.0.0), knitr, rmarkdown, leaflet, sf

Config/testthat/edition 3

BugReports <https://github.com/jensharbers/agricolaeplotr/issues>

URL <https://github.com/jensharbers/agricolaeplotr>

Depends R (>= 4.0)

VignetteBuilder knitr

Note 'None'

NeedsCompilation no

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Repository CRAN

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`citations`*Citation*

Description

Generates citations of all loaded packages

Usage

```
citations(includeURL = TRUE, bibtex = TRUE)
```

Arguments

`includeURL` boolean, Should the URL be returned?
`bibtex` boolean, Should the citations be returned as bibtex?

Value

printed output to console

Examples

```
library(ggplot2)  
library(agricolaeplotr)  
library(agricolae)  
library(raster)  
citations()
```

`DOE_obj`*Measures of a Field Design*

Description

Returns a list with several useful information about the experiment

Usage

```
DOE_obj(p)
```

Arguments

`p` ggplot object containing the data of the plot

Value

a list with several useful information about the experiment and the field

Examples

```
library(agricolae)
library(agricolaeplotr)
trt = c(2,3,4,5,6)
outdesign1 <- design.crd(trt,r=5,serie=2,2543,'Mersenne-Twister')
p <- plot_design_crd(outdesign1,
                     ncols = 7,
                     nrows = 4,
                     width = 10,
                     height = 10,
                     reverse_y = TRUE)
stats <- DOE_obj(p)
stats
```

full_control_positions

full_control_positions

Description

This function provides full control about the plotting. The user also may shift the coordinates as liked.

Usage

```
full_control_positions(
  design,
  x = "col",
  y = "row",
  factor_name = "trt",
  labels = "plots",
  width = 1,
  height = 1,
  space_width = 0.95,
  space_height = 0.85,
  reverse_y = FALSE,
  reverse_x = FALSE,
  shift_x = 0,
  shift_y = 0,
  start_origin = FALSE
)
```

Arguments

design	data.frame containing the row and columns of an experiment
x	Describes the x coordinates of a experiment design
y	Describes the y coordinates of a experiment design

factor_name	string Which factor should be used for plotting, needs to be a column in outdesign\$book
labels	string Describes the column from that the plots are taken to display them
width	numeric value, describes the width of a plot in an experiment
height	numeric value, describes the height of a plot in an experiment
space_width	numeric value, describes the share of the space of the plots. 0=only space, 1=no space between plots in term of width
space_height	numeric value, describes the share of the space of the plots. 0=only space, 1=no space between plots in term of height
reverse_y	boolean, should the plots of the experiment be changed in reverse order in Row direction? use reverse_y=TRUE to have same sketch as in agricolae. default:reverse_y=FALSE
reverse_x	boolean, should the plots of the experiment be changed in reverse order in column direction? default:reverse_x=FALSE
shift_x	numeric indicates the shift in units in x-axis.
shift_y	numeric indicates the shift in units for the y-axis.
start_origin	boolean. Should the design start at the origin (0 0)?

Value

ggplot graphic that can be modified, if wished

Examples

```
library(agricolaeplotr)
library(agricolae)
varieties<-c('perricholi','yungay','maria bonita','tomas')
outdesign <-design.youden(varieties,r=2,serie=2,seed=23)
design <- outdesign$book
design
p <- full_control_positions(design,"col","row","varieties","plots",
                           width=3,height=4.5,
                           space_width=0.5,space_height=0.5,
                           shift_x=(-0.5*3) + (-0.5*3*0.5),shift_y=-0.5*4.5 + (-0.5*4.5*0.5))
p
p <- full_control_positions(design,"col","row","varieties","plots",
                           width=3,height=4.5,
                           space_width=0.13,space_height=0.445,
                           shift_x=(-0.5*3) + (-0.5*3*(1-0.13)),shift_y=-0.5*4.5 + (-0.5*4.5*(1-0.445)))
p
p <- full_control_positions(design,"col","row","varieties","plots",
                           width=3,height=4.5,
                           space_width=1,space_height=1,
                           shift_x=-0.5*3,shift_y=-0.5*4.5)
p
p <- full_control_positions(design,"col","row","varieties","plots",
```

```
width=3,height=4.5,
space_width=0.93,space_height=0.945,
start_origin = TRUE)
p
```

make_polygons

make_polygons

Description

This function coerces all rectangles from a 'ggplot' object to 'SpatialPolygonDataframe'.

Usage

```
make_polygons(
  ggplot_object,
  north = 3454206.89,
  east = 5939183.21,
  projection_input = "+init=epsg:31467",
  projection_output = "+init=epsg:4326"
)
```

Arguments

ggplot_object	saved ggplot object, containing the coordinates of the rectangles of a 'ggplot' object of the first two layers
north	float added to the rows to have a northing ordinate
east	float added to the rows to have a easting ordinate
projection_input	string defines in which EPSG projection the ggplot object should be converted to a raster object? a projection with a metric unit is highly recommended
projection_output	string defines in which EPSG projection the SpatialPolygonDataFrame should be exported.

Value

a SpatialPolygonDataframe object

Examples

```
library(agricolaeplotr)
library(agricolae)
trt = c(2,3,4)
outdesign1 <- design.crd(trt,r=5,serie=2,2543,'Mersenne-Twister')
plt <- plot_design_crd(outdesign1,ncols = 13,nrows = 3)
spat_df <- make_polygons(plt)
spat_df
```

plot_alpha *Plot Alpha design Experiments*

Description

Plot a design of an experiment with an alpha design from agricolae design.alpha

Usage

```
plot_alpha(
  design,
  x = "cols",
  y = "block",
  factor_name = "trt",
  labels = "plots",
  width = 1,
  height = 1,
  space_width = 0.95,
  space_height = 0.85,
  reverse_y = FALSE,
  reverse_x = FALSE
)
```

Arguments

design	outdesign from agricolae package
x	Describes the x coordinates of a experiment design
y	Describes the y coordinates of a experiment design
factor_name	Which factor should be used for plotting, needs to be a column in outdesign\$book
labels	Describes the column from that the plots are taken to display them
width	numeric value, describes the width of a plot in an experiment
height	numeric value, describes the height of a plot in an experiment
space_width	numeric value, describes the share of the space of the plots. 0=only space, 1=no space between plots in term of width
space_height	numeric value, describes the share of the space of the plots. 0=only space, 1=no space between plots in term of height
reverse_y	boolean, should the plots of the experiment be changed in reverse order in Row direction? use reverse_y=TRUE to have same sketch as in agricolae. default:reverse_y=FALSE
reverse_x	boolean, should the plots of the experiment be changed in reverse order in column direction? default:reverse_x=FALSE

Value

ggplot graphic that can be modified, if wished

Examples

```

library(agricolaeplotr)
library(agricolae)
trt<-1:30
t <- length(trt)
# size block k
k<-3
# Blocks s
s<-t/k
# replications r
r <- 2
outdesign<- design.alpha(trt,k,r,serie=2)
plot_alpha(outdesign)

```

plot_bib

Plot Randomized Balanced Incomplete Block Designs

Description

Plot a design of an experiment with an Randomized Balanced Incomplete Block Designs (BIB) from design.bib

Usage

```

plot_bib(
  design,
  y = "block",
  factor_name = "trt",
  labels = "plots",
  width = 1,
  height = 1,
  space_width = 0.95,
  space_height = 0.85,
  reverse_y = FALSE,
  reverse_x = FALSE
)

```

Arguments

design	outdesign from agricolae package
y	Describes the y coordinates of a experiment design
factor_name	Which factor should be used for plotting, needs to be a column in outdesign\$book
labels	Describes the column from that the plots are taken to display them
width	numeric value, describes the width of a plot in an experiment
height	numeric value, describes the height of a plot in an experiment

space_width	numeric value, describes the share of the space of the plots. 0=only space, 1=no space between plots in term of width
space_height	numeric value, describes the share of the space of the plots. 0=only space, 1=no space between plots in term of height
reverse_y	boolean, should the plots of the experiment be changed in reverse order in Row direction? use reverse_y=TRUE to have same sketch as in agricolae. default:reverse_y=FALSE
reverse_x	boolean, should the plots of the experiment be changed in reverse order in column direction? default:reverse_x=FALSE

Value

ggplot graphic that can be modified, if wished

Examples

```
library(agricolaeplotr)
library(agricolae)
trt<-c('A', 'B', 'C', 'D')
k<-3
outdesign<-design.bib(trt,k,serie=2,seed =41,kinds = 'Super-Duper') # seed = 41
plot_bib(outdesign)
#now let us change position of the columns
plot_bib(outdesign,reverse_x = TRUE)
```

plot_cyclic

Plot Cyclic Design

Description

Plot a design of an experiment with an cyclic design from agricolae design.cyclic

Usage

```
plot_cyclic(
  design,
  y = "block",
  factor_name = "trt",
  labels = "plots",
  width = 1,
  height = 1,
  space_width = 0.95,
  space_height = 0.85,
  reverse_y = FALSE,
  reverse_x = FALSE
)
```

Arguments

design	outdesign from agricolae package
y	Describes the y coordinates of a experiment design
factor_name	Which factor should be used for plotting, needs to be a column in outdesign\$book
labels	Describes the column from that the plots are taken to display them
width	numeric value, describes the width of a plot in an experiment
height	numeric value, describes the height of a plot in an experiment
space_width	numeric value, describes the share of the space of the plots. 0=only space, 1=no space between plots in term of width
space_height	numeric value, describes the share of the space of the plots. 0=only space, 1=no space between plots in term of height
reverse_y	boolean, should the plots of the experiment be changed in reverse order in Row direction? use reverse_y=TRUE to have same sketch as in agricolae. default:reverse_y=FALSE
reverse_x	boolean, should the plots of the experiment be changed in reverse order in column direction? default:reverse_x=FALSE

Value

ggplot graphic that can be modified, if wished

Examples

```
library(agricolaeplotr)
library(agricolae)
k <- 2
r <- 6
trt <-c('CIP-101', 'CIP-201', 'CIP-301', 'CIP-401', 'CIP-501', LETTERS[1:2])
outdesign<- design.cyclic(trt,k=k, r=r, serie=3, rowcol=TRUE)
plot_cyclic(outdesign, factor_name = 'trt')
```

plot_dau

Plot Design of Augmented Blocks (dau)

Description

Plot a design of an experiment with an augmented block design from agricolae design.dau

Usage

```
plot_dau(
  design,
  y = "block",
  factor_name = "trt",
  labels = "plots",
  width = 1,
  height = 1,
  space_width = 0.95,
  space_height = 0.85,
  reverse_y = FALSE,
  reverse_x = FALSE
)
```

Arguments

design	outdesign from agricolae package
y	Describes the y coordinates of a experiment design
factor_name	Which factor should be used for plotting, needs to be a column in outdesign\$book
labels	Describes the column from that the plots are taken to display them
width	numeric value, describes the width of a plot in an experiment
height	numeric value, describes the height of a plot in an experiment
space_width	numeric value, describes the share of the space of the plots. 0=only space, 1=no space between plots in term of width
space_height	numeric value, describes the share of the space of the plots. 0=only space, 1=no space between plots in term of height
reverse_y	boolean, should the plots of the experiment be changed in reverse order in Row direction? use reverse_y=TRUE to have same sketch as in agricolae. default:reverse_y=FALSE
reverse_x	boolean, should the plots of the experiment be changed in reverse order in column direction? default:reverse_x=FALSE

Value

ggplot graphic that can be modified, if wished

Examples

```
library(agricolaeplotr)
library(agricolae)
T1<-c('A','B','C','D','E','F')
T2<-letters[19:26]
outdesign <-design.dau(T1,T2, r=5,serie=2)
plot_dau(outdesign)
plot_dau(outdesign,reverse_y = TRUE)
```

 plot_design.factorial_crd

Plot Factorial Complete Randomized Designs (crd)

Description

Plot a design of a factorial experiment with completely randomized design (crd) from design.ab

Usage

```
plot_design.factorial_crd(
  design,
  ncols,
  nrows,
  y = "row",
  factor_name = "A",
  labels = "plots",
  width = 1,
  height = 1,
  space_width = 0.95,
  space_height = 0.85,
  reverse_y = FALSE,
  reverse_x = FALSE
)
```

Arguments

design	outdesign from agricolae package
ncols	integer value, choose the number of columns to which the experiment should be plotted
nrows	integer value, choose the number of rows to which the experiment should be plotted
y	Describes the y coordinates of a experiment design, default is row
factor_name	Which factor should be used for plotting, needs to be a column in outdesign\$book
labels	string indicates the column of which the labels should be displayed
width	numeric value, describes the width of a plot in an experiment
height	numeric value, describes the height of a plot in an experiment
space_width	numeric value, describes the share of the space of the plots. 0=only space, 1=no space between plots in term of width
space_height	numeric value, describes the share of the space of the plots. 0=only space, 1=no space between plots in term of height
reverse_y	boolean, should the plots of the experiment be changed in reverse order in Row direction? use reverse_y=TRUE to have same sketch as in agricolae. default:reverse_y=FALSE
reverse_x	boolean, should the plots of the experiment be changed in reverse order in column direction? default:reverse_x=FALSE

Value

ggplot graphic that can be modified, if wished

Examples

```
library(agricolaeplotr)
library(agricolae)
trt<-c(3,2) # factorial 3x2
outdesign <- design.ab(trt, r=3, serie=2,design = 'crd')
plot_design.factorial_crd(outdesign,ncols = 8,nrows = 6)
plot_design.factorial_crd(outdesign,reverse_y = TRUE,ncols = 8,nrows = 6)
plot_design.factorial_crd(outdesign,reverse_y = TRUE,reverse_x = TRUE,ncols = 8,nrows = 6)
```

plot_design.factorial_1sd

Plot Factorial Latin Square Designs (1sd)

Description

Plot a design of a factorial experiment with latin square design (1sd) design from agricolae design.ab

Usage

```
plot_design.factorial_1sd(
  design,
  x = "col",
  y = "row",
  factor_name = "A",
  labels = "plots",
  width = 1,
  height = 1,
  space_width = 0.95,
  space_height = 0.85,
  reverse_y = FALSE,
  reverse_x = FALSE
)
```

Arguments

design	outdesign from agricolae package
x	Describes the x coordinates of a experiment design
y	Describes the y coordinates of a experiment design
factor_name	Which factor should be used for plotting, needs to be a column in outdesign\$book
labels	Describes the column from that the plots are taken to display them
width	numeric value, describes the width of a plot in an experiment

height	numeric value, describes the height of a plot in an experiment
space_width	numeric value, describes the share of the space of the plots. 0=only space, 1=no space between plots in term of width
space_height	numeric value, describes the share of the space of the plots. 0=only space, 1=no space between plots in term of height
reverse_y	boolean, should the plots of the experiment be changed in reverse order in Row direction? use reverse_y=TRUE to have same sketch as in agricolae. default:reverse_y=FALSE
reverse_x	boolean, should the plots of the experiment be changed in reverse order in column direction? default:reverse_x=FALSE

Value

ggplot graphic that can be modified, if wished

Examples

```
library(agricolaeplotr)
library(agricolae)
trt<-c(3,2) # factorial 3x2
outdesign <-design.ab(trt, r=3, serie=2,design = 'lsd')
plot_design.factorial_lsd(outdesign,factor_name = 'B',reverse_x = TRUE)
```

plot_design.factorial_rcbd

Plot Factorial Designs with rcbd Design

Description

Plot a design of a factorial experiment with randomized complete block design (rcbd) from design.ab

Usage

```
plot_design.factorial_rcbd(
  design,
  y = "row",
  factor_name = "A",
  width = 1,
  height = 1,
  space_width = 0.95,
  space_height = 0.85,
  reverse_x = FALSE,
  reverse_y = FALSE
)
```

Arguments

design	outdesign from agricolae package
y	Describes the y coordinates of a experiment design
factor_name	Which factor should be used for plotting, needs to be a column in outdesign\$book
width	numeric value, describes the width of a plot in an experiment
height	numeric value, describes the height of a plot in an experiment
space_width	numeric value, describes the share of the space of the plots. 0=only space, 1=no space between plots in term of width
space_height	numeric value, describes the share of the space of the plots. 0=only space, 1=no space between plots in term of height
reverse_x	boolean, should the plots of the experiment be changed in reverse order in column direction? default:reverse_x=FALSE
reverse_y	boolean, should the plots of the experiment be changed in reverse order in Row direction? use reverse_y=TRUE to have same sketch as in agricolae. default:reverse_y=FALSE

Value

ggplot graphic that can be modified, if wished

Examples

```
library(agricolaeplotr)
library(agricolae)
trt<-c(2,4)
k=6
outdesign<-design.ab(trt, r=k, serie=3,design='rcbd')
plot_design.factorial_rcbd(design=outdesign,factor_name = 'B')
plot_design.factorial_rcbd(outdesign,reverse_y = TRUE,reverse_x = TRUE)
```

plot_design_crd

Plot Complete Randomized Design

Description

Plot a design of a factorial experiment with randomized complete block design from agricolae design.ab

Usage

```
plot_design_crd(
  design,
  ncols,
  nrows,
  y = "row",
  factor_name = "trt",
  labels = "plots",
  width = 1,
  height = 1,
  space_width = 0.95,
  space_height = 0.85,
  reverse_y = FALSE,
  reverse_x = FALSE
)
```

Arguments

design	outdesign from agricolae package
ncols	integer value, choose the number of columns to which the experiment should be plotted
nrows	integer value, choose the number of rows to which the experiment should be plotted
y	Describes the y coordinates of a experiment design, default is row
factor_name	Which factor should be used for plotting, needs to be a column in outdesign\$book
labels	Describes the column from that the plots are taken to display them
width	numeric value, describes the width of a plot in an experiment
height	numeric value, describes the height of a plot in an experiment
space_width	numeric value, describes the share of the space of the plots. 0=only space, 1=no space between plots in term of width
space_height	numeric value, describes the share of the space of the plots. 0=only space, 1=no space between plots in term of height
reverse_y	boolean, should the plots of the experiment be changed in reverse order in Row direction? use reverse_y=TRUE to have same sketch as in agricolae. default:reverse_y=FALSE
reverse_x	boolean, should the plots of the experiment be changed in reverse order in column direction? default:reverse_x=FALSE

Value

ggplot graphic that can be modified, if wished

Examples

```

library(agricolaeplotr)
library(agricolae)
trt = c(2,3,4,5,6)
outdesign1 <-design.crd(trt,r=5,serie=2,2543,'Mersenne-Twister')
plot_design_crd(outdesign1,ncols = 13,nrows = 3)

```

plot_fieldhub

*Plot FieldHub Design***Description**

Plots designs from FieldHub package

Usage

```

plot_fieldhub(
  design,
  x = "COLUMN",
  y = "ROW",
  labels = "PLOT",
  factor_name = "TREATMENT",
  width = 1,
  height = 1,
  space_width = 0.95,
  space_height = 0.85,
  reverse_y = FALSE,
  reverse_x = FALSE,
  shift_x = 0,
  shift_y = 0
)

```

Arguments

design	outdesign from FieldHub package with one of the following IDs: c(9,13,14,15,16)
x	Describes the x coordinates of a experiment design
y	Describes the y coordinates of a experiment design
labels	string Describes the column from that the plots are taken to display them
factor_name	string Which factor should be used for plotting, needs to be a column in outdesign\$book
width	numeric value, describes the width of a plot in an experiment
height	numeric value, describes the height of a plot in an experiment
space_width	numeric value, describes the share of the space of the plots. 0=only space, 1=no space between plots in term of width

space_height	numeric value, describes the share of the space of the plots. 0=only space, 1=no space between plots in term of height
reverse_y	boolean, should the plots of the experiment be changed in reverse order in Row direction? use reverse_y=TRUE to have same sketch as in agricolae. default:reverse_y=FALSE
reverse_x	boolean, should the plots of the experiment be changed in reverse order in column direction? default:reverse_x=FALSE
shift_x	numeric indicates the shift in units in x-axis.
shift_y	numeric indicates the shift in units for the y-axis.

Value

ggplot graphic that can be modified, if wished

Examples

```
## Not run:
library(agricolaeplotr)
library(FieldHub)
H <- paste("H", 1:4, sep = "")
V <- paste("V", 1:5, sep = "")

strip1 <- FieldHub::strip_plot(Hplots = H,
                              Vplots = V,
                              b = 1,
                              l = 1,
                              plotNumber = 101,
                              planter = "serpentine",
                              locationNames = "A",
                              seed = 333)

strip1$fieldBook$ROW <- as.numeric(ordered(strip1$fieldBook$VSTRIP,
                                           levels = unique(strip1$fieldBook$VSTRIP)))
strip1$fieldBook$COLUMN <- as.numeric(ordered(strip1$fieldBook$HSTRIP,
                                              levels = unique(strip1$fieldBook$HSTRIP)))

plot_fieldhub(strip1,
              x = "ROW",
              y = "COLUMN",
              labels = "HSTRIP",
              factor_name = "HSTRIP",
              width = 12,
              height = 10,
              reverse_y = FALSE,
              reverse_x = FALSE)

## End(Not run)
```

plot_graeco *Plot Graeco Latin Square Design*

Description

Plot a design of an experiment with an Graeco - latin square design from agricolae design.graeco

Usage

```
plot_graeco(
  design,
  x = "col",
  y = "row",
  factor_name = "T1",
  labels = "plots",
  width = 1,
  height = 1,
  space_width = 0.95,
  space_height = 0.85,
  reverse_y = FALSE,
  reverse_x = FALSE
)
```

Arguments

design	outdesign from agricolae package
x	Describes the x coordinates of a experiment design
y	Describes the y coordinates of a experiment design
factor_name	Which factor should be used for plotting, needs to be a column in outdesign\$book
labels	Describes the column from that the plots are taken to display them
width	numeric value, describes the width of a plot in an experiment
height	numeric value, describes the height of a plot in an experiment
space_width	numeric value, describes the share of the space of the plots. 0=only space, 1=no space between plots in term of width
space_height	numeric value, describes the share of the space of the plots. 0=only space, 1=no space between plots in term of height
reverse_y	boolean, should the plots of the experiment be changed in reverse order in Row direction? use reverse_y=TRUE to have same sketch as in agricolae. default:reverse_y=FALSE
reverse_x	boolean, should the plots of the experiment be changed in reverse order in column direction? default:reverse_x=FALSE

Value

ggplot graphic that can be modified, if wished

Examples

```

library(agricolaeplotr)
library(agricolae)
T1<-c('a','b','c','d')
T2<-c('v','w','x','y','z','zz')
outdesign <- design.graeco(trt1=T1, trt2=T2, serie = 2,
  seed = 0, kinds = 'Super-Duper',randomization=TRUE)
plot_graeco(outdesign, factor_name = 'T2',reverse_y = TRUE)
plot_graeco(outdesign, factor_name = 'T2',reverse_x = TRUE)

```

plot_latin_square *Plot Latin Square Design*

Description

Plot a design of a factorial experiment with a latin square design from agricolae design.lsd

Usage

```

plot_latin_square(
  design,
  x = "col",
  y = "row",
  factor_name = "trt",
  labels = "plots",
  width = 1,
  height = 1,
  space_width = 0.95,
  space_height = 0.85,
  reverse_y = FALSE,
  reverse_x = FALSE
)

```

Arguments

design	outdesign from agricolae package
x	Describes the x coordinates of a experiment design
y	Describes the y coordinates of a experiment design
factor_name	Which factor should be used for plotting, needs to be a column in outdesign\$book
labels	Describes the column from that the plots are taken to display them
width	numeric value, describes the width of a plot in an experiment
height	numeric value, describes the height of a plot in an experiment
space_width	numeric value, describes the share of the space of the plots. 0=only space, 1=no space between plots in term of width

space_height	numeric value, describes the share of the space of the plots. 0=only space, 1=no space between plots in term of height
reverse_y	boolean, should the plots of the experiment be changed in reverse order in Row direction? use reverse_y=TRUE to have same sketch as in agricolae. default:reverse_y=FALSE
reverse_x	boolean, should the plots of the experiment be changed in reverse order in column direction? default:reverse_x=FALSE

Value

ggplot graphic that can be modified, if wished

Examples

```
library(agricolaeplotr)
library(agricolae)
trt<-LETTERS[1:9]
outdesign<- design.lsd(trt,serie=2)
plot_latin_square(outdesign, reverse_y = TRUE)
```

plot_lattice_simple *Plot Simple Lattice Design*

Description

Plot a design of a factorial experiment with a lattice design from agricolae design.lattice with r=2

Usage

```
plot_lattice_simple(
  design,
  y = "block",
  factor_name = "trt",
  labels = "plots",
  width = 1,
  height = 1,
  space_width = 0.95,
  space_height = 0.85,
  reverse_y = FALSE,
  reverse_x = FALSE
)
```

Arguments

design	outdesign from agricolae package
y	Describes the y coordinates of a experiment design
factor_name	Which factor should be used for plotting, needs to be a column in outdesign\$book

labels	Describes the column from that the plots are taken to display them
width	numeric value, describes the width of a plot in an experiment
height	numeric value, describes the height of a plot in an experiment
space_width	numeric value, describes the share of the space of the plots. 0=only space, 1=no space between plots in term of width
space_height	numeric value, describes the share of the space of the plots. 0=only space, 1=no space between plots in term of height
reverse_y	boolean, should the plots of the experiment be changed in reverse order in Row direction? use reverse_y=TRUE to have same sketch as in agricolae. default:reverse_y=FALSE
reverse_x	boolean, should the plots of the experiment be changed in reverse order in column direction? default:reverse_x=FALSE

Value

ggplot graphic that can be modified, if wished

Examples

```
library(agricolaeplotr)
library(agricolae)
trt<-1:100
outdesign<-design.lattice(trt,r=2,serie=3) # simple lattice design, 10x10
plot_lattice_simple(outdesign,width = 2, height = 1)
```

plot_lattice_triple *Plot Triple Lattice Design*

Description

Plot a design of a factorial experiment with a latin square design from agricolae design.lattice with r=3

Usage

```
plot_lattice_triple(
  design,
  y = "block",
  factor_name = "trt",
  labels = "plots",
  width = 1,
  height = 1,
  space_width = 0.95,
  space_height = 0.85,
  reverse_y = FALSE,
  reverse_x = FALSE
)
```

Arguments

design	outdesign from agricolae package
y	Describes the y coordinates of a experiment design
factor_name	Which factor should be used for plotting, needs to be a column in outdesign\$book
labels	Describes the column from that the plots are taken to display them
width	numeric value, describes the width of a plot in an experiment
height	numeric value, describes the height of a plot in an experiment
space_width	numeric value, describes the share of the space of the plots. 0=only space, 1=no space between plots in term of width
space_height	numeric value, describes the share of the space of the plots. 0=only space, 1=no space between plots in term of height
reverse_y	boolean, should the plots of the experiment be changed in reverse order in Row direction? use reverse_y=TRUE to have same sketch as in agricolae. default:reverse_y=FALSE
reverse_x	boolean, should the plots of the experiment be changed in reverse order in column direction? default:reverse_x=FALSE

Value

ggplot graphic that can be modified, if wished

Examples

```
library(agricolaeplotr)
library(agricolae)
trt<-LETTERS[1:9]
outdesign<-design.lattice(trt,r=3,serie=2)
plot_lattice_triple(design=outdesign,reverse_x=TRUE)
```

plot_rcdb

Plot randomized complete block designs

Description

Plot a design of an experiment with randomized complete block design (rcbd) design from agricolae design.rcbd

Usage

```
plot_rcdb(
  design,
  y = "block",
  factor_name = "trt",
  labels = "plots",
  width = 1,
  height = 1,
  space_width = 0.95,
  space_height = 0.85,
  reverse_y = FALSE,
  reverse_x = FALSE
)
```

Arguments

design	outdesign from agricolae package
y	Describes the y coordinates of a experiment design
factor_name	Which factor should be used for plotting, needs to be a column in outdesign\$book
labels	Describes the column from that the plots are taken to display them
width	numeric value, describes the width of a plot in an experiment
height	numeric value, describes the height of a plot in an experiment
space_width	numeric value, describes the share of the space of the plots. 0=only space, 1=no space between plots in term of width
space_height	numeric value, describes the share of the space of the plots. 0=only space, 1=no space between plots in term of height
reverse_y	boolean, should the plots of the experiment be changed in reverse order in Row direction? use reverse_y=TRUE to have same sketch as in agricolae. default:reverse_y=FALSE
reverse_x	boolean, should the plots of the experiment be changed in reverse order in column direction? default:reverse_x=FALSE

Value

ggplot graphic that can be modified, if wished

Examples

```
library(agricolaeplotr)
library(agricolae)
# 5 treatments and 6 blocks
trt<-c('A', 'B', 'C', 'D', 'E')
outdesign <-design.rcbd(trt,6,serie=2,986,'Wichmann-Hill') # seed = 986
plot_rcdb(outdesign)
plot_rcdb(outdesign,reverse_y = TRUE,reverse_x = TRUE)
```

plot_split_crd *Plot Split Plot Designs (crd)*

Description

Plot a design of a split plot experiment with a complete randomized design (crd) from design.split

Usage

```
plot_split_crd(
  design,
  nrows,
  ncols,
  factor_name_1 = "T1",
  factor_name_2 = "T2",
  labels = "plots",
  subplots = TRUE,
  width = 1,
  height = 1,
  space_width = 0.95,
  space_height = 0.85,
  reverse_y = FALSE,
  reverse_x = FALSE
)
```

Arguments

design	outdesign from agricolae package
nrows	Number of rows for the design
ncols	Number of columns for the design
factor_name_1	string Which factor should be used for plotting, needs to be a column in outdesign\$book
factor_name_2	string Which factor should be used for plotting, needs to be a column in outdesign\$book
labels	string Describes the column from that the plots are taken to display them
subplots	should the plot function return the subplots (default) or main plots?
width	numeric value, describes the width of a plot in an experiment
height	numeric value, describes the height of a plot in an experiment
space_width	numeric value, describes the share of the space of the plots. 0=only space, 1=no space between plots in term of width
space_height	numeric value, describes the share of the space of the plots. 0=only space, 1=no space between plots in term of height

reverse_y	boolean, should the plots of the experiment be changed in reverse order in Row direction? use reverse_y=TRUE to have same sketch as in agricolae. default:reverse_y=FALSE
reverse_x	boolean, should the plots of the experiment be changed in reverse order in column direction? default:reverse_x=FALSE

Value

ggplot graphic that can be modified, if wished

Examples

```
library(agricolaeplotr)
library(agricolae)
T1<-c('a','b','c','d','e','f','g')
T2<-c('v','w','x','y','zzz')
r <- 4
outdesign2 <- design.split(trt1=T1, trt2=T2, r=r,
  serie = 2, seed = 0, kinds = 'Super-Duper',
  randomization=TRUE,first=TRUE,design = 'crd')
plot_split_crd(outdesign2,ncols = 6,nrows=5)

outdesign2 <- design.split(trt1=T1, trt2=T2, r=r,
  serie = 2, seed = 0, kinds = 'Super-Duper',
  randomization=FALSE,first=TRUE,design = 'crd')
plot_split_crd(outdesign2,ncols = 6,nrows=5)
```

plot_split_lsd

Plot Split Plot Design lsd

Description

Plot a design of a split plot experiment with latin squared design (lsd) from design.split

Usage

```
plot_split_lsd(
  design,
  factor_name_1 = "T1",
  factor_name_2 = "T2",
  labels = "plots",
  subplots = TRUE,
  width = 1,
  height = 1,
  space_width = 0.95,
  space_height = 0.85,
  reverse_y = FALSE,
  reverse_x = FALSE
)
```

Arguments

design	outdesign from agricolae package
factor_name_1	string Which factor should be used for plotting, needs to be a column in outdesign\$book
factor_name_2	string Which factor should be used for plotting, needs to be a column in outdesign\$book
labels	string Describes the column from that the plots are taken to display them
subplots	should the plot function return the subplots (default) or main plots?
width	numeric value, describes the width of a plot in an experiment
height	numeric value, describes the height of a plot in an experiment
space_width	numeric value, describes the share of the space of the plots. 0=only space, 1=no space between plots in term of width
space_height	numeric value, describes the share of the space of the plots. 0=only space, 1=no space between plots in term of height
reverse_y	boolean, should the plots of the experiment be changed in reverse order in Row direction? use reverse_y=TRUE to have same sketch as in agricolae. default:reverse_y=FALSE
reverse_x	boolean, should the plots of the experiment be changed in reverse order in column direction? default:reverse_x=FALSE

Value

ggplot graphic that can be modified, if wished

Examples

```
library(agricolaeplotr)
library(agricolae)
T1<-c('a','b','c','d','e')
T2<-c('v','w','x','y')
outdesign2 <- design.split(trt1=T1, trt2=T2, r=r,serie = 2,
                          seed = 0, kinds = 'Super-Duper',
                          randomization=TRUE,first=TRUE,design = 'lsd')
plot_split_lsd(outdesign2,width = 4,height = 4)
```

plot_split_rcbd

Plot Split Plot Designs with rcdb

Description

Plot a design of a split plot experiment with randomized complete blocks design (rcbd) from design.split

Usage

```
plot_split_rcbd(
  design,
  y = "block",
  factor_name_1 = "T1",
  factor_name_2 = "T2",
  subplots = TRUE,
  labels = "plots",
  width = 1,
  height = 1,
  space_width = 0.95,
  space_height = 0.85,
  reverse_y = FALSE,
  reverse_x = FALSE
)
```

Arguments

design	outdesign from agricolae package
y	string defines the block
factor_name_1	string Which factor should be used for plotting, needs to be a column in outdesign\$book
factor_name_2	string Which factor should be used for plotting, needs to be a column in outdesign\$book
subplots	should the plot function return the subplots (default) or main plots?
labels	string Describes the column from that the plots are taken to display them
width	numeric value, describes the width of a plot in an experiment
height	numeric value, describes the height of a plot in an experiment
space_width	numeric value, describes the share of the space of the plots. 0=only space, 1=no space between plots in term of width
space_height	numeric value, describes the share of the space of the plots. 0=only space, 1=no space between plots in term of height
reverse_y	boolean, should the plots of the experiment be changed in reverse order in Row direction? use reverse_y=TRUE to have same sketch as in agricolae. default:reverse_y=FALSE
reverse_x	boolean, should the plots of the experiment be changed in reverse order in column direction? default:reverse_x=FALSE

Value

ggplot graphic that can be modified, if wished

Examples

```

library(agricolaeplotr)
library(agricolae)
T1<-c('a','b','c','d','e')
T2<-c('v','w','x','y','z','zz')
r = 3
outdesign2 <- design.split(trt1=T1, trt2=T2, r=r,serie = 2,
  seed = 0, kinds = 'Super-Duper',randomization=TRUE,
  first=TRUE,design = 'rcbd')
plot_split_rcbd(outdesign2,width = 1,height = 1)
plot_split_rcbd(outdesign2,width = 1,height = 1,reverse_y = TRUE)
plot_split_rcbd(outdesign2,width = 1,height = 1,reverse_x = TRUE,reverse_y = TRUE)

```

plot_strip

Plot Strip Design

Description

Plot a design of an experiment with an Strip Plot design from agricolae design.strip

Usage

```

plot_strip(
  design,
  x = "col",
  y = "row",
  factor_name_1 = "T1",
  factor_name_2 = "T2",
  labels = "plots",
  width = 1,
  height = 1,
  space_width = 0.95,
  space_height = 0.85,
  reverse_y = FALSE,
  reverse_x = FALSE
)

```

Arguments

design	outdesign from agricolae package
x	Describes the x coordinates of a experiment design
y	Describes the y coordinates of a experiment design
factor_name_1	Which factor should be used for plotting, needs to be a column in outdesign\$book
factor_name_2	Which factor should be used for plotting, needs to be a column in outdesign\$book
labels	Describes the column from that the plots are taken to display them
width	numeric value, describes the width of a plot in an experiment

height	numeric value, describes the height of a plot in an experiment
space_width	numeric value, describes the share of the space of the plots. 0=only space, 1=no space between plots in term of width
space_height	numeric value, describes the share of the space of the plots. 0=only space, 1=no space between plots in term of height
reverse_y	boolean, should the plots of the experiment be changed in reverse order in Row direction? use reverse_y=TRUE to have same sketch as in agricolae. default:reverse_y=FALSE
reverse_x	boolean, should the plots of the experiment be changed in reverse order in column direction? default:reverse_x=FALSE

Value

ggplot graphic that can be modified, if wished

Examples

```
library(agricolaeplotr)
library(agricolae)
T1<-c('a','b','c','d')
T2<-c('v','w','x','y','z')
r = 3
outdesign <- design.strip(trt1=T1, trt2=T2, r=r,serie = 2,
  seed = 0, kinds = 'Super-Duper',randomization=TRUE)
plot_strip(outdesign,factor_name_1 = "T1",factor_name_2="T2")
plot_strip(outdesign,factor_name_1 = "T1",factor_name_2="T2",reverse_x = TRUE)
```

plot_youden

Plot Youden Design

Description

Plot a Youden experiment design from agricolae design.youden

Usage

```
plot_youden(
  design,
  x = "col",
  y = "row",
  factor_name = "varieties",
  labels = "plots",
  width = 1,
  height = 1,
  space_width = 0.95,
  space_height = 0.85,
  reverse_y = FALSE,
  reverse_x = FALSE
)
```

Arguments

design	outdesign from agricolae package
x	Describes the x coordinates of a experiment design
y	Describes the y coordinates of a experiment design
factor_name	string Which factor should be used for plotting, needs to be a column in outdesign\$book
labels	string Describes the column from that the plots are taken to display them
width	numeric value, describes the width of a plot in an experiment
height	numeric value, describes the height of a plot in an experiment
space_width	numeric value, describes the share of the space of the plots. 0=only space, 1=no space between plots in term of width
space_height	numeric value, describes the share of the space of the plots. 0=only space, 1=no space between plots in term of height
reverse_y	boolean, should the plots of the experiment be changed in reverse order in Row direction? use reverse_y=TRUE to have same sketch as in agricolae. default:reverse_y=FALSE
reverse_x	boolean, should the plots of the experiment be changed in reverse order in column direction? default:reverse_x=FALSE

Value

ggplot graphic that can be modified, if wished

Examples

```
library(agricolaeplotr)
library(agricolae)
varieties<-c('perricholi','yungay','maria bonita','tomasa')
outdesign <-design.youden(varieties,r=2,serie=2,seed=23)
plot_youden(outdesign, labels = 'varieties')
```

serpentine

Serpentine

Description

This function produces a serpentine array of integers beginning by one

Usage

```
serpentine(n, times, m = 1)
```

Arguments

n	integer value indicating the upper cap of a numeric sequence
times	integer number of replications
m	integer value indicating the lower cap of a numeric sequence

Value

vector containing the serpentine sequence

Examples

```
serpentine(n=20,times = 15)
serpentine(n=20,times = 15,m=4)
```

summary

summary of a field Layout

Description

print a summary of a FieldLayout object

Usage

```
summary(object, unit = "m", part = "net_plot", ...)
```

Arguments

object	an object, created by DOE_obj with a FieldLayout class
unit	a string that corresponds to measure unit (default is m)
part	which part of the summary are you interested? Choose one of the following: "net_plot", "gross_plot", "field", "experiment", "all"
...	further arguments passed to or from other methods

Examples

```
library(agricolaeplotr)
library(agricolae)
varieties<-c('perricholi','yungay','maria bonita','tomasa')
outdesign <-design.youden(varieties,r=2,serie=2,seed=23)
p <- plot_youden(outdesign, labels = 'varieties')
stats <- DOE_obj(p)
# print plot summary for net plot (plots without space)
summary(stats, part = "net_plot")
# print plot summary for gross plot (plots with space)
summary(stats, part = "gross_plot")
# print plot summary for entire field
summary(stats, part = "field")
```



```
# print plot summary for design summary
summary(stats, part = "experiment")
# print plot summary for all information shown above in one output
summary(stats, part = "all")
```

test_input_extend *Test if input for width and height is numeric*

Description

Test if input is numeric for field width and height

Usage

```
test_input_extend(x)
```

Arguments

x input to be tested

Value

error

Examples

```
library(agricolaeplotr)
test_input_extend(3)
```

test_input_ncols *checks matrix column input*

Description

checks if input is suitable for matrix column indication

Usage

```
test_input_ncols(x)
```

Arguments

x input to be tested

Value

error

Examples

```
library(agricolaeplotr)
test_input_ncols(9)
```

test_input_nrows	<i>checks matrix rows input</i>
------------------	---------------------------------

Description

checks if input is suitable for matrix row indication

Usage

```
test_input_nrows(x)
```

Arguments

x input to be tested

Value

error

Examples

```
library(agricolaeplotr)
test_input_nrows(10)
```

test_input_reverse	<i>Test if input is a logical</i>
--------------------	-----------------------------------

Description

Test if input is a logical

Usage

```
test_input_reverse(x)
```

Arguments

x input to be tested

Value

error

Examples

```
library(agricolaeplotr)
test_input_reverse(TRUE)
```

test_input_shift	<i>Test if input for shift parameter is numeric</i>
------------------	---

Description

Test if input is numeric for shift parameter

Usage

```
test_input_shift(x)
```

Arguments

x	input to be tested
---	--------------------

Value

error

Examples

```
library(agricolaeplotr)
test_input_shift(0.5)
```

test_names_design	<i>Test of experimental design</i>
-------------------	------------------------------------

Description

Test if the outdesign file contains book and parameter list

Usage

```
test_names_design(design)
```

Arguments

design	design from agricolae package
--------	-------------------------------

Value

error

Examples

```
library(agricolaeplotr)
library(agricolae)
trt<-c(2,4)
k=6
outdesign<-design.ab(trt, r=k, serie=3,design='rcbd')
test_names_design(outdesign)
```

test_name_in_column	<i>Test if input column names</i>
---------------------	-----------------------------------

Description

Test if input is in column names of a table

Usage

```
test_name_in_column(x, design)
```

Arguments

x	string input
design	design from agricolae package

Value

error

Examples

```
library(agricolaeplotr)
library(agricolae)
trt<-c(2,4)
k=6
outdesign<-design.ab(trt, r=k, serie=3,design='rcbd')
test_name_in_column('B',outdesign)
```

test_string	<i>Test if input is a string</i>
-------------	----------------------------------

Description

Test if input is a string

Usage

```
test_string(x)
```

Arguments

x input to be tested

Value

error

Examples

```
library(agricolaeplotr)
test_string('smallstring')
```

theme_gi	<i>theme_gi</i>
----------	-----------------

Description

Creates a theme for 'ggplot' based graphics to ensure to meet formal requirements for conferences of the Gesellschaft fuer Informatik

Usage

```
theme_gi()
```

Value

a 'ggplot' graph with a modified theme

Examples

```
# example borrowed from ggplot2
library(ggplot2)
df <- data.frame(
  gp = factor(rep(letters[1:3], each = 10)),
  y = rnorm(30))

p <- ggplot() +
  geom_point(data = df, aes(gp, y))
p <- p + theme_gi();p
```

theme_poster

ggplot2 theme for poster presentation

Description

This theme is designed to increase font size to ensure readability on poster presentations

Usage

```
theme_poster()
```

Value

ggplot2 theme

Examples

```
library(agricolaeplotr)
library(agricolae)
T1<-c('a','b','c','d','e','f','g')
T2<-c('v','w','x','y','z')
r <- 4
outdesign2 <- design.split(trt1=T1, trt2=T2, r=r,
  serie = 2, seed = 0, kinds = 'Super-Duper',
  randomization=FALSE,first=TRUE,design = 'crd')
plot_split_crd(outdesign2,ncols = 6,nrows=5)+
  theme_poster()
```

theme_pres	<i>ggplot2 theme for outdoor presentation</i>
------------	---

Description

This theme is designed to increase font size to ensure readability on outdoor used devices

Usage

```
theme_pres()
```

Value

ggplot2 theme

Examples

```
library(agricolaeplotr)
library(agricolae)
T1<-c('a','b','c','d','e','f','g')
T2<-c('v','w','x','y','z')
r <- 4
outdesign2 <- design.split(trt1=T1, trt2=T2, r=r,
  serie = 2, seed = 0, kinds = 'Super-Duper',
  randomization=FALSE,first=TRUE,design = 'crd')
plot_split_crd(outdesign2,ncols = 6,nrows=5)+
  theme_pres()
```

to_table	<i>to_table</i>
----------	-----------------

Description

Write field experiment information to a dataframe.

Usage

```
to_table(object, part = "net_plot", unit = "m", digits = 3, ...)
```

Arguments

object	an object, created by DOE_obj with a FieldLayout class
part	which part of the summary are you interested? Choose one of the following: "net_plot", "gross_plot", "field", "experiment"
unit	a string that corresponds to measure unit (default is m)
digits	integer indicating the number of decimal places (round) or significant digits (signif) to be used. Negative values are allowed
...	further arguments passed to or from other methods

Value

dataframe with corresponding information about the experiment

Examples

```
library(agricolaeplotr)
library(agricolae)
varieties<-c('perricholi','yungay','maria bonita','tomasa')
outdesign <-design.youden(varieties,r=2,serie=2,seed=23)
p <- plot_youden(outdesign, labels = 'varieties', width=4, height=3)
stats <- DOE_obj(p)
r <- to_table(stats,part = "net_plot", digits = 2)
r
r <- to_table(stats,part = "gross_plot", digits = 2)
r
r <- to_table(stats,part = "field", digits = 2)
r
r <- to_table(stats,part = "experiment", digits = 2)
r
r <- to_table(stats,part = "all", digits = 2)
r
```


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